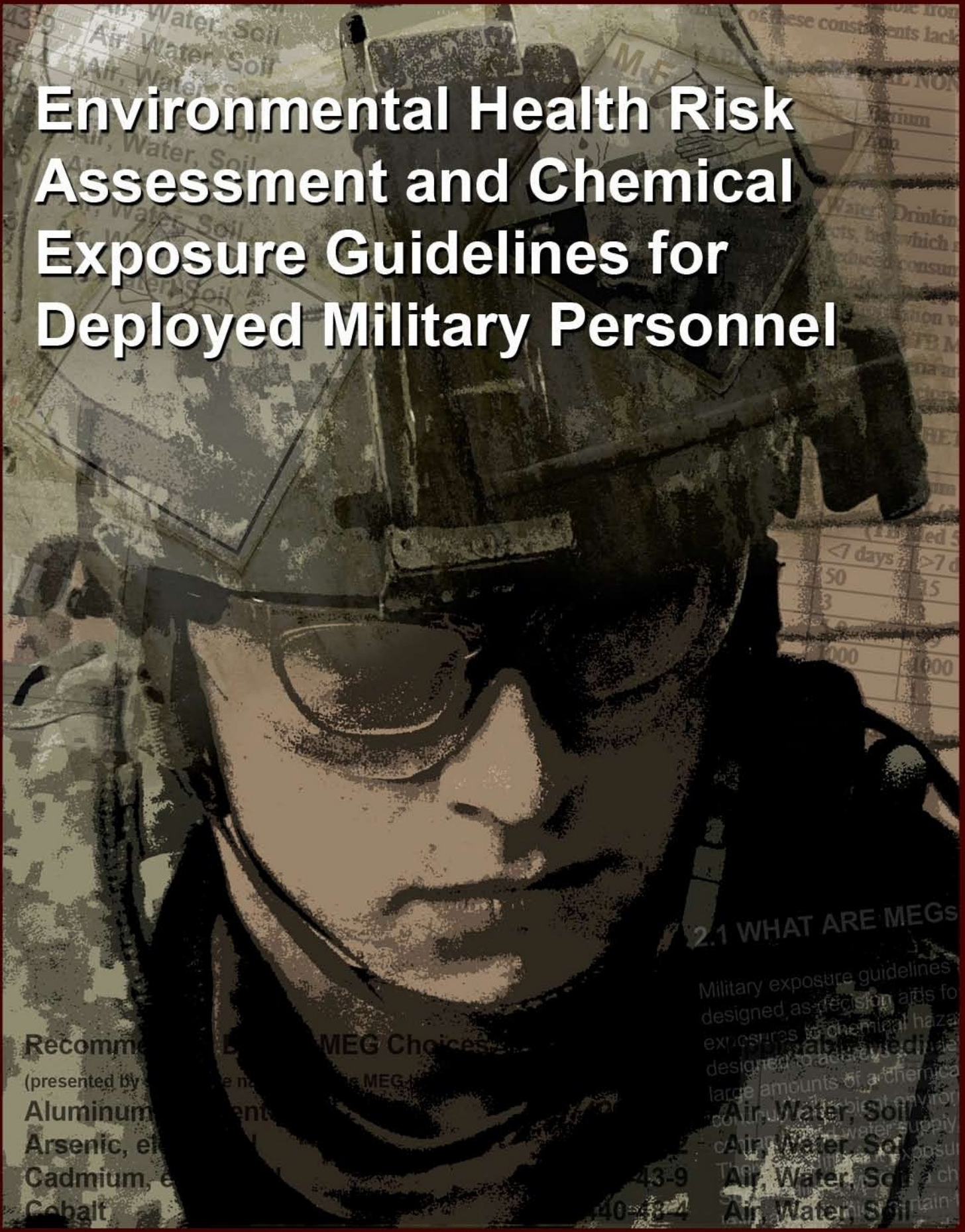


Environmental Health Risk Assessment and Chemical Exposure Guidelines for Deployed Military Personnel



Recommended Best MEG Choices

(presented by the name of the MEG)

Aluminum

Arsenic, etc.

Cadmium, etc.

Cobalt

2.1 WHAT ARE MEGS

Military exposure guidelines designed as decision aids for exposures to chemical hazards designed to address situations involving large amounts of a chemical.

Air, Water, Soil
Air, Water, Soil
Air, Water, Soil
Air, Water, Soil

Technical Guide 230

Environmental Health Risk Assessment and Chemical Exposure Guidelines for Deployed Military Personnel

2013 Revision



U.S. Army Public Health Command

Approved for Public Release;

Preface

Department of Defense Instruction 6490.03 (Deployment Health), Joint Staff Memorandum MCM-0028-07 (Procedures for Deployment Health Surveillance), Joint Publication 4-02 (Health Services Support), and Army Regulation 11-35 (Deployment Occupational and Environmental Health Risk Management) represent some of the key policy and doctrinal references that describe the military position regarding identification and assessment of chemical exposures in deployed settings. These documents establish responsibilities that direct Commanders to ensure Force Health Protection by using the military risk management process to control occupational and environmental health hazards and to minimize total health and safety risks to personnel across the broad spectrum of military operations. This includes identifying, documenting, and reporting exposures to chemicals that may result in short- or long-term health effects to deployed military personnel.

The U.S. Army Public Health Command (USAPHC) Technical Guide (TG) 230 is provided as a standard tool to assess and characterize chemical exposures during deployments in a manner that is consistent with established joint military risk management doctrine (described above). This guide provides a range of military exposure guidelines that are health-based chemical concentrations in air, water, and soil for various military exposure scenarios during deployments.

The 2013 Revision of TG 230 is the first minor revision since June 2010. This revision provides improved guidance on conducting health risk assessments, and addresses issues with the 2010 revision found after publication.

Additional Information, Updates, and Revisions

Chemical risk assessments for deployments have been performed on a regular basis since 1995 by this organization, as well as other Service organizations. The USAPHC approach to characterizing chemical-related risks has evolved over the years. Our goal has been to learn through experience and establish a standardized, supportable methodology that can be used by reach-back support as well as applied directly “in the field” by appropriate military medical/health personnel. This guide and its supporting Reference Document 230 (RD 230) present our most current recommended guidance and supporting methodology. Due to scientific advances and expanding operational needs, our methods and documents will be updated as necessary. The most current version of TG 230 and supporting reference materials and guidance can be obtained electronically at:

http://phc.amedd.army.mil/topics/envirohealth/hrasm/Pages/EHRAP_TechGuide.aspx

The USAPHC Environmental Health Risk Assessment Program is the proponent of this TG. Questions, comments, and recommendations can be forwarded to—

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1**INTRODUCTION****1.1 PURPOSE**

The U.S. Army Public Health Command (USAPHC) Technical Guide 230 (TG 230) presents military exposure guidelines (MEGs) for chemicals in air, water, and soil; risk assessment methods; and risk communication guidance for use in evaluating and communicating exposure risks during deployments.

This USAPHC TG 230 Revision was developed as a standard tool to support established joint military risk management doctrine—specifically, it supports Department of Defense (DOD) Instruction 6490.03 (Deployment Health) (DOD 2006a), Joint Staff Memorandum MCM-0028-07 (Procedures for Deployment Health Surveillance) (CJCS 2007), Joint Publication (JP) 4-02 (Health Services Support) (JP 4-02 2006), and Army Regulation (AR) 11-35 (Deployment Occupational and Environmental Health Risk Management) (AR 11-35 2007). These policies establish the requirement to reduce potential and actual exposure from occupational and environmental hazards encountered during military operations to as low as practicable to minimize immediate, delayed, and long-term health effects within the context of mission parameters and military risk management principles. The military risk management process requires the identification of hazards, a standardized categorization of the risks, and a decision process that appropriately balances these risks to minimize adverse impacts on the mission and personnel. Commanders should be made aware of and consider the acute and chronic health risks associated with occupational and environmental potential and actual exposure during all phases of military operations and over the broad spectrum of military activities.

While this guide has been developed by USAPHC to address Army-specific requirements, it is consistent with the requirements of the DOD and the Joint staff. Thus, it provides a consistent basis for all Services to conduct chemical risk assessments during deployments.

The MEGs are intended to be used as a preventive medicine (PVNTMED) tool to identify and assess chemical occupational and environmental health (OEH) hazards faced by military personnel within the deployment environment. It is essential that the impact of exposures be translated in this fashion so that Commanders at the field- or theater-level can compare risks from chemical hazards against a myriad of other mission- and personnel-related risks and make appropriate risk management decisions. The MEGs and the associated risk assessment process outlined in TG 230 are intended to support Commanders decisions to manage and minimize OEH risks to personnel in the deployed environment.

Use of registered trademark names does not imply endorsement by the U.S. Army but is intended only to assist in identification of a specific product.

The MEGs are health-based chemical concentrations for various deployed military exposure scenarios representing levels at which no, some, or significant health effects could occur within the exposed, deployed population. While MEGs are derived in large part from existing Federal standards and guidelines, the MEGs themselves are not “standards” or “action levels.” The USAPHC TG 230 also presents a standard risk assessment process that uses the MEGs to characterize chemical exposure risks during deployments in a manner that is consistent with established joint military risk management doctrine. In addition, information regarding the specific health endpoints used to establish the MEGs is provided.

While health risk assessments must rely on expert judgment and are intrinsically uncertain, the goal of USAPHC TG 230 is to provide trained personnel (such as public health and PVNTMED officers, environmental staff officers, industrial hygienists, health risk assessors, or other medically trained personnel) with a tool to characterize operational risks from chemical exposures as consistently as possible, by use of a standardized process that is both scientifically supportable and militarily feasible. Appendix A contains a complete list of references used to prepare this TG. Appendix B provides a list of acronyms and health effects descriptions.

1.2 SCOPE

The USAPHC TG 230 addresses chemical hazards to include chemical warfare agents (CWAs), toxic industrial chemicals (TICs), and a wide array of general environmental pollutants. The guide does not address biological or nuclear/radiation hazards. Also, it does not specifically address environmental sampling methods, hazard control methods, nor does it address medical treatment procedures.

The TG 230 provides two key types of information: (1) health-based MEGs for chemicals found in air, water, and soil (see Appendix C); and (2) risk assessment guidance on how to translate environmental data collected from deployment sites into the qualitative military risk management framework. Based on the nature of the underlying toxicological and epidemiologic data and the inherent uncertainties and variability in that data, the MEGs are designed for assessing risks for populations and are not designed for assessing risks or specific health outcomes for individuals.

This TG 230 revision provides MEGs for thousands of chemicals for which information was readily available or that were otherwise identified as key hazards of concern by USAPHC. However, MEGs are not available for every chemical potentially encountered during a deployment since toxicity information is unavailable for many chemicals. Future revisions will provide updated MEGs and MEGs for new chemicals as data becomes available (see the website cited in the Preface for accessing updates). The USAPHC RD 230 provides the technical information relating to the rationale and methodology to derive MEG values (USAPHC (Prov) 2010). These documents and future updates can be found at: <http://1.usa.gov/TG-230>.

The TG 230 risk assessment process is not designed for typical garrison operations and should not be used for environmental compliance, preservation, or site cleanup decisions within the continental United States (CONUS) or outside the continental United States (OCONUS). These

programs are covered under existing Department of the Army (DA) occupational health and environmental regulations. However, TG 230 can have limited applicability in catastrophic CONUS scenarios such as those associated with terrorist events or large natural disasters.

1.3 AUDIENCE

This guide is written for PVNTMED and medical personnel trained to identify and evaluate environmental health hazards. Within the Army, these individuals function at or above the Health Service Support Level II, according to Department of the Army Pamphlet (DA Pam) 40-11, Section 3-2 (DA Pam 2006). Although these personnel are likely not expertly trained risk assessors, they may be called upon to provide recommendations to Commanders regarding the potential mission impact from air, water, and/or soil contaminants. Regardless of the level of skill and/or experience, PVNTMED and medical personnel can always contact USAPHC for assistance in evaluating environmental health hazards using this TG.

The TG 230 guidance serves as an objective base from which to make educated determinations based on subject matter expertise experience and knowledge. Risk assessors should have a basic understanding of the underlying toxicological and health basis for the MEGs. They should be familiar with basic methods of exposure assessment for chemicals in the environment. Finally, it is necessary that the risk assessor appreciate the uncertainties associated with sampling and with the assumptions used for estimating representative exposure levels as well as possessing an understanding of basic risk communication principles. This guidance does not replace the need for basic technical training in these areas, nor does it provide guidance for sample planning or collection.

It is noted that previous versions of TG 230 have been reviewed, approved, and used for years by the other Services. It is the intent that appropriately trained PVNTMED and medical personnel from the other Services can also use this TG. Although military health services personnel will need to use professional judgment when applying the standardized information in TG 230, this guidance will more adequately prepare them to determine the operational severity of health hazards within a framework that is consistent with military risk management procedures. Additional information regarding the basis of MEGs can be found in USAPHC RD 230. Personnel can also contact USAPHC for additional materials or training, to include assistance with risk communication efforts related to MEGs in specific situations.

1.4 MILITARY HEALTH RISK MANAGEMENT POLICIES

The military, scientific, and political communities have acknowledged the need to identify and consider (as identifiable military “threats”) all toxic chemicals or radiological hazards that pose delayed, chronic health risks to military personnel (Institute of Medicine (IOM) 1999, National Research Council (NRC) 1999, DOD 1999a, DOD 1998, and National Science and Technology Council (NSTC)/Presidential Review Directive (PRD) 1998). Military leaders and their staff elements are responsible for monitoring, assessing, and minimizing OEH hazards to ensure Force Health Protection (FHP). A listing of policies, procedures, and guiding principles for the management of such hazards is presented in RD 230.

Exposures to chemicals during deployments and other operations are inevitable due to mission location and military activities. Operation-related OEH hazards include climate conditions (e.g., excessive heat, cold, and noise), infectious diseases, physical threats (including those associated with accidents, explosions, and certain forms of ionizing radiation), chemical and biological warfare agents, and a large number of chemicals in air, water, food, and soil. Sources of these hazards can be host nation customs and activities (e.g., local industry and community activities, and local contamination), military operations (e.g., equipment maintenance, solid waste disposal operations, enemy military operations), and the natural environment (e.g., heat, cold, dust). Personnel might be exposed to these hazards intermittently, continuously, or simultaneously. In some situations, chemicals may be present for only a short time but at high enough levels that exposures could immediately impact individual health or even degrade the mission. In other situations, continuous but less extreme levels of chemicals in the environment could put military personnel at increased risk of delayed, permanent health problems.

Deployment scenarios can involve a range of operations from sustaining peace and stability to direct combat. While risk tolerance thresholds and OEH hazards may be different during these operations, the risk management process should be the same. Making decisions to accept, minimize, or altogether prevent OEH risks must be made in conjunction with assessments of other operational hazards that put the Commander's mission and personnel at risk. The Army Field Manual (FM) 5-19 provides the risk management doctrine that defines this process.¹ The USAPHC TG 248 (USACHPPM 2001a) provides a general framework for addressing all deployment OEH hazards (i.e., chemical, radiological, biological, entomological, endemic disease) in a way that implements the Army risk management process, which was defined in FM 100-14 at the time TG 248 was published. This USAPHC TG 230 revision was developed following the TG 248 framework, but adapts to the updated risk management concepts provided in FM 5-19, which superseded FM 100-14. It is military policy to address the health and mission risks associated with chemical exposures within the overall risk management process presented in FM 5-19 (DODI 6490.3; DOD 2006a; CJCS 2007; AR 11-35, DA 2007).

Note: Section 3 reviews the FM 5-19 process and provides guidance for conducting OEH chemical hazard health risk assessments using MEGs within the military risk management framework.

¹ FM 5-19 was published in August 2006 and supersedes FM 100-14, Risk Assessment (FM 100-14, 1998).

Appropriate consideration of OEH chemical hazards is a part of FHP, and proper assessment and surveillance should be used to minimize immediate health and mission impacts, as well as any potential delayed health effects that adversely affect the long-term health of military personnel. The objective is to minimize overall health risks while achieving successful mission completion. War-time operations will inevitably yield higher acceptance of casualties, while peacekeeping missions will require greater need to minimize non-severe health effects associated with what has been referred to as “low-level” exposures. Low-level exposures are those that do not significantly impact the current mission or result in any function-impairing effects (CJCS 2007). In general, low-level exposures do not pose a notable known risk for delayed health effects except for certain chemicals (USACHPPM 2004).

1.5 KEY ASSUMPTIONS AND DECISIONS

Development of USAPHC TG 230 guidance required several up-front risk management decisions that cannot be answered by science. To the extent possible, these reflect existing military policy/directives, but some issues are not adequately determined by current policy or regulation. The following decisions and assumptions are critical concepts underlying the guidance provided by this guide.²

1.5.1 Use of Existing Military and Federal Guidelines and Health Criteria

Existing exposure and health criteria published by other organizations provide the primary basis for MEG values. This includes an array of Federal standards, guidelines, peer-reviewed toxicological estimates, and previously published source toxicity data. No toxicological or epidemiological studies were performed by USAPHC to specifically provide data for development of MEGs. All the available information was collected and reviewed in accordance with the hierarchy and methods described in USAPHC RD 230. Example sources of existing guidelines include, but are not limited to, the following:

- U.S. Environmental Protection Agency (USEPA) and the NRC – Acute Exposure Guideline Levels (AEGs) for chemical warfare agents and highly toxic air pollutants
- NRC – Emergency Exposure Guidance Levels for Military Smokes and Obscurants
- USEPA Integrated Risk Information System and externally reviewed toxicity values from USEPA program offices – reference values and slope factors for cancer and non-cancer health endpoints.

² The National Research Council's Committee of Toxicology (NRC/COT) was asked to review a previous version of TG 230 in 2002 and published its review in May 2004 (NRC 2004). A summary of the issues raised during the NRC/COT review addresses some of these key assumptions and decisions; see USAPHC RD 230, Section 8.

This approach allowed for the broadest array of chemicals to be addressed in a time-efficient and cost-efficient manner. It also ensured that the selection of guidelines was consistent with how other Federal guidelines are developed (e.g., for workers and the general population), and that the selected guidelines had already gone through scientific peer-review. The use of previously peer-reviewed guidelines and estimates combined with accepted methodologies provides added quality. The target population and subpopulations that most of the existing guidelines address are different from the military population; however, the MEG development process attempted to make appropriate population-specific adjustments. This overall approach is scientifically defensible and is the most timely and cost-effective means by which to provide guidance for already on-going field assessments.

1.5.2 Immediate vs. Delayed Health Effects

Whether health effects caused by chemical exposures occur immediately during a deployment (e.g., acute effects) or are delayed and do not occur until months or even several years post deployment (e.g., chronic effects), current military policy requires that the risk of any adverse health effect is to be considered in military operations (CJCS 2007). Use of the guidance in USAPHC TG 230 allows the user to characterize risk for both short- and long-term effects.

1.5.3 The Healthy and Fit Population Assumption

The military population is largely assumed to be “healthy and fit” and is often believed to be less susceptible to the adverse health effects caused by chemical exposures compared to the general civilian population. However, this assumption has been debated and a USAPHC assessment of susceptibility traits among the military population concluded that for many health effects the military population is of equivalent variability as the general population (see Weese 2001). Subpopulations within the deployed military population may be more susceptible to some effects of certain chemicals. These subpopulations may be identifiable or unknown. In cases where adequate information was available, the MEGs accommodate a susceptible group within the military population (e.g., asthmatics, who are included in deployment operations, or females who have been shown to be significantly more susceptible to organophosphates than males). Although pregnant women are not considered deployable, there are potential scenarios where a woman may be deployed without realizing her pregnant status, may become pregnant during a deployment, or may become pregnant immediately following a deployment while the chemical is still present in her body. Since developmental effects caused by chemical exposures are often associated with first-trimester exposures, such exposures are considered during the development of some, but not all, of the exposure guidelines. Such considerations are relevant for long-term MEGs. Additional details are provided in Section 2.3 and Section 2.4 of this TG and in RD 230.

1.5.4 Population Health Thresholds

Current scientific methods for deriving protective health-risk based guidelines focus on establishing ‘population threshold’ concentrations. These are estimated by using the available toxicological or epidemiological data along with safety (aka uncertainty) factors to account for

lack of information and uncertainties. Most of the MEGs presented in this guide are Negligible MEGs and they are generally based on the 'population threshold' approach for exposure scenarios typical for deployed military personnel.³ This provides the risk assessor with an idea of when the most susceptible individuals may begin to be affected. The Negligible MEGs, therefore, do not represent exposure levels at which many personnel or the majority of personnel will demonstrate such effects, as the selected reference sources do not provide this information. This is the recommended approach for FHP requirements, whereby the Negligible MEGs are the most relevant type of MEG. However, operational requirements incorporate higher hazard levels (as may be anticipated in high-threat conditions). Therefore, it is necessary for Commanders to have more specific estimates of health outcomes and which are not necessarily 'protective.' For this reason, population threshold estimates were not used as the basis for Marginal, Critical, and Catastrophic MEGs.

1.6 REVISIONS AND PROCESS IMPROVEMENTS

1.6.1 Summary

The USAPHC continues to review and formulate improvements to the MEG values themselves and the accompanying risk assessment guidance to reflect lessons learned and changes to military policies and procedures, technical methodologies, and toxicological information. This revision incorporates additional MEGs derived, modified, or updated in the interim, modifies the MEG table lookup format, reorganizes the health effects table and guidance on how to use it, includes suggested chemical matches to help match lab reported data with MEGs, and clarifies the risk assessment process and how it integrates with other environmental sampling and assessment guidance from USAPHC.

Because MEG values may change over time, users should use the most current MEGs posted on the USAPHC website. In addition to the revisions included herein, USAPHC is working on additional revisions to improve the quality of the TG 230 process.

1.6.2 Database

The USAPHC is currently merging the existing MEG development database into a larger chemical database to service multiple risk assessment needs for both deployment and garrison settings. This more comprehensive database will allow for the pooling of resources and more efficient updating of risk reference data, such as health criteria, used to develop MEGs. These redesign efforts will increase the speed at which MEG updates can be published, so that the MEGs can be kept as current as possible relative to the changing toxicity information used in their development. Improved web-based access to the most current MEGs is forthcoming.

³ The 'population threshold' approach is based on 'non-cancer' health effects, where it is assumed that exposure above some threshold level is required in order to initiate toxicological responses. Some effects, usually cancer, are assumed to have an increased risk, albeit small, for any level of exposure, whereby no threshold is presumed to exist. The long-term (1 year) Negligible MEGs are based on holding the excess cancer risk to below 1 in 10,000. See Section 2.5.3 for the rationale.

Specific changes and the sections in which they may be found are highlighted below.

1.6.3 Specific 2013 Revision Changes

- The MEG tables were reorganized to enable more convenient, quicker lookup of MEG values and to reduce the overall size of the printed version. The MEGs are organized into three new tables by exposure media (Air, Water and Soil), and within each table by chemical name. The basis for each MEG value is also included in the tables to provide guidance to risk assessors who wish to review the source health criteria upon which the particular MEG is based. These new MEG tables are presented in Appendix C.
- A new table of suggested chemical matches is included in this revision. A description of the type of matched chemicals, as well as how they factor into the TG 230 process, may be found in Section 3.5.5. The matched chemical table is located in Appendix D.
- The general health effects included in Appendices C,D and E of the 2010 revision of TG 230 have been replaced by specific health endpoints directly linked to a MEG. The 2010 health effects table listed all possible health effects of a particular chemical, whereas the new health effects are the health endpoints linked to a specific MEG exposure level. As MEGs represent threshold levels and are based on exposure rates at the high end of what is expected to be typical, these health effects may begin to be seen in a population exposed at rates consistent with the MEG derivation assumptions (breathing rate, water intake, soil contact, etc.). Many populations exposed at “normal” exposure rates may not see these effects until exposed concentrations are well beyond the MEG. These new health effects are presented in Table E-1, Appendix E. A description of the Air MEG health effect basis table and how to use the data within it is presented in Section 3.4.7.2.
- Three new worksheets have been added to Appendix G to provide a step by step process for completing a TG 230 risk assessment using default assumptions. These worksheets provide references to the applicable parts of TG 230 that contain additional details on each step of the process.
- Individual MEG values were corrected, updated or added to improve the accuracy and completeness of the MEG set. Detailed discussions of these updated values are in the 2013 addendum of RD 230.
- The guidance on the water assessment process was updated to clarify how TG 230 and Technical Bulletin, Medical (TB MED) 577 relate, and to provide better guidance on which method to use to assess different types of water (i.e., grey water, non-drinking water, etc.). This updated guidance can be found in section 3.5.2.
- The 1-year water MEGs for the 15L/day consumption rate were eliminated. Consumption rates of 15L/day while possible for short periods cannot be sustained for extended periods, and certainly not for an entire year. The TG 230 assessment method

was modified where appropriate to only use the 5L/day 1-year water MEGs. The revised assessment methodology may be found in section 3.4.

- A new Section 3.2.2 was added to give a brief description of where the TG 230 process fits into the Occupational and Environmental Health Site Assessment (OEHSA) process, and what information from the OEHSA document may be useful in completing a TG 230 risk assessment.
- The hazard probability definitions presented in Table 3-5 were modified to improve clarity and to more closely link them to the probability ranking process.
- The Excel file containing all the MEGs in electronic format (available on the PHC website) has been updated with all modified MEG values. These modifications and the rationale behind them are available in the 2013 RD 230 addendum.

1.7 RISK COMMUNICATION CHALLENGES

Defining health risks from chemical exposures in a deployed environment will often present technical communication challenges. The application of MEGs versus more familiar “guidelines” or “standards” (such as those used in civilian applications and CONUS garrison activities) can also pose unique risk communication challenges within the technical community and when communicating risk assessment information to the layperson (see Section 1.5.1). The tools of risk communication founded in social science research can therefore be irreplaceable in minimizing unnecessary concerns about chemical exposure.

Regardless of whether environmental/exposure data is well defined, science and quantitative data alone cannot always effectively address concerns about possible chemical exposure. Risk communication goes beyond using the right words at the right time. Although risk communication “tools,” such as fact sheets or town hall briefings can be helpful in increasing awareness of the complexities associated with MEGs, the context in which concerns and misperceptions are discussed is known to either escalate or decrease them. Therefore, risk communication should be viewed as another preventive measure—when implemented effectively, risk communication processes can assist in building a useful dialogue amongst technical experts, Command leaders, and the layperson so that social trust increases and productive discussions about health risks can take place. Risk communication processes can increase the layperson’s understanding of MEGs and the risk management process; minimize misperceptions of risk while garnering support for Command decisions; and over time strengthen the social trust necessary to productively discuss MEG values and/or associated risk management decisions. Therefore, those performing the PVNTMED mission must possess excellent risk communication skills in order to effectively communicate about the risk assessment process and OEH risks, both real and/or perceived, while minimizing unnecessary concerns.

Note: Section 4 provides additional risk communication guidance.

2**MILITARY EXPOSURE
GUIDELINES****2.1 WHAT ARE MEGs?**

Military exposure guidelines are concentrations of chemicals in air, water, and soil that are designed as decision aids for health risk assessors to evaluate the significance of field exposures to chemical hazards during deployments. The USAPHC TG 230 MEGs are designed to address a variety of deployment scenarios such as a single catastrophic release of large amounts of a chemical, temporary exposure conditions lasting hours to days, or continuous ambient environmental conditions (such as, regional pollution, use of a contaminated water supply, or persistent soil contamination where there is regular contact). There are different exposure scenarios of concern for each environmental medium.

Specifically, a MEG is a chemical concentration which represents a safe-sided estimate of the level above which certain types of health effects may begin to occur in individuals after an exposure of the specified duration. The severity of the health effects and percentage of the exposed population that might demonstrate the health effects may increase as concentrations increase above the MEG. However, the degree to which severity and/or incidence of health effects increase as exposure increases above the MEG is chemical specific. The MEGs are PVNTMED guidelines and are not specifically designed for generating casualty estimates.

Note: Appendix F provides answers to Frequently Asked Questions (FAQs).

2.2 HOW ARE MEGs DEVELOPED?

Existing peer-reviewed exposure guidelines and toxicological estimates (i.e., existing health criteria) published by reputable public health and scientific organizations provide the primary basis for MEG values. Such organizations include the National Academy of Science's NRC, the USEPA, and the Agency for Toxic Substances and Disease Registry (ATSDR). For the long-term MEGs, previously published source toxicity data were evaluated and used with existing Federal methodology for developing exposure guidelines.

No toxicological or epidemiological studies were performed by USAPHC to specifically provide data for development of MEGs. This approach allowed for the broadest array of chemicals to be addressed in a time-efficient and cost-efficient manner. It also ensured that the selection of guidelines was consistent with how other Federal guidelines are developed (e.g., for workers

Note: USAPHC RD 230 presents the data and methods used to develop the MEGs.

and the general population) and that the selected guidelines had already gone through scientific peer-review. To this extent, the use of previously peer-reviewed guidelines and estimates, combined with accepted methodologies provides added quality. This approach is scientifically defensible and is the most timely and cost-effective means by which to provide guidance for already on-going field assessments. Since existing toxicological databases and health criteria were utilized to develop the MEGs, the quality and extensiveness of toxicological information underlying the MEGs is comparable to and as variable as that used by Federal agencies.

2.3 WHAT KINDS OF MEGs ARE AVAILABLE?

The available set of MEGs includes chemical concentrations for air, water, and soil for several different exposure durations arranged along differing OEH hazard severity levels from Negligible to Catastrophic. For example, for a given chemical, there are four possible Air MEG values for the 1-hour exposure duration. Each of the hypothetical MEGs in Table 2-1 represent the airborne concentration of the chemical that marks the threshold for entry into the hazard severity category (see Tables 2-2 through 2-4 for descriptions of the hazard severity levels) found in the name of the MEG. In other words, each MEG represents a hazard severity category threshold.

Table 2-1. Example of the Potential Types of Air MEGs for a 1-Hour Exposure Duration for a Hypothetical Chemical and the Standard Interpretation of the Hazard Severity Level Associated with Various Field Exposures

Exposure Estimate*	MEG Name	MEG Value	Hazard Severity Designation †
≥ 340 mg/m ³	1-hour Catastrophic MEG	340 mg/m ³	Catastrophic
150 – <340 mg/m ³	1-hour Critical MEG	150 mg/m ³	Critical
30 – <150 mg/m ³	1-hour Marginal MEG	30 mg/m ³	Marginal
† 5 – <30 mg/m ³	1-hour Negligible MEG	5 mg/m ³	Negligible

Notes:

* This exposure estimate represents an average 1-hour exposure. Analytical error associated with measurements at the boundaries of the categories (e.g., 29 vs. 30 milligrams per cubic meter (mg/m³)) must be acknowledged.

† Field exposures < 5 mg/m³ would not be considered to be a deployment hazard and would not be evaluated in a formal risk assessment.

‡ In reality, hazard severity blends together at the margins between each category, which reflects a graded series of health responses as exposure increases. For example, there is no practical measurement and toxicological distinction between 29 and 30 mg/m³ even though the selected severity categories will be different. The risk assessment method addresses exposures near the borders of the categories.

This standard approach for setting hazard severity levels within a risk assessment sets a useful framework; however, it does not highlight the chemical-specific knowledge and the scientific

uncertainties associated with the underlying data for any given assessment. Additional details on what data the MEGs are based on and what it means to exceed a MEG (i.e., where a field exposure is greater than a MEG) are provided in Section 2.5. The specific methodology for evaluating field exposures using the MEGs is presented in detail in Section 3.

For any given chemical, the MEGs that have been developed are limited to the exposure timeframes and hazard severity levels for which there were readily available health criteria published by regulatory or other agencies (as described in Section 2.2). Figure 2-1 presents a conceptual diagram of the available MEGs.

2.3.1 Air MEGs for Inhalation of Chemicals in Ambient Air

The air MEGs are defined in Table 2-2, and the chemical-specific MEGs are presented in Table C-1. Air MEGs were developed for assessing deployment exposures to chemicals in ambient air. A variety of types of air MEGs were developed because contaminants in air are difficult to avoid or control and may produce immediate and severe health effects. Some of the short-term air MEGs represent concentrations that are likely to have real-time, direct impacts on personnel performance and mission accomplishment.

2.3.2 Water MEGs for Ingestion of Chemicals in Water

The water MEGs are defined in Table 2-3, and the chemical-specific MEGs are presented in Table C-2. Water MEGs were developed for assessing deployed personnel exposures to chemicals in water that is used for consumption. The water MEGs were derived for drinking water ingestion rates of 5 L/day (for temperate climates) and 15 L/day (for dry/arid climates) for each of the two short-term exposure durations (7 days and 14 days) and for water ingestion rates of 5 L/day for the long-term exposure duration (1-year). This was done to be generally consistent with the TB MED 507, the Combined Arms Support Command (CASCOM) water planning report (CASCOM 2008), and the 2005 version of TB MED 577 descriptions of increased water intake based on operational conditions and individual variability. Direct use of water MEGs to make decisions regarding bathing, dishwashing, or other non-potable water applications that may result in indirect ingestion are overly protective applications, but at this time no other guidelines have been derived for these specific scenarios due to data limitations. Methods for assessing water for purposes other than consumption are provided in Section 3.5.2.

Note: The 2010 revision to TB MED 577 includes changes to the short and long term water quality standards. Compared to the previous 2005 version, the 2010 revision includes a reduction in the number of different short term potability (STP) standards and a complete revision of the long term potability (LTP) standards. The use of the 2005 TSFWS for short-term MEG development, as described within this RD 230, does not cause conflicts with the 2010 STP standards because the revised STP standards are a subset of the 2005 standards. The revised LTP standards are primarily based on U.S. Federal water standards for drinking water and bottled water. During the development of the 1-year water MEGs, these Federal standards were examined in collaboration with the lead subject matter experts

for the TB MED 577 revision so that the long-term (1-year) Negligible water MEGs would not conflict with the 2010 TB MED 577 LTP standards.

2.3.3 Soil MEGs for Exposure through Skin Contact, Ingestion, and Inhalation

The soil MEGs are defined in Table 2-4, and the chemical-specific MEGs are presented in Table C-3. Soil MEGs were designed to assess exposure to chemicals in soil through

Air MEGs

Boxes represent potential MEGs.
A shaded box indicates that a MEG was developed for one or more chemicals.

	Negligible	Marginal	Critical	Catastrophic
1 year	A	B		
14 day	C			
24 hour	D	D	D	E
8 hour	F	G	G	E
1 hour	F	F	H	E
10 minutes	G	G	G	E

A - Includes general air pollutants, PM_{2.5}, and key toxic industrial chemicals.
 B - Includes only PM_{2.5}.
 C - Includes general air pollutants and key toxic industrial chemicals.
 D - Includes chemical warfare agents, key toxic industrial chemicals, PM₁₀, and PM_{2.5}.
 E - Includes only chemical warfare agents.
 F - Includes general air pollutants, key toxic industrial chemicals, military smokes and obscurants, and chemical warfare agents.
 G - Includes key toxic industrial chemicals and chemical warfare agents.
 H - Includes general air pollutants, key toxic industrial chemicals, and chemical warfare agents.

Water MEGs

	Negligible	Marginal	Critical	Catastrophic
1 year	A			
14 day	A			
7 day	A			

A - Includes the general pollutant list and the chemicals identified in TB MED 577 (which includes chemical warfare agents).

Soil MEGs

	Negligible	Marginal	Critical	Catastrophic
1 year	A			

A - Includes the general pollutant list and the chemical warfare agents.

Figure 2-1. Conceptual Diagram of Available Military Exposure Guidelines

Table 2-2. Standard Air MEG Types and Associated Health Effect and Performance Degradation Descriptors

<ul style="list-style-type: none"> • Type of MEG(s) The descriptors apply to the deployed military population generally (described in more detail in Section 2.4). Sensitive individuals may be predisposed to toxic effects and, therefore, maybe more susceptible. If available scientific evidence regarding such subpopulations exists for a particular chemical, then this information is provided with the chemical-specific MEG.
<ul style="list-style-type: none"> • 10-minute, 1-hour, 8-hour, or 24-hour CATASTROPHIC Air-MEG A continuous exposure to airborne concentrations (for 10 minutes, 1 hour, 8 hours, or 24 hours) above the MEG is anticipated to result in deaths and/or many personnel with severe incapacitating effects (overall greater than 50 percent mission/performance capability loss). Effects are likely to require medical treatment.
<ul style="list-style-type: none"> • 10-minute, 1-hour, 8-hour, and 24-hour CRITICAL Air-MEG A continuous exposure to airborne concentrations (for 10 minutes, 1 hour, 8 hours, or 24 hours) above the MEG (but below the Catastrophic MEG) could begin to result in serious health effects. This MEG is a conservative population threshold estimate of potential life-threatening or lethal effects; whereby, these effects are expected initially in personnel with underlying susceptibility factors.
<ul style="list-style-type: none"> • 10-minute, 1-hour, 8-hour, and 24-hour MARGINAL Air-MEG A continuous exposure to airborne concentrations (for 10 minutes, 1 hour, 8 hours, or 24 hours) above this MEG (but below the Critical MEG) could begin to produce effects that may result in some performance degradation, especially for tasks requiring extreme mental/visual acuity or physical dexterity/strength amongst a portion of individuals.
<ul style="list-style-type: none"> • 10-minute, 1-hour, 8-hour, and 24-hour NEGLIGIBLE Air-MEG A continuous exposure to airborne concentrations (for 10 minutes, 1 hour, 8 hours, or 24 hours) above this MEG (but below the Marginal MEG) could begin to produce mild, non-disabling, transient, reversible effects. Such effects, if any, will typically be mild irritant types of effects and/or initially be expected in personnel with underlying susceptibility factors (e.g., asthmatics). Effects are not expected to impair performance.
<ul style="list-style-type: none"> • 14-day NEGLIGIBLE Air-MEG A continuous exposure to airborne concentrations above this MEG for up to 14 days (24 hours/day) (but below the Marginal MEG*) is not anticipated to result in acute performance degrading effects or specific long-term health consequences. The potential for adverse health outcomes increases within the exposed population as the exposure increases above the MEG.
<ul style="list-style-type: none"> • 1-year NEGLIGIBLE Air-MEG A continuous exposure to airborne concentrations above this MEG for up to 1 year (365 days, 24 hours/day) (but below the Marginal MEG[†]) is not anticipated to result in any adverse health effects to include acute performance degrading effects or long-term health consequences. This MEG is considered protective against the development of chronic diseases and an increased cancer risk greater than 1 in 10,000. The potential for adverse health outcomes increases within the exposed population as the exposure increases above the MEG.

Notes:

* Currently, there are no available 14-day Marginal Air-MEGs.

† Currently, there is only one 1-year Marginal Air-MEG for PM_{2.5}. This MEG is defined in Table 3-11.

Table 2-3. Standard Water MEG Types and Associated Health Effect and Performance Degradation Descriptors

<ul style="list-style-type: none"> Type of MEG Generally, the descriptors apply to the deployed military population. Sensitive individuals may be predisposed to toxic effects and, therefore, may be more susceptible. If scientific evidence regarding such subpopulations exists for a particular chemical, this information is provided with the chemical-specific MEG.
<ul style="list-style-type: none"> 7-day NEGLIGIBLE Water-MEGs for consumption rates of 5 and 15 liters per day Daily consumption at or below this concentration for up to 7 days should not impair performance and is considered protective against significant non-cancer effects. As duration and/or concentration increases above this MEG, the potential is increased for performance degradation, need for medical intervention, or the potential for delayed/permanent disease (e.g., kidney disease or cancer).
<ul style="list-style-type: none"> 14-day NEGLIGIBLE Water-MEG for consumption rates of 5 and 15 liters per day Daily consumption at or below this concentration for up to 14 days should not impair performance and is considered protective against significant non-cancer effects. As duration and/or concentration increases above this MEG, the potential is increased for performance degradation, need for medical intervention, or the potential for delayed/permanent disease (e.g., kidney disease or cancer).
<ul style="list-style-type: none"> 1-year NEGLIGIBLE Water-MEG for consumption rates of 5 liters per day Daily consumption at or below this concentration for up to 1 year should not impair performance and is considered protective against development of chronic disease to include increased cancer risk greater than 1 in 10,000. As duration and/or concentration increases above this MEG, the potential is increased for delayed/permanent disease (e.g., kidney disease or cancer).

Table 2-4. Standard Soil MEG Type and Associated Health Effect and Performance Degradation Descriptors

<ul style="list-style-type: none"> Type of MEG Generally, the descriptors apply to the deployed military population. Sensitive individuals may be predisposed to toxic effects and, therefore, may be more susceptible. If available scientific evidence regarding such subpopulations exists for a particular chemical, this information is provided with the chemical-specific MEG.
<ul style="list-style-type: none"> 1-year NEGLIGIBLE Soil-MEG Continuous, daily exposure (from ingestion, dermal absorption, and inhalation) to soil with concentrations at or below this level should not impair performance and is considered protective against development of chronic disease and an increased cancer risk greater than 1 in 10,000. As duration and/or concentration increases above this MEG, the potential is increased for delayed/permanent disease (e.g., kidney disease or cancer).

direct contact with exposed skin, incidental ingestion from hand-to-mouth contact, and/or inhalation of dust particles or volatiles originating from contaminated soil. The soil MEGs were developed considering all three of these potential routes of exposure and are based on specific exposure assumptions that are expected to be typical for military deployment operations. The soil MEGs were generated assuming continuous exposure for 1-year (i.e., long-term exposure). Soil MEGs for short-term exposures were not developed; unless obvious odors, dead or discolored vegetation, or free chemical product are observed, soil contamination is not anticipated to be an immediate or severe hazard. If such conditions are observed, the areas that may contain contaminated soils should be avoided.

2.4 POPULATION ASSUMPTIONS

The deployed military population includes Active Duty, Reserve, and National Guard personnel and is composed mostly of relatively healthy and fit adults, 18 to 55 years of age, with an average weight of approximately 70 kilograms (kg) (i.e., approximately 154 pounds). While this description addresses the majority of personnel (e.g., estimated 90 percent or greater), demographic and other data show that there are personnel that fall outside this description. For example, particularly with increased reliance on National Guard and Reservists, an increased number of older personnel are now deployed. In addition, it is known that a small percentage of females become pregnant right before, during or immediately following deployment. The assumption that deployed military individuals will have no predisposing physical or mental factors that could exacerbate exposure to environmental chemicals does not appear to be entirely supported through scientific evidence. While there are basic health and fitness requirements that must be met and maintained by military personnel, an assessment of the factors that can lead to chemical-specific susceptibilities suggests that many of the same primary susceptibility factors exist for the deployed military population. Predisposing factors such as age (> 40 years), illness (e.g., asthma), physical and emotional stressors, life-style choices (e.g., smoking or alcohol use), physiological state (e.g., fatigue, hypothermia, underlying cardiovascular disease), or unique genetic traits may alter susceptibility to some toxicants. In some cases, where adequate information is available, susceptible subgroups (e.g., asthmatics, which are included in deployments) can be considered during MEG development.

Various population characteristics were used to determine the standard hierarchy of health criteria sources and to select and/or adjust underlying toxicity values used in some MEG calculations. Available information shows that a small portion of the deployed population consists of susceptible individuals who, upon exposure to certain chemicals or classes of chemicals, are likely to first experience chemical exposure effects or will experience more severe effects. Nonetheless, in general, risk analysts are typically not likely to know: (1) who those individuals are, (2) what portion of the population is susceptible, and/or (3) the extent of the susceptibilities within the population. What is known are the various types of factors that may increase susceptibility. This general knowledge served as the basis for developing MEGs that address a relatively heterogeneous population among which there are some susceptible groups (without addressing hyper-susceptible groups/persons with extreme chemicals sensitivities).

Selected characteristics relevant to exposure and response within the deployed population are reviewed in more detail in RD 230 Section 2.1.

2.5 DIFFERENT MEGS REFLECT DIFFERENT EFFECTS

2.5.1 Meaning of Exposures Greater Than the MEGs and Predicted Health Effects

To the extent possible, the MEGs were developed in a manner to consistently represent designated levels of toxicological severity. However, since the quantity and quality of scientific data upon which the MEGs are based vary substantially, the accuracy with which the MEGs represent the same severity level varies. In some cases (e.g., a 1-hour Marginal MEG), exposures to levels greater than the MEG can induce immediate adverse health effects that may impact upon the ability of personnel to accomplish their mission. In other cases (e.g., a 14-day Negligible MEG), exposures greater than the MEG simply indicate that there is an increased likelihood that a health problem could arise either during or after the deployment is completed. In general, environmental concentrations equal to, or slightly greater than, the specified MEG, are expected to result in the specified type and degree of health effect in a given portion of individuals in the exposed military population. In some cases, however, the MEG represents a purely protective level where health effects should not be observed at all when field exposures are at or just above the MEG.

Though the MEGs are based on generally protective interpretations of toxicological data, there are variations among the chemicals in the degree of protectiveness. The degree and duration of potential health effects experienced will depend on: (1) the inherent toxicity of the chemical, (2) the sensitivity and characteristics of the individual exposed, (3) the duration and frequency of exposures, (4) the chemical concentration, (5) the rate at which the individual takes in the chemical (such as breathing rate or water ingestion rate), and (6) the levels of other chemicals and hazards present and their interaction. In addition, the MEGs and the TG 230 risk assessment process do not incorporate the potential impacts of multiple deployments with similar or variable chemical exposures, or the inevitable exposures that occur pre- and post-deployment during CONUS-based activities and/or personal time (e.g., related to hobbies or home activities).

2.5.2 Acute and Systemic, Non-cancer Health Effects

For non-cancer health effects, it is assumed that there is a threshold dose that defines the minimal amount of a chemical necessary to cause a specific adverse health effect. Below the threshold dose, a chemical is not expected to cause any biologically adverse change. The MEG values for non-carcinogenic effects represent the best estimates of the exposure concentrations under deployment conditions corresponding to the threshold doses. Above these concentrations, it is possible that a variety of adverse symptoms of exposure may occur.

The types of health effects associated with exposure to levels greater than a MEG are provided in the tables in Appendix E. Health effects information was primarily obtained from the source from which the MEG was based, and is therefore not available for all MEGs as not all sources

provide this information. It is important to note that some potential health effects might not be identified in the appendices due to limited toxicological data on the chemical. Similarly, there are uncertainties with ascertaining whether any, some, or all of the effects may actually occur. Due to human variability and uncertainties in the available toxicological data, it is also very difficult to quantify the percentage of exposed individuals that may be impacted. Therefore, trained personnel should interpret with caution any exposures to levels above the MEGs. Understanding the types of effects and ascertaining whether exposure concentrations are greater than the short-term MEGs is very important in determining the severity of the hazard.

2.5.3 Cancer

Chemicals that are identified as cancer-causing (i.e., carcinogenic) can also cause local and/or other systemic health effects that are non-carcinogenic. In such cases, both health effects were addressed for the selection of the final MEG. With the exception of 1-hour Critical air-MEGs, the majority of the MEGs are protective against local, systemic, and significant excess cancer risk. The significance of cancer risk is unique from other toxic effects in that it is a non-threshold effect; therefore, exposure at any level may be considered to increase the risk of cancer development. To address this in setting chemical exposure levels, Federal organizations such as the USEPA and OSHA have established “acceptable” excess cancer risk levels. For purposes of USAPHC TG 230, the MEGs represent levels that are protective of excess cancer risks greater than 1 in 10,000 (i.e., 1×10^{-4}). An excess cancer risk of 1×10^{-4} means that an extra risk in the amount of 1×10^{-4} (0.0001) is added to the existing baseline cancer risk in the population due to exposure from the chemical at the site. For example, if the baseline cancer risk was 5×10^{-1} (also expressed as 0.5, 5 in 10, or 50 percent), then exposure to the chemical at the given concentration would add 1×10^{-4} (also expressed as 0.0001), resulting in a total risk of 5.001×10^{-1} (also expressed as 0.5001, 5.001 in 10, or 50.01 percent). An excess cancer risk of 1×10^{-4} is within the range of acceptable risk noted by other Federal agencies and has previously been indicated as an acceptable risk level for DOD (NRC 1986). Further discussion is provided in the USAPHC RD 230.

2.6 GENERAL APPLICATIONS AND LIMITATIONS

The MEGs and the USAPHC TG 230 risk assessment process should be used to characterize health hazards and the risks they pose to military personnel within the military risk management framework. Section 3 provides a standard risk assessment process by which the MEGs are used with professional judgment to evaluate field sampling data and other information (e.g., modeled data). Due to the uncertainties that are inherent in the toxicological data underlying the MEGs, as well as the variations in human response to chemical exposure and the exposure estimates that go into establishing health-based guidelines, the MEGs should not be used as strict, bright-line decision points (i.e., go/no-go standards) unless there is a doctrinal exception.

2.6.1 Use with Caution: Scientific Uncertainties

Uncertainties involved in the development of the MEGs are principally those related to exposure parameters and toxicological data. Uncertainties in the toxicological data may result from data

gaps, insufficient quality or quantity of data, and/or lack of human data. Exposure assumptions used in developing the MEGs include inhalation and ingestion rates, body weights, and frequency and duration of exposure. These assumptions may or may not represent those in actual deployment scenarios. Furthermore, the environmental exposure levels estimated through sampling are often not likely to remain constant. Risk assessors must consider these uncertainties when making risk estimates and recommending risk management decisions. At times, the consideration of the competing uncertainties must be based on professional judgment that attempts to balance the most protective approach with real-world conditions. These same uncertainties and how they are considered can contribute to personnel perception of health risk, therefore reinforcing the need for excellent risk communication skills.

Use of USAPHC TG 230 should not be construed as a “definitive quantification of health outcomes.” In most deployment scenarios, it will be difficult to make definitive statements as to the absolute degree of risk or specific type of health effect that may be caused by an exposure to environmental chemicals. Even findings regarding whether a risk is present or not must be carefully stated to ensure that the uncertainty inherent in any risk assessment is accurately considered and weighed.

In addition to effectively communicating a level of risk associated with a chemical hazard, a user should be prepared to describe the degree of confidence in his/her assessment (such as, high, medium, or low confidence). An estimate of a “high” risk that has low confidence (i.e., uncertainty is high) may significantly influence Command decisions, especially if there are other high risks for which there are greater levels of certainty. Communicating confidence levels to the Commander and affected personnel—particularly low confidence—presents another risk communication challenge, and should be approached with proven risk communication principles in mind (see Section 4).

Due to limitations in toxicity data, the nature of chemical exposures and human variability, chemical risk assessments should rarely be ranked with high confidence. For the most part, the MEGs are designed to be protective for deployment exposures so that confidence in estimated *low risks* will tend to be greater than those for estimated *high risks*.

Section 3.3.4 provides guidance for assessing the confidence in a risk assessment that is based on the application of the MEGs.

2.6.2 Use in Different Types of Deployment Scenarios

During deployments, it is Army policy (AR 11-35) to comply with U.S., Army-unique, and host nation OEH standards, whichever are more restrictive. When the mission parameters or overall health of deployed personnel warrant risk management decisions that may modify the application of peacetime health standards, such decisions will be made by the Brigade Commander or above, as far as practicable, or as specified in operational plans and orders.

Pursuant to this policy, for certain types of deployment operations (such as direct combat), it is possible that chemical exposures will be a limited Command priority. That is, physical hazards

such as artillery fire from armed adversaries will present much greater risks and, therefore, be of greater priority. For other scenarios where the overall risks to troops and mission are low, the considerations of chemical exposures, including long-term health risks, will play a more critical role in risk management decisions. Accordingly, these guidelines are to be used at the discretion of the Commander.

When assessing deployment exposures contained within industrial-type operations (e.g., exposures occurring while spray painting, welding, or performing vehicle maintenance), existing industrial hygiene occupational exposure limits (e.g., OSHA Permissible Exposure Limits (PELs), American Conference of Governmental Industrial Hygienists (ACGIH[®]) Threshold Limit Values (TLV[®]s), and so forth) are more appropriate to use than the MEGs to assess the risks within these industrial areas. (ACGIH[®] and TLV[®] are registered trademarks of the American Conference of Governmental Industrial Hygienists.) Other standards (e.g., guidelines from the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE)) can be used to assess indoor air quality (e.g., offices buildings). The Army applies a military-unique carbon monoxide standard for military-unique workplaces and operations and is based upon carboxyhemoglobin blood content (DOD 1999b).

Some of the acute MEGs (i.e., 10-minute, 1-hour, and some 8-hour MEGs) are based upon civilian exposure guidelines designed for non-repetitive, once-in-a-lifetime, or rare exposures. Their use is not generally appropriate for continuous, repetitive, or regularly intermittent exposures. In some limited instances and where exposures are repetitive and occurring on a routine, regular basis, occupational exposure limits may be more appropriate to apply; however, their applicability must also be balanced with the realities and constraints of the mission circumstances or operations.

2.6.3 Multiple Deployments

The current scope of TG 230 is the risk assessment methodology and associated MEGs for assessing deployed military exposures at sites for exposure durations matching the length of deployment. This duration is generally up to 1 year; nonetheless, the TG 230 risk assessment method allows an assessment for site exposures as long as 3 years (Section 3.4.4.2, paragraph 3b). The TG 230 does not address multiple deployments because TG 230 was envisioned as a tool to be used for making operational decisions at the site level, whereby the hazards being managed are single, repeated, or continuous exposures at a location under control of a Commander or for a unit at any given time during a specific operation.

2.6.4 Other Technical Guidance Pertaining to Chemical Hazards

A wide variety of occupational, environmental, and military health criteria or standards have been considered and incorporated into the development of the MEGs. There is a substantial amount of technical information on various chemicals that can be obtained from other sources. Personnel are encouraged to review additional information if they have the resources, accessibility, and time available as it will likely increase overall confidence in the assessment and risk characterization. However, it is anticipated that there will be situations where there are

inconsistencies in information or guideline levels. The USAPHC RD 230 describes how the MEGs were developed and the information source that was used for each individual MEG. If there are questions regarding the inconsistencies of the MEGs with other guidelines that are not addressed by USAPHC RD 230, then USAPHC should be contacted for consultation.

2.7 CHEMICALS WITH UNIQUE CONCERNS

2.7.1 Chemical Warfare Agents

The CWAs addressed by USAPHC TG 230 include the nerve agents (Tabun (GA), Sarin (GB), Soman (GD), cyclosarin (GF) and O-ethyl S-[2-(diisopropylamino)ethyl] methylphosphonothioate (VX)) and the vesicants or blister agents (sulfur mustard (HD) and Lewisite). Currently, military risk management decisions regarding CWAs are somewhat unique in comparison to that of other TICs addressed by this guide. In part, this is because various Army, DOD and Joint Staff policy and doctrinal documents establish procedures and standards to address potential military exposure to CWA. Until recently, most operational chemical, biological, radiological, and nuclear (CBRN) policies and procedures focused on the wartime scenario; however, doctrine has been changing over the last few years to include other chemicals. Much of the responsibility is assigned to the Chemical Corps or designated CBRN personnel. Previous doctrine and equipment has focused on “presence/absence” identification of CWA as opposed to the quantification of amounts and estimation of the associated degree of risk. Medical CBRN responsibilities have historically been limited to casualty management with PVNTMED aspects focused on antidote development and administration. Today, with varying types of deployments and increased attention to health effects that may be more subtle and/or long lasting, the policies, doctrine, and even equipment (such as, detection and monitoring devices) are undergoing evaluation and change. Doctrine and policy to address mild or delayed health effects in operational risk management (ORM)—including scenarios involving potential residual or low-level CWA concentrations—now require more information than what has been previously incorporated into doctrine (CJCS 2007, DODI 2006a). Most scenarios involving CWA will still require chemical/CBRN personnel involvement. Follow-up and/or joint evaluation by medical/PVNTMED personnel is necessary to ensure that the potential for residual CWA contamination is appropriately considered and documented.

2.7.1.1 Air MEGs for chemical warfare agents

The air MEGs for CWAs were developed differently than for other chemicals. The MEGs for CWAs were updated according to procedures described in the USACHPPM technical report *Acute Toxicity Estimation and Operational Risk Management of Chemical Warfare Agent Exposures* (USACHPPM 2004). The purpose of that report was to provide implementation guidance on the use and interpretation of the December 2001 Deputy Assistant to The Secretary of Defense Chemical and Biological (Warfare Agent) Defense ((DATSD-CBD) interim-certified acute toxicity values for GA, GB, GD, GF, VX, and HD (DATSD-CBD 2001). The report demonstrated how the interim-certified acute toxicity values can be incorporated into ORM terminology and how toxicity information and corresponding health impacts can be translated into the different OEH hazard severity categories. This was an ideal method for developing air

MEGs because the toxicity data presented in the report are specifically intended for assessing military personnel exposures for the time periods of interest. The USAPHC RD 230 provides additional explanation and rationale for development of the air MEGs for CWA. They were developed for exposure durations (EDs) of 10 minutes, 1 hour, 8 hours, and 24 hours in each of the four hazard severity categories (Negligible, Marginal, Critical, and Catastrophic). This resulted in a total of 16 different air MEGs for each CWA. Air MEGs were not developed for longer exposure durations (i.e., 14-day and 1-year) because scenarios involving CWAs do not reasonably involve such extended air exposures.

2.7.1.2 Water MEGs for chemical warfare agents

The water MEGs for CWAs are extracted directly from the doctrinal requirements of TB MED 577. These water MEGs are, therefore, Military Field Water Standards (MFWS) which, if exceeded, require the Commander's approval prior to water consumption. As with the air exposure pathway, extended exposure to small amounts of CWA in a drinking water source is not a plausible scenario (due to physical/chemical characteristics of the agent as well as the military requirements that would prohibit extended use of such a water source); therefore, only short-term water MEGs for CWA are provided.

2.7.1.3 Soil MEGs for chemical warfare agents

Despite the general nonpersistent nature of CWA in air and even water, binding to soil or other solid media can potentially extend the presence of CWA in a deployment setting. This is particularly true for the agents HD and VX. Cold temperatures and dry climates will tend to extend the persistence of these chemicals; on the other hand, rain and heat are natural mechanisms of degradation.

Decisions concerning reentry and post-decontamination scenarios (i.e., after air monitoring has cleared the immediate airborne hazard concern) may need to be validated through specific analysis of soil or other solid material. Soil MEGs have been developed using the same model used to derive 1-year soil MEGs for other chemical hazards.

2.7.2 Key TICs of Military Concern

The TICs are commercially produced chemicals that may (depending on the toxicity and exposure) pose risk of severe, potentially lethal, immediate acute adverse health effects from a single exposure event. The key TICs of concern to the military are those that are especially toxic and readily accessible in large amounts. The TIC exposures can result from accidental releases, leaks, explosions or intentional releases including attacks near stored chemicals or release with improvised explosive devices (IEDs) (e.g., see USACHPPM 2006). Environmental settings, where the presence of TICs is likely, include: industrial production and manufacturing facilities, water and waste water treatment plants, waste storage facilities, and laboratories.

The USACHPPM participated in an international military effort to identify and prioritize TICs of military concern for the health, safety, and operational success of deployed troops. The basis

(methodology) for the priority “list” of TICs is discussed in USACHPPM technical report, *Industrial Chemical Prioritization and Determination of Critical Hazards of Concern, Technical Annex and Supporting Documents for International Task Force (ITF)-40 (FOUO)*, (USACHPPM 2003) and also summarized in a peer-reviewed publication (Hauschild and Bratt 2005). The resulting report identified key TICs for three categories: acutely toxic airborne hazards (via inhalation/ocular), critical physical hazards (flammable/instable), and critical acute ingestion hazards (via drinking water). The MEGs for these chemicals were developed using the same standard methods as the other chemical MEGs in USAPHC TG 230. However, additional Negligible, Marginal, and Critical short-term air MEGs (for 10-minute, as well as 1-hour and 8-hour exposures) are now provided for a list of 34 key TICs of particular concern. Just as with the CWAs, this is considered necessary since many scenarios would involve a single, very brief exposure to TIC vapors.

Additional PVNTMED resources for handling TICs include the USAPHC Deployment Health Guide: Toxic Industrial Chemicals (TIC) Release Response Staying Healthy Guide (SHG) # 044–0106 and the companion Hazardous and Toxic Industrial Chemicals Tables (last update: Oct 2007). Both are available on the USAPHC website.

Because these criteria were needed as decision criteria for acquisition specifications, the issues and methodology were recently addressed in USACHPPM technical report, *Health-Based Chemical Vapor Concentration Levels for Future Systems Acquisition and Development*, (USACHPPM 2008).

2.7.3 Airborne Particulate Matter

Particulate matter (PM) air pollution is a complex mixture of extremely small particles and liquid droplets in the air. When breathed in, some of these particles can reach the deepest regions of the lungs. Exposure to excessive particle pollution is linked to a variety of significant health problems. Particulate matter pollution can be, or can be perceived as, a major health and operational risk concern in some deployment environments.

A specific methodology was developed for the setting of the PM MEGs, which are based, in part, on guidelines provided by the USEPA and recent USAPHC experience assessing PM risks in deployment settings. Guidance for assessing airborne PM exposures is provided in Section 3. The USAPHC RD 230 provides the details behind the derivation of the PM MEGs.

Although PM may emanate from many sources, fossil-fuel combustion is the predominant source of particulate in areas with high population density, such as in the United States and the European Union. However, in some deployed settings, blowing dust can be a major contributor to the total PM concentration. The size and composition of measured PM in deployment settings is directly relevant to the accurate assessment of PM health risks for deployed personnel. For this reason, the accurate health assessment of PM measurements must be accompanied by evaluations of the likely sources and composition of the measured particles.

In addition, airborne PM in some regions of the world can result in personnel perceptions of adverse health risks, distrust, and a high level of emotion about military risk assessment conclusions that indicate that exposures pose a low risk. Some personnel will be concerned that PM (possibly in conjunction with other TICs) will cause adverse health effects, despite the absence of airborne TICs above a MEG. Personnel outrage related to perceived health risks (vs. actual) as a result of airborne exposures can further complicate communication of OEH assessments, and should be factored into risk communication efforts related to airborne PM.

2.7.4 Other Chemicals of Special Interest

The risk assessment process and/or the MEG development process provides for additional considerations and deviations from the standard methodology for some other chemical groups. These include dioxin-like compounds, military smokes and obscurants, and diesel fuels and related compound mixtures. Details are provided in Section 3 for risk assessment process considerations and USAPHC RD 230 for special MEG development methods.

3**RISK ASSESSMENT
APPLICATIONS****3.1 INTRODUCTION****3.1.1 Purpose**

This section provides guidance on how to properly use MEGs within risk assessments supporting ORM decisions. The guidance provides a defensible, logical, and consistent framework for characterizing health risks associated with OEH hazards encountered during deployments. While this section attempts to provide a level of standardization and transparency to what is inherently both an art and a science, it should be understood that any given risk assessment involves case-specific considerations and some degree of subjective, professional judgment.

3.1.2 Audience and Scope

This guidance is written for PVNTMED personnel trained to identify and evaluate environmental health hazards functioning at or above the Health Service Support Level II, according to DA Pam 40-11, Section 3-2, (DA Pam 40-11, 2006). Appropriate application of MEGs requires a basic understanding of health risk assessment concepts and models (e.g., exposure assessment) and of key scientific limitations associated with the MEGs (e.g., dose response and toxicology). This guidance does not replace the need for basic technical training in these areas, nor does it provide guidance for sample planning or collection. Additional information regarding the basis of MEGs can be found in USAPHC RD 230. Personnel can also contact USAPHC for additional materials, training, or assistance in application of the MEGs.

3.1.3 Summary of Change

While the risk assessment process described herein remains embedded within the overarching military risk management framework (FM 5-19), it has been updated and expanded to address changes in DOD and Joint deployment health surveillance policy. Specifically, the resulting risk assessment process must now address acute (short-term) and chronic (long-term/latent) health effects potentially associated with deployment exposures to OEH hazards. In addition, methods for ranking hazard probability have been improved and procedural clarifications and rules of thumb are provided. These are based on the experiences of USAPHC personnel who have been conducting deployment health risk assessments.

Note: Section 1.4 provides a broad overview of military health risk management policies.

3.2 MILITARY RISK MANAGEMENT PROCESS

3.2.1 Background

Commanders are responsible for protecting and preserving personnel and equipment against injury, damage, or loss that may impact to the military mission and force readiness. Risk is an expression of the possible mission impacts (either tactical or lifecycle) that a hazard may have in terms of both the consequences of its occurrence (severity) and the probability that it may occur. Determining the risk that is acceptable for a given threat must be done through an iterative process that evaluates changing conditions and balances decisions with other ongoing risks.

Composite Risk Management is the current term used in Army doctrine to describe the process used to identify and control hazards across the full spectrum of Army missions, functions, operations, and activities (FM 5-19). Composite risk management is conceptually in line with the risk management process described in past multiservice doctrine (FM 3-100.12, which has now been rescinded), but emphasizes additional details. The military risk management process is reflected by Figure 3-1. In this TG risk management refers to the overall process of assessing risk and managing risk to include risks to military personnel from health effects that can occur during and/or after the mission.

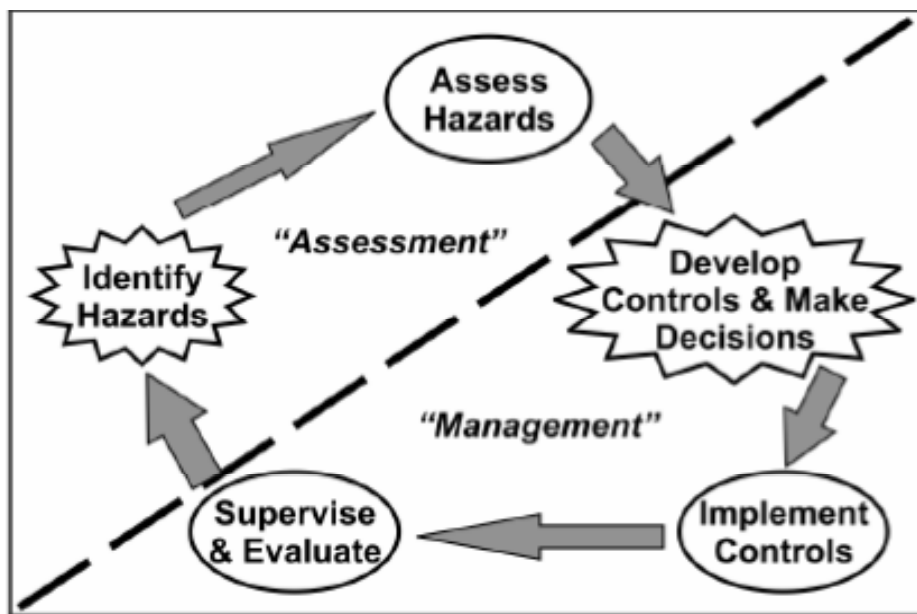


Figure 3-1. Military Risk Management Process (FM 5-19)

The risk matrix shown in Table 3-1 is the qualitative ranking tool described in the military risk management doctrine (FM 5-19, ATTP 4-02) that is to be used to characterize the risks. Use of this standardized matrix facilitates comparison of risks and risk decision making. The severity and probability of identified hazards are converted into the specified risk levels in the matrix.

Table 3-1. Military Risk Assessment Matrix (FM 5-19 and ATTP 4-02)

HAZARD SEVERITY	HAZARD PROBABILITY				
	Frequent (A)	Likely (B)	Occasional (C)	Seldom (D)	Unlikely (E)
Catastrophic (I)	Extremely High	Extremely High	High	High	Moderate
Critical (II)	Extremely High	High	High	Moderate	Low
Marginal (III)	High	Moderate	Moderate	Low	Low
Negligible (IV)	Moderate	Low	Low	Low	Low

3.2.2 Occupational and Environmental Health Site Assessments

DOD policy requires that health threats at deployment locations be identified, risks associated with those threats be characterized, and the steps taken to mitigate those health threats be documented. The first step in the process of documenting health threats at deployment locations is achieved by completing an OEHSA.

When the assessment is completed consistent with the multi-service guidance provided in Navy Tactical Reference Publication 4-02.9 Occupational and Environmental Health Site Assessment, (also published as AFTTP 3-2.82_IP and ATP 4-02.82) (DN 2012) (available from the Navy Doctrine Library System at <https://ndls.nwdc.navy.mil/BookViewer.aspx?docinstid=10973§ionid=0&search=OEHSA>), the OEHSA will identify exposure pathways including health threat sources, potentially exposed populations, the conditions under which exposures could occur, the frequency and duration of exposures, and any existing controls in place to control risk. The OEHSA describes complete and potentially complete exposure pathways in a Conceptual Site Model (CSM). The CSM helps to define similarly exposed groups within a population. It then drives the production of a site-specific sampling and analysis plan which defines the quantity and quality of environmental sampling data needed to support health risk characterization for each subset of the potentially exposed population.

The TG 230 risk assessment process takes place during Phase III of the OEHSA process when the results of environmental sampling and analysis are being evaluated. The CSM developed during the OEHSA provides the necessary contextual information required to correctly interpret environmental sampling data. It does this by specifically linking environmental data collection to

the potentially exposed populations and pathways defined in the CSM. The OEHSA also provides for better definition of the probability portion of the TG 230 risk assessment process in that the CSM specifically defines the frequency, duration, and time period over which potential exposures occur resulting in more accurate and precise characterization of health risk.

Ultimately, the results of the TG 230 risk assessment process feeds back into the OEHSA process to determine what type of risk mitigation (if any) is warranted for an existing OEH threat. This step would be followed by an evaluation of the effectiveness of the mitigation measures.

3.2.3 Tactical Risks and Lifecycle Risks

Previous deployment health policy and guidance required the use of the established risk management process as the framework to characterize risks associated with chemical exposures in deployment settings. This has not changed since the previous publication of USAPHC TG 230. However, the established doctrinal definitions of the four risk levels in Table 3-1 are actually based on direct (tactical), real-time mission impacts. While these direct 'tactical' mission consequences are still the key focus of the military risk management process, there is now greater realization that there are potentially significant post-deployment impacts to military resources and force readiness that need to be factored into operational decision making.

In 2007, The Joint Staff concluded that military risk management doctrine did not adequately characterize post-deployment military health impacts, resource, or force readiness consequences. It established procedures in a Joint Staff Memorandum (MCM 0028-07; CJCS 2007) to address OEH issues but did not explicitly define risks levels consistent with the doctrinal process. In the interim, this guide provides recommended risk level definitions for interpreting the significance of lifecycle consequences due to potential latent/long-term health impacts to personnel. The risk level definitions for tactical risk (due to immediate health effects) are the doctrinal definitions, while the recommended risk level definitions for use with lifecycle risks (due to delayed or long-term health effects) are proposed here for the first time.

3.2.3.1 Tactical Risk Definitions

Tactical risk estimates reflect the direct risks to the mission. Acute health effects from environmental exposures can pose direct risks to the mission. Current doctrinal risk definitions are presented in Table 3-2, which also identifies (in italics) the possible medical and PVNTMED risk management responses that may be anticipated. In addition to the medical resources needed to treat and document acute effects, certain exposures that result in acute health effects may also be associated with effects that require post-deployment medical surveillance/follow-up. The potential for any post-deployment medical follow-up and surveillance should be addressed as part of the risk management response triggered by "lifecycle" risks (see next subsection).

3.2.3.2 Lifecycle Risk Definitions

Lifecycle risk estimates reflect long-term risks to Force Readiness and are described in terms of the degree of impact to the medical support system following deployment. Risk definitions are presented in Table 3-3, which also identifies (in italics) the possible medical and PVNTMED risk management responses that may be anticipated. These definitions were developed by USAPHC based on current DOD deployment policy objectives. The consequences associated with lifecycle risks are less oriented on “treatment” than those associated with the tactical risks. Instead they reflect the anticipated broad, long-term resource responsibilities of the military medical system to ensure overall Force Readiness. The policies for lifecycle surveillance activities related to these risk definitions continue to be developed.

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Table 3-2. Tactical Risk Definitions (FM 5-19) and Possible Medical Responses Associated with Real-Time or “Acute” Health Effects

Risk Level	Consequences to Military Operations and Force Readiness ^{1, 2, 3, 4}
Extremely High	Loss of ability to accomplish the mission if hazards occur during mission. <i>Notable in-theater medical countermeasures and resources anticipated. For example, protection, treatment, and exposure documentation.</i>
High	Significant degradation of mission capabilities in terms of the required mission standard, inability to accomplish all parts of the mission, or inability to complete the mission to standard if hazards occur during the mission. <i>Some in-theater medical countermeasures and resources anticipated. For example, protection, treatment, and exposure documentation.</i>
Moderate	Expected degraded mission capabilities in terms of the required mission standard and will result in reduced mission capability if hazards occur during the mission. <i>Limited in-theater medical countermeasures and resources anticipated. For example, protection, treatment, and exposure documentation.</i>
Low	Expected losses have little or no impact on accomplishing the mission. <i>Little to no in-theater medical resources anticipated for protection and treatment. However, a summary of any negative or low level sampling results should be documented and archived particularly if some personnel express concerns.</i>

Notes:

- ¹ The italicized phrases are not part of the doctrinal definitions but are the types of anticipated medical and PVNTMED responses associated with the expected health outcomes associated with these risk levels.
- ² In addition to the medical resources needed to treat and document acute effects, certain exposures that result in acute health effects may also be associated with effects that require post-deployment medical surveillance/follow-up. The potential for any post-deployment medical follow-up and surveillance should be addressed as part of the risk management response triggered by the “chronic” risk estimate.
- ³ For certain chemical exposures, the risk outcomes may be especially pronounced in certain people. For example, moderate risk exposures to sulfur dioxide may be very irritating to most and cause some mild impairment, but may significantly exacerbate the condition of asthmatics and require medical countermeasures.
- ⁴ Exposure documentation (per DODI 6490.03, 2006) includes any applicable medical treatment documentation as well as exposure data incident information (to include field data and incident descriptions). In addition to required in-theater reporting channels, documentation should also be submitted through the designated DOD OEHS Surveillance (OEHS) Data Archive (oehs@apg.amedd.army.mil) or secure e-mail (oehsdata@usachppm.army.smil.mil). Environmental exposure data archive data reports can be viewed through the DOD OEHS Data Portal (<https://doehsportal.apgea.army.mil/doehrs-oehs/>).

Table 3-3. Recommended Lifecycle Risk Definitions and Possible Medical Responses Associated with Post-Deployment “Chronic” Health Effects

Risk Level	Consequences to Military Operations and Force Readiness ^{1, 2}
Extremely High	Significant future medical surveillance activities and medical provider resources anticipated. <i>Documentation of environmental data in designated DOD archive and designate a registry to actively track the exposed personnel. Conduct specific active surveillance and/or medical follow-up procedures for life cycle of identified group.</i>
High	Notable future medical surveillance activities and related resources anticipated. <i>Documentation of environmental data in designated DOD archive. Specific identification and documentation of the exposed personnel. Possible passive medical surveillance-related activities.</i>
Moderate	Limited future medical surveillance activities and related resources anticipated. <i>Documentation of environmental data in designated DOD archive. Consider documenting exposed groups or personnel of surveillance interest.</i>
Low	No specific medical action required. <i>Documentation of environmental data in designated DOD archive.</i>

Notes:

¹ The definitions are based on the USAPHC interpretation of DOD and Joint Staff policies and requirements. The italicized phrases are the types of anticipated medical and PVNTMED responses associated with the expected health outcomes associated with these risk levels.

² Environmental documentation (per DODI 6490.03, 2006) should be submitted through the designated DOD OEHS Data Archive (oehs@apg.amedd.army.mil) or secure e-mail (oehsdata@usachppm.army.smil.mil). Environmental archive data reports can be viewed through the DOD OEHS Data Portal (<https://doehsportal.apgea.army.mil/doehrs-oehs/>).

3.3 KEY RISK ASSESSMENT CONCEPTS FOR ASSESSING CHEMICAL HAZARDS

The primary application of the USAPHC TG 230 is to provide the means to interpret scientific data regarding the toxicity of a chemical along with field monitoring results to estimate health and operational risks of excessive chemical exposure. The process of assessing and characterizing deployment-related risks from chemical exposures inherently involves significant data limitations, uncertainty, variability, and professional judgment. Therefore, the PVNTMED professionals using USAPHC TG 230 need to be aware of these inherent limitations. Additionally, MEGs are not “go/no-go” standards that must be strictly followed. The MEGs are one of the risk assessment tools to be used by trained PVNTMED personnel who may be required to inform their Commanders of potential adverse health effects caused by chemicals and to identify potential impacts on the mission.

If appropriately used, the risk assessment process in USAPHC TG 230 will aid risk managers in making sound risk decisions. This guidance focuses on the *Identify Hazards* and *Assess Hazards* steps of the MRM process illustrated in Figure 3-1. The USAPHC TG 230 risk assessment process that implements these steps is summarized in the bullets below. Detailed procedures are described in Section 3.4. Within this process, both acute and chronic exposure hazards are initially identified. Once identified, the severity and probability of the hazards are assessed to determine operational risk.

- Define the purpose of the risk assessment.
- Collect data and describe exposure setting.
- Prescreen detected chemical substances.
- Generate the risk assessment data set.
- Conduct an acute risk assessment.
- Conduct a chronic risk assessment (if appropriate).
- Provide a risk characterization summary.

3.3.1 Hazard Definition

The USAPHC TG 230 risk assessment process addresses OEH chemical hazards in deployment settings. The USAPHC TG 230 process defines a hazard as follows—

An OEH chemical hazard is a deployment-related exposure to a chemical substance at a concentration level that has the potential to cause an adverse acute and/or chronic health outcome within the exposed population.

A chemical is only considered to be an OEH hazard if it is determined to be present for adequate periods of time in a form and at concentrations that could be associated with adverse effects in an exposed population. Even if a sample result shows a concentration above a MEG, an OEH hazard may not be present. An appropriate determination involves a data-screening process that considers all the available data in context with one or more relevant MEGs. Even if

a chemical exposure is determined to be an OEH hazard, then the significance of the hazard still must be determined through the military risk assessment process. This TG provides the methodology necessary to appropriately evaluate field data in context with the MEGs to ascertain whether an acute and/or chronic hazard is present. This TG also provides the methodology necessary to further assess the hazards in order to determine the acute and/or chronic risks associated with the hazard.

3.3.2 Ranking Hazard Severity

3.3.2.1 Hazard Severity Definition

The hazard severity of any given deployment-related exposure refers to the extent of potential injury, illness, disease, or other adverse health effects within the population under assumed exposure conditions, integrated with the significance of the health consequences to the tactical and lifecycle missions.

3.3.2.2 Acute and Chronic Health Effects

The significance of the potential health outcomes are ranked differently for tactical versus lifecycle hazards. Ranking health outcomes differently is a major change from previous guidance. Current military policy (Joint Staff Memorandum MCM-0028-07; CJCS 2007) now provides distinct and separate health-based hazard severity level definitions for acute and chronic (long-term/latent) health effects. While the severity categories (e.g., Catastrophic, Critical, Marginal, and Negligible) correspond to the four hazard severity levels established by the doctrinal risk management matrix in Table 3-1, the Joint policy definitions provide a unique interpretation pertinent to implications of acute or chronic (long-term) health effects.

The policy definitions from the Joint Staff Memorandum (CJCS 2007) are presented in Table 3-4. The difference between “acute” and “chronic” health effects, as it pertains to the military risk assessment process, is described below—

- **Acute Health Effects.** These are health effects that develop immediately or shortly after an exposure. Generally speaking, acute/short term *effects* occur after single, relatively brief or short-term *exposures* (minutes to days). Acute health effects can degrade the ability of personnel to conduct real-time deployment, required mission tasks and, thus, have direct (tactical) consequences to military operations. The overall risks posed by acute health effects include the direct impacts to success of the specific tactical mission resulting from both the degradation of Soldier/unit capabilities as well as any required medical or PVNTMED resources.
- **Chronic Health Effects.** These are health effects that develop or continue post-deployment (e.g., months or years later). While it is possible for certain single, short-term exposures to result in a latent health effect (e.g., permanent damage to lung tissue leading to long term respiratory disease), chronic, long-term, or latent health effects are generally associated with continuous/repeated chronic or long-term exposures (e.g.,

exposures that last many months or for years). While chronic effects themselves do not pose significant tactical risks, the impacts on morale (physiological considerations) and resulting resources required for risk communication can impact unit effectiveness. In addition, according to the current policy, field Commanders must consider the future consequences of chronic health effects on the full-force-readiness life cycle. The force-readiness 'life cycle' includes personnel accession through retirement or separation and beyond. Future consequences include the DOD resources that may be required to address Soldier and family concerns that escalate post-deployment through risk communication processes; and for medical documentation, surveillance, and potentially the follow-up of personnel if chronic, long-term effects are associated with exposures encountered during deployments.

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Table 3-4. Health Effects Descriptions for Each Hazard Severity Category (CJCS 2007)*

Negligible Severity	Marginal Severity	Critical Severity	Catastrophic Severity
<p><u>Acute Effects</u></p> <p>Few exposed personnel (if any) are expected to have noticeable health effects during mission. Exposed personnel are expected to be able to effectively perform all critical tasks during mission operations. Minimal to no degradation of abilities to conduct complex tasks are expected.</p>	<p><u>Acute Effects</u></p> <p>Many exposed persons are expected to have noticeable but not incapacitating health effects. Observable effects require minimal, if any, medical attention but may reduce some individual physical capabilities and/or may enhance stress-related casualties. Exposed personnel able to perform most critical tasks. Note: Ability to accomplish complex tasks may be degraded.</p>	<p><u>Acute Effects</u></p> <p>Personnel are expected to have incapacitating health effects that require immediate medical treatment or support (e.g., are considered 'casualties'). There may be limited numbers of fatalities. Personnel not experiencing these more serious effects are expected to have at least noticeable, but not incapacitating health effects. Exposed personnel will have limited ability to perform most critical tasks. Note: Ability to accomplish complex tasks likely to be degraded.</p>	<p><u>Acute Effects</u></p> <p>Casualties with severe incapacitating effects requiring immediate and significant medical attention and/or additional support for survival. Increasing number of fatalities is expected. Exposed personnel unable to perform critical tasks.</p>
<p>and/or</p>	<p>and/or</p>	<p>and/or</p>	<p>not a driver</p>
<p><u>Chronic Effects</u></p> <p>Few exposed personnel (if any) are expected to develop delayed onset, irreversible effects</p>	<p><u>Chronic Effects</u></p> <p>Many exposed personnel are plausibly expected to develop delayed onset, irreversible effects. While this may not affect the immediate physiological capabilities of individuals, Commanders must consider long-term implications and appropriately communicate the potential risks. Operational stress related implications may adversely impact operations particularly over-extended, operational periods.</p>	<p><u>Chronic Effects</u></p> <p>Majority to all exposed personnel are plausibly expected to develop delayed onset, irreversible effects due to the specified exposure. While this may not affect the immediate physiological capabilities of individuals, Commanders must consider long-term implications and appropriately communicate the potential risks. Psychological implications may adversely impact operations particularly over extended operational periods.</p>	<p><u>Chronic Effects</u></p> <p>This level of hazard severity is reserved for the most serious of conditions where immediate survivability against acute effects is the priority. Those that survive may be at increased risk for certain chronic effects.</p>

Note: This matrix applies to all health hazards encountered during deployment. Health effects associated with chemical exposures are typically either acute or chronic but in some cases may be both. In general, short-term, one-time chemical exposures are primarily associated with acute effects, while repeated long-term exposures are associated with chronic effects.

* Format modified from the original Joint Staff Memorandum MCM-0028-07 (CJCS 2007) version for ease of presentation, to include the elimination of the 'no effects' category.

3.3.2.3 Methodology for Ranking Hazard Severity

For tactical or “acute” hazards, hazard severity is ranked relative to the ability of the field unit to complete the mission or maintain tactical readiness and is associated with potential “acute” health effects. For lifecycle or “chronic” hazards, hazard severity is ranked relative to the medical and related resources required to address personnel health outcomes post-deployment and into retirement and is associated with the potential for “chronic” (or latent) health effects.

Determining the severity level requires an estimate of potential health outcomes given knowledge about the population’s exposure. Ranking the severity of a given exposure in a population essentially involves answering questions related to whether the health outcomes described for each severity level from Table 3-4 are likely to occur in some segment of the population deployed in the suspected exposure location.

For example, to rank an exposure at the Critical severity level for chronic effects means that, given the data and the knowledge about the exposure event, it is plausible that a majority to all of the exposed personnel will develop delayed onset, irreversible effects. Unfortunately, with the limits in human toxicological and epidemiological data, it is not possible to predict with good precision the actual extent of effects or the number of exposed personnel that will demonstrate such effects. Even with substantial animal laboratory data, human response variability and genetic susceptibilities to most chemicals make it difficult to know specifically what health effects to anticipate or, even more difficult, to ascertain the percentages of an exposed population that will exhibit certain effects. The expression of potential health outcomes within a population depends on several factors including the magnitude of the chemical concentration, the degree (or rate) of contact, the duration of contact, and the susceptibility of the population. However, to the extent possible, the following factors should be considered when ranking hazard severity for a given chemical exposure:

- 1. Nature of the Health Effects.** This factor relates to the range of potential effects, from temporary irritation to disease development to death. The nature of the effects will play a role in whether or not personnel will be able to complete mission tasks and what level of medical resources will be needed in response. Typically, the short-term MEGs address both the degree and severity of an increasing array of acute effects and symptoms (e.g., from mild irritation/odor to more serious respiratory problems or difficulty breathing). In contrast, the long-term MEGs directly address cancer and the single most sensitive non-cancer health endpoint (e.g., kidney disease, low birth weight, or deficit in psychomotor function). The long-term MEGs reflect a safe-sided estimate of the point above which the frequency of the effect among the population becomes increasingly likely rather than an increase in the ‘severity’ of the health outcome.
- 2. Incidence of Health Effects within the Population.** The extent or portion of exposed personnel that are anticipated to exhibit effects given an exposure (evaluated in qualitative terms such as none, few, many, most) also plays a role in the significance of the impacts to the military unit in terms of accomplishing the operational mission and in

the scope of potential medical follow-up of exposed personnel. As indicated above, this is often the primary 'severity' parameter for assessing the risks for long-term chronic effects.

3. Confidence in the Available MEG to Approximate Factors 1 and 2 from Above.

Confidence in the available data and scientific weight-of-evidence (WOE) that a specific health outcome will occur if a MEG is exceeded should be considered when ranking hazard severity. This consideration has been incorporated into the MEG development process. The quality of the WOE can vary significantly among MEGs because the quality of the toxicological and/or epidemiological data underlying the MEGs can be quite variable. For most MEGs, there are some data limitations; so to be protective, the values are generally adjusted downward to estimate the levels at which certain health outcomes may be anticipated. For certain MEGs, the degree of uncertainty is much more substantial than others and may vary by orders of magnitude. In some cases, the means to protectively address these uncertainties involved including a subjective, semi-quantitative reduction of the estimated effect level when setting the value used for the MEG. This uncertainty adjustment is often made by use of quantified 'uncertainty factors (UFs).' Sometimes terms such as 'modifying factor' or 'safety factor' are used.

Typically, specific UFs are assigned for different types of uncertainties to include: (1) animal-to-human extrapolation, (2) interspecies variability, (3) sub-chronic to chronic exposure extrapolation, (4) database completeness, and (5) use of a lowest-observable-adverse-effect-level (LOAEL) in the absence of a no-observable-adverse-effect-level (NOAEL). Each of these UFs are assigned a value of 1, 3 or 10, and the factors are multiplied by each other to get a final 'total UF' value. For a few MEGs, the total UF is between 10 to 30, most are between 100 to 1000, and a few are higher (e.g., 3000). In general, there is typically less uncertainty (and smaller UFs) in the short-term acute MEGs than compared with long-term MEGs. The resulting MEGs themselves, therefore, do not generally represent the exact exposure threshold for the specific extent and severity of the anticipated health effect(s) in the population. While the MEGs and the associated assessment methodology in this guide can be used to estimate the hazard severity, an evaluation of the chemical-specific types of effects, the actual dose-response data, and the underlying WOE and UFs underlying the MEG values may be useful when assigning hazard severity levels higher than Negligible. This is especially recommended for ranking hazard severity within a chronic health risk assessment. Such evaluations should be performed by appropriately trained PVNTMED personnel.

3.3.3 Ranking Hazard Probability

3.3.3.1 Hazard Probability Definition

Within the USAPHC TG 230 process, the hazard probability is the likelihood that the population exposure will result in the hazard severity outcome.

Based on this definition, USAPHC has developed definitions (see Table 3–5) for the five probability levels in context with OEH hazards assessed by the TG 230 methodology. Under this framework, hazard probability is ranked after hazard severity is ranked.

Table 3-5. USAPHC TG 230 Hazard Probability Levels

Rank*	Interpretation**
Frequent	The health effects and mission impacts described by the selected severity level repeatedly occur within the exposed population. [At this probability level at least two of the four ranking factors are scored the maximum of 3.]
Likely	The health effects and mission impacts described by the selected severity level are expected to occur within the exposed population. [At this probability level at least one of the four ranking factors are scored the maximum of 3.]
Occasional	The health effects and mission impacts described by the selected severity level occur intermittently within the exposed population. [At this probability level the average of the four ranking factors must be a score of 2. Any ranking factor that is scored as a 3 will be balanced by a factor scored as a 1.]
Seldom	The health effects and mission impacts described by the selected severity level infrequently occur within the exposed population. [At this probability level at least one of the four probability ranking factors is scored the minimum of 1.]
Unlikely	The health effects and mission impacts described by the selected severity level are improbable within the exposed population. [At this probability level at least two of the four probability ranking factors are scored the minimum of 1.]

Notes:

* The ranks come directly from FM 5-19.

** The definitions are modifications of the FM 5-19 definitions, because the TG 230 process assumes that exposure has already occurred, or will occur, and the exposure level has been estimated during the risk assessment. The bracketed text refers to the four probability scoring factors that are described in detail in the next section. Each factor is scored as a 1 (reduces likelihood), 2 (neutral), or 3 (increases likelihood).

3.3.3.2 Methodology for Ranking Hazard Probability

Ranking hazard probability involves developing a ranking score that assigns a probability based on joint consideration of the degree, duration, and rate of exposure. The resulting ranking score will scale the “likelihood of personnel encountering a health hazard” (CJCS 2007, p. B-6) according to the intentions articulated in doctrine (FM 5-19) and also match USAPHC TG 230 ranking definitions in Table 3-5. While the duration of the assessed exposure events are different for acute versus chronic assessments, the same probability ranking approach is recommended for each assessment. The four hazard probability factors are defined below. Section 3.4 (specifically Exhibit 3-3) provides a decision-logic for ranking hazard probability using these factors.

- 1. Degree of Exposure.** This factor is a measure of how much greater the population exposure estimate is compared to the MEG. The higher an exposure is above a MEG,

the higher the probability that the severity level health outcomes will occur. As an environmental concentration increases, so does the amount of chemical or material absorbed by those exposed. The probability of an effect being seen in the population is related to the magnitude of the exposure. Depending on a person's susceptibility, effects will be seen at higher or lower levels of absorbed dose. As a result, for any given population, there will be a gradual increase in the number of people showing effects as exposure increases. These effects can increase in both the severity of individual effects and/or in the number of effects expressed. The types of effects and the level of severity do not necessarily increase linearly above a specific MEG. In fact, the dose-response relationship is unique for each chemical and type of MEG.

- 2. Representativeness of Field Data.** This factor is a measure of how representative the field-collected data is of the true exposure concentration. In other words, this measures the degree to which the field data may under or over estimate the population exposure. An understanding of the quality of the dataset, which is impacted by measurement error, sample size, data variability, and temporal and spatial scales, is critical in assessing this factor. The intent of the risk assessment will also aid in evaluating this factor. For example, was the data collected to estimate exposure to a whole base camp or just a segment of the camp's population? Also, different data-quality considerations may apply for acute versus chronic risk assessments. Biased sampling designs, sample collection protocols, analytical method detection uncertainties, inadequate data collection (e.g., too few samples), and high spatial and/or temporal variability can all contribute to either an overestimation or underestimation of actual exposures. Professional judgment and exposure assessment principles are needed to evaluate this factor.
- 3. Duration of Exposure.** This factor is a measure of how different the population's exposure duration is relative to the exposure duration used to develop the MEG. In many cases, the effects expressed in a population are the result of an exposure over time. For example, some effects—such as cancer—generally require that a person be exposed to a chemical or material over a sustained period of time. In these cases, the probability of an effect being expressed is directly related to the amount of time that population is exposed to a material; as exposure duration increases, so does the probability of these effects occurring.
- 4. Rate of Exposure.** This factor is a measure of how different the population's rate of exposure (e.g., inhalation rate (IR), water consumption rate, soil contact rate) is relative to the assumed rate used to develop the MEG. The probability of effects being expressed in a population is dependent on the rate of exposure for a population. (Two examples: a population that is very physically active will have an increased breathing rate and will inhale more of an airborne contaminant, and personnel who maintain vehicles in contaminated soil will have higher contact with that soil). As these rates of contact go up, so will the probability of the expression of effects.

The MEGs represent the bottom of the hazard severity concentration range, where exceeding the MEG means that the concentration has crossed the threshold into that severity category.

For example, exposure to a concentration equal to the 1-year Negligible MEG for 1 year assumes that at a corresponding concentration, few exposed personnel will develop delayed onset, irreversible effects. However, as the exposure concentrations increase above the MEG or personnel are exposed for more than 1 year to that level (or both), the probability that more personnel will develop delayed onset, irreversible effects, or these effects will become more serious, will increase.

3.3.4 Articulating the Level of Confidence (or Uncertainty) in the Risk Estimate

The best decisions are made based on obtaining the best data and considering the uncertainties associated with that data. Data quality, including both sampling data, information that informs exposure parameters, and available health effects data will have a direct impact on the confidence in the risk assessment. The discussion below provides some considerations in determining the confidence in the assigned risk. While some guidelines are presented, there are no “standard” definitions for levels of confidence. The risk assessor should consider all of the information at hand and should communicate to the decision maker the level of confidence they have in the data underlying the risk level being presented. Indicators of confidence are given in Table 3-6.

- **High Confidence** - High confidence in a risk level implies significant understanding of all the variables used to determine the risk. It results from sampling data that is adequate to characterize typical exposures and the range of those types of exposures, as well as a good understanding of the exposure patterns of the population being characterized.
- **Medium Confidence** - Medium confidence in a risk level implies some understanding of most of the variables used to determine the risk. It results from sampling data that is plausibly adequate to characterize typical exposures and the range of those types of exposures.
- **Low Confidence** - Low confidence is assigned when sampling data may not be adequate to characterize the situation, and when the assessor is making a best scientific assessment in the absence of complete information.

There are other uncertainties that may need to be considered other than data quality. For example, there will be various situations where actual exposures are not consistent with assumptions used to develop MEGs. Two of these situations are discussed below.

3.3.4.1 Multiple Chemical Exposures

Each MEG has been established to be protective against exposure to a single chemical (or a specific mixture as defined by the chemical name, e.g., particulate matter). The complex issue of multi-chemical exposures and effects of chemical interactions is beyond the current scope of USAPHC TG 230, but such effects should be considered in the overall evaluation of environmental exposures, especially if several chemical hazards present have similar adverse effects on the human body. A specific, quantitative technique for assessing multiple

contaminants in a deployment setting is not recommended at this time (with the exception of assessments for dioxin-like compounds, see Section 3.5.6). Instead, analysts are encouraged to note the possibility of added hazards, particularly where chemical exposures have similar health effects or affect the same target organs. If two or more chemicals have the same target organs or systems, then it may be considered that their effects can be additive or synergistic. For some specific chemicals, such as total petroleum hydrocarbon (TPH) compounds or carcinogens (particularly those with an A or B cancer classification), it is generally assumed that effects of the different chemicals when combined are at least additive.

Table 3-6. Example Criteria for Assigning Confidence Levels

Confidence	Criteria
High	<ul style="list-style-type: none"> - Field Sampling data quality is very good – substantial samples over time/space. - Field activity patterns are well known. - True exposures are reasonably approximated. - No critical missing information. - The predicted health outcomes are highly plausible (strong toxicological weight of evidence/human data) or already demonstrated.
Medium	<ul style="list-style-type: none"> - Field data quality is relatively good. - Estimates of field exposure are likely to be greater than true exposures due to incomplete data coverage relative to actual exposure durations. - Detailed information is lacking regarding true personnel activity patterns in the field. - Predicted health outcomes are plausible; there is toxicological data, but limited WOE/human data is lacking.
Low	<ul style="list-style-type: none"> - Important data gaps and/or inconsistencies exist. - Exposure conditions are not well defined. - Field personnel activity patterns are basically unknown. - Predicted health outcomes are not plausible because it is not consistent with real-world events/experience.

3.3.4.2 Multiple Exposure Pathways

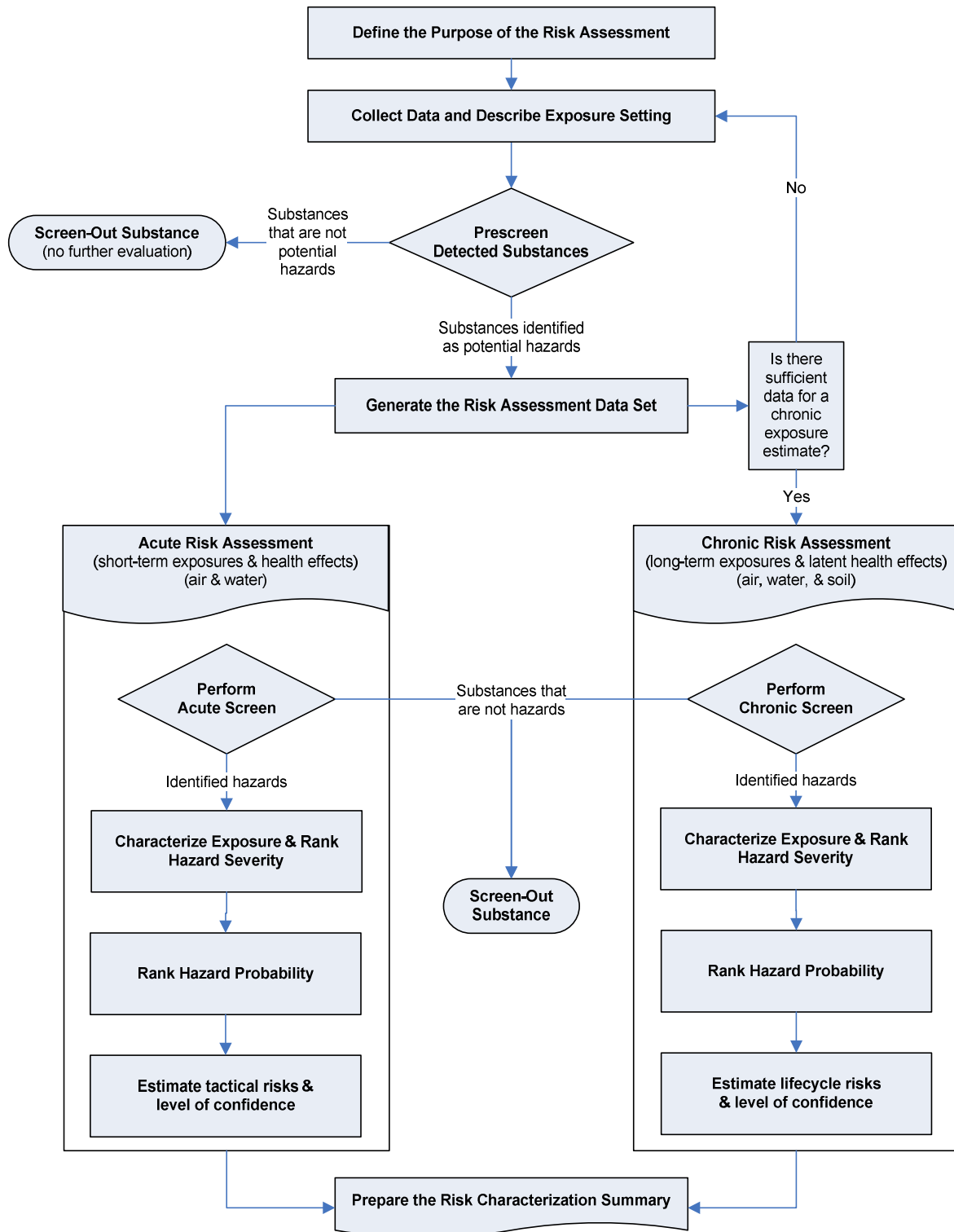
Military personnel may be exposed to the same chemicals via multiple environmental media (e.g., air, water, and soil) and multiple sources (e.g., industrial pollution, vehicle exhaust, waste disposal practices, motor pool spills, and/or agricultural practices). The effects of exposure to the same or similar chemicals through different media should be considered additive. Risk assessors are encouraged to note that exposure (through multi-media) may increase overall exposure. This information can be used when ranking OEH hazards if control measures are more difficult to implement for some hazards than others.

3.4 CONDUCTING A RISK ASSESSMENT

The TG 230 risk assessment method consists of the following phases (see Figure 3–2).

- Define the purpose of the risk assessment
- Collect data and describe exposure setting.
- Prescreen detected chemical substances.
- Generate the risk assessment data set.
- Conduct an acute risk assessment—
 - Screen for hazardous exposures that may lead to acute effects (acute screen).
 - Characterize exposure, and rank acute hazard severity.
 - Rank acute hazard probability.
 - Estimate tactical and lifecycle risks and level of confidence.
- Conduct a chronic risk assessment (if appropriate)—
 - Screen for hazardous exposures that may lead to chronic effects (chronic screen).
 - Characterize exposure and rank chronic hazard severity.
 - Rank chronic hazard probability.
 - Estimate life-cycle risk and level of confidence.
- Provide a risk characterization summary.

Note: Appendix G provides quick reference tools for conducting a risk assessment using this process.
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Section 3.4 provides details associated with each process step.

Figure 3-2. Risk Assessment Process Diagram

3.4.1 Define the Purpose of the Risk Assessment

The purpose of the risk assessment needs to be explicitly stated along with a description of the exposure being assessed. That is, it should articulate, in context with the timeframe under consideration, the population at risk, and what exposure events or environmental conditions are being assessed. The population at risk should be clarified. For example, is it the entire base camp population or a specific unit using a particular water source?

The relevant exposure events and conditions under consideration can include one-time events (e.g., accident, use of a particular water source for 3 months), potentially intermittent events (e.g., high-dust days or air quality associated with temperature inversions), or long-term or continuous exposure events or conditions (e.g., soil contamination or annual average air quality). Some environmental chemical hazards are present at very low levels for the majority of the time but may be intermittently present at notably higher levels (e.g., ambient air quality). In these cases, it is important to evaluate the data in different ways. For example, the assessment should characterize the overall, long-term exposure to determine potential for long-term health risk as well as to evaluate any time periods where acute exposures may pose unique, short-term health risks. Multiple approaches to organizing and evaluating the data prior are discussed in Section 3.4.4.

Whether the risk assessment will address acute exposures or chronic exposures or both should be clearly stated. This is important because there may be situations where insufficient environmental monitoring data exists in order to conduct a chronic risk assessment. Good risk management and medical decisions cannot be made using chronic assessments based on insufficient environmental monitoring data. There is an expectation that there is a minimum standard for data quality related to determining a reasonably reliable estimate of long-term (or annual) exposure levels. Trustworthy estimates of chronic risk in particular must integrate good risk communication principles in order to decrease unnecessary concern while accurately communicating the resulting risk estimate.

3.4.2 Collect Data and Describe Exposure Setting

Collect site data via sampling and analysis or compile available data. Guidance for site characterization and sampling can be found in USAPHC TG 317, *Technical Guide for Collection of Environmental Sampling Data Related to Environmental Health Site Assessments for Military Deployments*, (USACHPPM 2009) and other references (i.e., Navy and Marine Corps Public Health Center (NMCPHC) 2008; ASTM 2003).

Based on the purpose of the risk assessment, explicitly describe what is being assessed and how exposure may occur. The exposure pathways that are possible, probable, or already complete should be identified. Additional guidance includes—

- **Water.** Describe the water source or sources being assessed and the potential for exposure. Distinguish between drinking water sources (including ice) and sources used for purposes other than drinking water.

- **Air.** Describe whether site-wide exposure is being assessed, if subareas are being assessed, or if a specific activity within the site is being assessed. Any given assessment can do all of these, but data reduction procedures will need to be clear to avoid confusion and to ensure the best exposure assessment possible (to include calculations).
- **Soil.** Describe whether a specific, potentially contaminated area is being assessed or if the assessment will address site-wide soil conditions. Any given assessment can do both, but clarity will be needed on how exposure to subareas within a site will be handled relative to site-wide exposures and to ensure the best exposure assessment possible (to include calculations).

Given what is determined from the above, a definition of the exposure pathways—from source to human contact—that are under consideration in the assessment should be listed. The end product of this phase should be a description of the source(s), the exposure event(s), the exposure duration(s), the environmental condition(s), and exposure pathways that the risk assessment is addressing.

3.4.3 Prescreen Detected Chemical Substances

As a means to quickly eliminate chemicals from any further evaluation, a pre-screening step is recommended to avoid the evaluation of chemicals where no plausible acute or chronic health effects are expected even under worst-case conditions. Apply these standard rules—

- **Air and Soil.** Eliminate from consideration all chemical substances that do not have a single sample concentration greater than the 1-year Negligible MEG.
- **Drinking Water.** Eliminate from consideration all chemical substances that do not have a single sample concentration greater than the 1-year Negligible MEG for the 5 L/day consumption rate or the 14-day Negligible MEG for the 15 L/day consumption rate (whichever is lower).
- **Non-drinking Water (e.g., used for hygiene or cooking).** Eliminate from consideration all chemical substances that do not have a single sample concentration greater than 2.5 times the 1-year Negligible MEG for the 5 L/day rate.⁴

When there is no 1-year Negligible MEG for prescreening purposes, do not eliminate the substance—carry it through to the next steps.

⁴ See Section 3.5.2 for the basis of this criterion.

3.4.4 Generate the Risk Assessment Data Set

At this point in the process, there will be one or more chemical exposures identified as possible hazards requiring further assessment. For these chemicals, a risk assessment data set needs to be constructed. The data set needs to address all exposure events and exposure pathways relevant to the chemicals and time period being assessed. Once the data set is constructed, chemical-specific population exposure point concentrations (PEPCs) will need to be calculated for each exposure event and exposure medium.

3.4.4.1 Population Exposure Point Concentrations

The PEPC concept is described here, and the following subsections provide a method for generating quantitative PEPC estimates.

A PEPC is a numerical estimate of the chemical exposure experienced by the population at risk for a given exposure event, time period, and environmental medium. PEPCs are designed to be compared to the MEGs within the context of a health risk assessment. In general, there are peak PEPCs and “average” PEPCs.

An important aspect of this definition is the term “average.” In statistical terms, what is meant here by “average” is actually the estimate of the central tendency exposure within the population. Thus, “average” conceptually refers to the mean or median concentration. For risk assessments, the mean is usually most relevant. Depending upon the number of samples and the distribution of the sample data, various estimation procedures can be used to calculate the “average” other than the simple arithmetic mean. Other estimation procedures should be considered for skewed data distributions, which can be common for environmental contaminant data. For example, a geometric mean may be preferred for relatively large sample sizes with lognormal distributions (Gilbert 1987). The proper method for calculating the mean will depend on the professional opinion of the risk assessor given the distribution of the data and what is known about the exposure event. In general, the arithmetic mean is recommended when the size of the data set is limited.

One or more PEPCs are required for each potentially hazardous chemical exposure under evaluation. There are two main types of potentially hazardous exposures (defined as follows) and, therefore, two main types of PEPCs are needed to assess these exposures—

- **Potentially hazardous acute exposures** are those that are short-term and/or time-limited to a specific duration, where the health effects of primary interest are those that may occur during the mission. Health effects of secondary interest are those that may arise after the mission is complete. **Acute PEPC estimates** are concentrations that characterize peak and average acute exposures.

- Potentially hazardous chronic exposures** are those that are long-term and that may result in latent health effects that may arise after the deployment. **Chronic PEPC estimates** are concentrations that characterize average chronic exposures.

Acute and chronic PEPCs are needed for each chemical not “pre-screened” out of the process in the previous step. These PEPCs are then compared to one or more relevant MEGs in order to evaluate the exposures associated with the site. Multiple PEPCs for the same chemical are usually needed in order to perform a risk assessment. Table 3–7 identifies the standard types of PEPCs.

Table 3-7. Standard Types of PEPCs

Type of Exposure	PEPC Type	PEPC Definition*
Acute	Peak PEPC	The measured or expected maximum exposure experienced by the population. It is the maximum-detected concentration during the exposure event or the maximum-detected concentration for a given sample averaging time associated with the data. This concentration represents an estimate of the peak value of the concentration–time curve.†
	Average PEPC or Event-length PEPC	The expectation of the average exposure experienced by the population during the exposure event. It is usually the arithmetic mean or geometric mean concentration of the exposure event.
Chronic	Average PEPC or Deployment-length PEPC	<u>For air and soil only:</u> The expectation of the average exposure experienced by the population during site operations. It is usually the arithmetic-mean or geometric-mean concentration across 1 year or across the length of the deployment.
	Average PEPC or Source PEPC	<u>For water only:</u> The expectation of the average exposure experienced by the population while using the water source (including ice). It is usually the arithmetic-mean concentration for the water source averaged across the duration of use of the water.†

Notes:

* Several of the definitions refer to the arithmetic-mean or geometric-mean concentration. In general, the proper method for calculating the mean and confidence intervals around the mean will depend on the professional opinion of the risk analyst given the distribution of the data and what is known about the exposure event (see text above the table).

† It should be understood that even the maximum-detected concentration represents an average across the sampling duration (this is not necessarily the same as across the entire duration of the exposure event). This is most important for air concentrations because water and soil concentrations are less dynamic over time. Thus, a maximum air concentration is actually a time-averaged sample concentration across the duration of time the sample was collected. The following example illustrates the concept. Air is continuously sampled for 10 minutes at two adjacent locations, and those air

samples are analyzed in the laboratory with results of 5 and 15 mg/m³. The overall 10-minute average concentration is 10 mg/m³. The maximum concentration is 15 mg/m³, but this maximum is still a 10-minute average. For example, during that 10-minute period, the concentration could have been higher for 2 minutes and lower for 8 minutes.

- ‡ In some cases it may be desirable to generate a chronic-average PEPC that is developed as a weighted average across multiple water sources. This preference may arise when the focus of the assessment is on managing total exposure to a specific military unit.

3.4.4.2 Methodology for Generating PEPCs

All PEPCs should be calculated directly from the risk assessment data set. The following step-wise process is the standard method for creating the data set and generating PEPC estimates.

1. **Identify all valid samples** that are relevant to the exposure event and population at risk. This includes a consideration of time, location, and data quality. The data set should include all sample results to include those that are less than the limits of quantitation (or reporting limits)—this includes non-detects (U-flagged data) and estimated concentrations (J-flagged data). Refer to Section 3.4.4.3 for a description of the kinds of quantitation and detection limits and data qualification flags.
 - a. Samples outside the date/time range under consideration should be excluded.
 - b. Samples outside the exposure area or that do not otherwise characterize the exposure event conditions at the site should be excluded.
 - c. Invalidated samples, due to sampling, analytical, or other errors or problems should be excluded.
2. **Compile peak PEPCs for each chemical.** Methods are slightly different for air and water exposures.
 - a. **Air.** One or more peak PEPCs can be selected directly from the data set. They are the maximum-detected concentrations of each chemical for each of the available sample averaging times. If a data set contains samples for only one sample averaging time (e.g., 24 hours), then there will be only one peak PEPC for each chemical. However, if multiple sample averaging times are available in the data set (e.g., 1-hour data and 24-hour data), then there is likely to be more than one peak PEPC for a chemical (e.g., a 1-hour peak PEPC and a 24-hour peak PEPC). The highest peak PEPC is considered to be the overall peak PEPC, and it is usually associated with the shortest available sample averaging time.
 - b. **Water.** The peak PEPC for a water source is simply the maximum-detected concentration of the chemical.

3. Calculate average PEPCs for each chemical. Methods are slightly different for calculating acute (short-term) and chronic (long-term) average PEPCs. Average PEPC calculations require an explicit definition of the exposure duration with start and stop times. The duration of the exposure event or ambient condition under evaluation is pre-defined at this point in the process. Average PEPC calculations may need to involve procedures for handling results that are less than the limit of quantitation (see Section 3.4.4.3).

- a. **Air (acute-average PEPCs).** The acute-average (or event-length) PEPC across the duration of the exposure event is calculated for each chemical. While there may be multiple peak PEPCs for a chemical (i.e., one associated with each sample averaging time), there will be only one average PEPC for a chemical.

If the duration of the exposure event is longer than that covered by the sampling data or the available sample averaging times, then assumptions about the concentration–time profile must be made in order to reliably estimate the average PEPC. For example, this can occur if an exposure event associated with an airborne release lasts 5 days and data exists for only the first 3 days. In this case, the average concentration across the first 3 days can be calculated directly from the data. However, if in actuality the concentration (time profile of the event has a peak on the first day and then tapers off to 0 by the end of day 5), then the 3-day-average concentration will be higher than the true-average exposure across all 5 days. It will be conservative (i.e., health protective) to assume that the 3-day average is the average event-length PEPC. In some cases, the risk analyst may have sufficient knowledge of the exposure event to be able to estimate surrogate values for missing time periods. In general, however, average PEPCs should be calculated directly from the sample data and assumed to best represent the true average event-length PEPC. If the risk analyst believes that this PEPC estimate significantly over or under estimates true exposure, the risk assessment methodology incorporates this professional opinion when the hazard probability is ranked later in the process (see probability factor 2 in Section 3.3.3.2 and in Exhibit 3-3).

- b. **Air (chronic-average PEPCs).** The chronic average (or deployment-length) PEPC is calculated by averaging across the length of deployment (or the length of time of site operations). This duration is usually 1 year but should not exceed 3 years for risk assessment purposes, because such long exposures will require another assessment methodology. Given that the only chronic MEGs are 1-year MEGs, if the exposure duration is greater than 1 year, then the risk assessment methodology incorporates this difference when the hazard probability is ranked later in the process (see probability factor 3 in Section 3.3.3.2 and in Exhibit 3-3). However, if the duration is longer than 3 years, then a unique risk assessment design may be required because the chronic MEGs were not designed for longer exposure times.

Invariably, sampling data will not exist for some time periods between the start of the deployment and the end of the deployment. There is an expectation that there is a minimum data-collection standard for generating reliable estimates of long-term (or annual) exposure levels to ambient airborne chemical hazards. When there is adequate data available to characterize typical every day exposures, intermittent high-end exposures, and intermittent low-end exposures, then there should be sufficient data from which to calculate a reliable average deployment-length PEPC. What is also needed is an estimate of the frequency and duration of the intermittent high- and low-end exposures. With this level of information, it can be assumed that the time periods with missing data are represented in periods with data and that calculated average PEPCs will be reliable. Even in these situations, the use of weighted averages may need to be considered to generate a reliable, overall average deployment-length PEPC.

However, there may be situations where insufficient environmental monitoring data exists and/or those data extrapolations for missing time periods becomes too uncertain in order to reliably estimate the long-term average exposure. Additional data collection is recommended in these situations. If additional data collection is not possible prior to when the risk assessment is needed, then the best estimate of the average PEPC should be produced. Then if the risk analyst believes that this PEPC estimate significantly over- or under-estimates true exposure, the risk assessment methodology can incorporate this professional opinion when the hazard probability is ranked (see probability factor 2 in Section 3.3.3.2 and in Exhibit 3-3).

- c. **Water (acute- and chronic-average PEPCs).** In both cases (acute and chronic), the average PEPC is the average concentration across the exposure duration (i.e., the duration of use of the water source). These values are calculated or chosen directly from the data set.
- (1) For many water sources, only one sample will be available and statistical averages are not possible. In those cases, the results from the single sample should be used to represent the average PEPC. In these cases, the peak and average PEPCs will be equal.
 - (2) In many cases, the acute- and chronic-average PEPCs will be equal because the concentration-time relationship is constant for potable water sources. However, there may be cases where the two PEPCs are different, especially if a non-potable water source is being used.
 - (3) In some cases it may be desirable to generate a chronic-average PEPC that is developed as a weighted average across multiple water sources. This preference may arise when the focus of the assessment is on managing total exposure to a specific military unit.

- d. **Soil (chronic-average PEPCs).** The chronic-average (or deployment-length) PEPC is calculated by averaging across all the collected samples within the exposure area during the time of site operations (or during the deployment). For deployment risk assessment purposes, it is assumed that there is no variability in the concentration-time relationship for soil contaminants unless there is a specific soil release (e.g., spill or leakage). That is, it is expected that a single round of soil samples can be used to estimate the long-term average chemical concentration in soil at a site. Specific soil-contamination events, such as leaks and spills, should be characterized independently.

3.4.4.3 Detection Limits and Surrogate Values for Non-detected Chemicals

There is often a lack of understanding as to the meaning of and distinctions between the various terms used by laboratories to define analytical method sensitivity and how they should be handled in a risk assessment. There are three kinds of analytical limits most relevant to the risk assessment process—

- **Detection Limit (DL).** The lowest concentration or amount of the target analyte that can be identified, measured, and reported with confidence that the analyte concentration is not a false positive value.⁵ This is the smallest concentration that can be demonstrated to be different from zero or a blank concentration at the 99 percent level of confidence (DOD 2009). The DL is the statistical determination that nearly all laboratories perform on a per-method, per-matrix, and sometimes per-instrument basis. At the DL, the false-positive rate is 1 percent (DOD 2009); however, the DL does not sufficiently protect against false negatives. At the DL, the false-negative rate can be as high as 50 percent.
- **Limit of Detection (LOD).** An estimate of the minimum amount of a substance that an analytical process can reliably detect. An LOD is analyte- and matrix-specific and may be laboratory-dependent. This is the smallest concentration that must be present in a sample in order to be detected at a high level of confidence (99 percent). At the LOD, the false-negative rate is 1 percent (DOD 2009).
- **Limit of Quantitation (LOQ).** The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. It is the lowest concentration that produces a quantitative result within specified limits of precision and bias. For DOD projects, the LOQ shall be set at or above the concentration of the lowest initial calibration standard (DOD 2009).⁶

⁵ The method detection limit (MDL) can be considered equal to the DL. The process to determine the MDL is one way to establish a DL.

⁶ The client-specified reporting limit (RL) is often equal to the LOQ, but it can be higher. The RL is the client-specified, lowest-concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix (DOD 2009).

Note: Some laboratories will still use terms such as quantitation limit, reporting limit, practical quantitation limit, or other alternatives when it has the same definition as the LOQ (as defined above). These alternative terms may be used if a laboratory is not DOD accredited, which is currently only technically required of a laboratory running samples for DOD cleanup projects. Such laboratories will also not likely report the LOD.

Laboratory analytical results of environmental field samples often report values that are below the LOQ. These numbers need to be flagged and treated appropriately. When an analyte is detected between the DL and the LOQ, the data should be flagged with a “J.” This means that the reported concentration is an estimated value. When an analyte is not detected, it should be flagged with a “U.” This means that the true concentration is less than the LOD, which should be reported to the client. However, some laboratories do not report the LOD in these cases. Some laboratories report non-detect results with a “U” flag at the LOQ. Non-detect results should not be reported at the DL because of the insufficient protection against false negatives.

Table 3–8 illustrates the relationship between these limits, the qualification flags, and the reporting of results.

Table 3-8. Relationship Between Detection Limits, Data Flags, and Reported Results

Possible Laboratory Outcomes		Laboratory Reported Results		
		Reported Data Flag	Reported Value	
Result	The concentration is...		Method A	Method B
Not detected	Less than the DL	U	LOD	LOQ
Detected	Between the DL and the RL	J	Measured value	Measured value
Detected	Equal to or greater than the RL	No flag	Measured value	Measured value

Note:

At this time, some laboratories do not report the LOD. In these cases, non-detect values are reported with a “U” flag at the RL (alternative B). Note that some laboratories may not even report estimates below the LOQ as a default reporting procedure. This may have to be specially requested.

For risk assessment purposes, all detected values (even estimated J-flagged values) should be used in calculation of PEPC estimates. When a chemical is not detected in every sample, the sample values reported as not detected (i.e., U-flagged) should be assigned surrogate values equal to ½ of the LOD or ½ of the LOQ for the purposes of calculating average PEPCs (see the exception in the paragraph below). The USAPHC recommends use of ½ of the LOD when the LOD is known, as it is a more accurate reflection of the information at hand.

In a chronic risk assessment (see Section 3.4.6), chemicals that are detected in only 5 percent or less of the samples are usually screened out of the process. These detected chemicals are screened out by convention (EPA 1989) whereby the rationale is that they are unlikely to contribute to significant, long-term chronic exposure. However, infrequently detected chemicals

can pose acute health risks, which are evaluated in the acute risk assessment process (see Section 3.4.5).

For illustration purposes, consider the following example where the analytical limits for chemical A are as stated below:

DL = 1 mg/m³
LOD = 3 mg/m³
LOQ = 5 mg/m³

Results of 5 mg/m³ or above would be reported with no flags.

Results between 1 and 5 mg/m³ would be reported with a J-flag as estimated values.

Results below 1 mg/m³ would be reported in one of two ways.

Under method A, the preferred approach, the results would be reported as < 3 mg/m³ since the LOD has been determined to protect against false negatives. The report may actually present the result as "3 mg/m³ U."

Under method B where the LOD is not reported by the laboratory, the results would be reported as < 5 mg/m³. The report may actually present the result as "5 mg/m³ U."

3.4.4.4 Dealing with a Detection Limit that is Higher than a MEG

Many of the deployment sampling protocols were developed in order to minimize the logistical footprint of PVNTMED assets and maximize the ability to characterize the ambient environment with limited resources. One of the results of this balance is that for a handful of chemicals, the long-term 1-year Negligible MEG (which is used for screening purposes) is lower than the DL. This results in an increased false negative error rate, meaning that there is (for those chemicals) an increased chance that a potential health hazard will not be detected. Current efforts to improve the methods and protocols are ongoing, but this problem will remain for some chemicals for the foreseeable future.

Addressing chemicals in a data set that are reported below the DL will be a matter of professional judgment. However, USAPHC provides three general recommendations below—

- If there are no detections and there is no indication that the chemical would be present based on knowledge of the local and regional sources, then do not consider the chemical to be a potential OEH hazard. That is, screen the chemical out of the process. For example, if the MEG for antimony is below the DL and antimony is (a) not detected at all and (b) typically not found in the water in the area, then it should not be considered to be a hazard. No further actions

would be needed other than to document the high detection limit in the confidence discussion.

- If the data set has sporadic detections (≤ 5 percent of total samples, for example, 1 detection in 20 or more samples), then consider the detections individually as unique acute events; identify hazards and assess the acute risk accordingly. Document the high-detection limit in the confidence discussion, and discuss the exclusion of data in the confidence section.
- If there are multiple detections (> 5 percent of total samples, for example, 2 or more per 20 samples), then consider the chemical to be a potential hazard for screening purposes. For the purpose of calculating averages, replace non-detects with a surrogate value equal to $\frac{1}{2}$ LOD or $\frac{1}{2}$ LOQ according to guidance provided in Section 3.4.4.3.

3.4.5 Conduct an Acute Risk Assessment

3.4.5.1 Screen for Hazardous Exposures that May Lead to Acute Effects (acute hazards)

Potential acute hazards are exposures that are short-term and/or time-limited to a specific duration, where the health effects of interest are those that may occur during the mission. In this step, hazardous acute exposures are identified for each previously identified exposure pathway.

This screening is performed by comparing PEPCs for each chemical not eliminated by the prescreen step to the acute screening criteria. Those chemicals with a PEPC less than or equal to the screening criteria are eliminated from further consideration. Remaining chemical substances are then considered to be acute hazards associated with the exposure event or ambient environment. More formally, the remaining chemicals contribute to an identified hazardous acute exposure, meaning that more than one chemical can be associated with a hazardous exposure event. Risk assessors need to be aware of a limitation with the current risk assessment process when multiple chemicals are present. Currently, the process addresses each as a single hazard, and additive effects are not addressed directly. The acute screening algorithm is defined as follows.

- **Soil.** Currently, sampling data for soil is not evaluated in an acute risk assessment.
- **Air.** Compile the peak PEPC for available sample averaging times from the risk assessment data set (see Section 3.4.4). Eliminate from further consideration all chemical substances with a peak PEPC that is less than or equal to the 14-day Negligible MEG, with the following exceptions:

For most chemicals—

- When a 14-day Negligible MEG is equal to the 1-year Negligible MEG, then use the 8-hour Negligible MEG to eliminate chemicals from consideration. This will occur when there is a lack of confidence in the 14-day MEG.
- When a 14-day Negligible MEG is unavailable, then use the 8-hour Negligible MEG.
- If an 8-hour Negligible MEG is unavailable, then use the 1-hour Negligible MEG.

For PM and CWAs—

- Use the 24-hour Negligible MEG for elimination.
- **Drinking Water.** Compile the peak PEPC for each water source from the risk assessment data set (see Section 3.4.4). Eliminate from further consideration all chemical substances with a peak PEPC that is less than or equal to the 14-day Negligible MEG for the 15-L/day consumption rate.
- **Non-drinking Water (e.g., used for hygiene or cooking).** Compile the peak PEPC for each water source from the risk assessment data set (see Section 3.4.4). Eliminate from further consideration all chemical substances with a peak PEPC that is less than or equal to 2.5 times the 14-day, 5-L/day Negligible MEG. (See Section 3.5.2 for the basis of this screening criterion). If this MEG is unavailable, then eliminate those less than or equal to 2.5 times the 1-year, 5L/day Negligible MEG.

From this point forward, the assessment focuses upon the exposure pathways and chemicals with peak PEPCs that are greater than the acute screening criteria.

3.4.5.2 Characterize Exposure and Rank Acute Hazard Severity

To characterize exposure and rank hazard severity, a determination should be made whether the exposure is the result of a one-time or rare event, or if it is an intermittent event relative to the deployment duration. While the following method for ranking hazard severity is the same for each of these situations, the frequency of intermittent events should be articulated during risk characterization. Under normal circumstances, knowledge of the source of the chemicals will play a role in making this determination. However, if the source of the chemicals is unknown, then it should be treated as if it could be an intermittent event, as this would be a conservative (health-protective) assumption until more information is available. For the assessment of risk of acute health effects, ambient environmental conditions should be treated as if each day is an intermittent event.

- **Air.** For airborne exposures, both the peak PEPCs and the average PEPC across the selected exposure duration should be determined and/or calculated from the risk assessment data set (see Section 3.4.4) for selection of the hazard severity by comparison to the MEGs as shown in Exhibit 3-1. The decision logic presented in this figure ranks severity according to the highest MEG that the PEPC exceeds.

- **Drinking Water.** For drinking water exposures, both the peak and average PEPCs across the selected exposure duration should be calculated from the risk assessment data set (see Section 3.4.4) for selection of the acute hazard severity by comparison to the MEGs as shown in Exhibit 3-2. The decision logic presented in this figure ranks severity according to the highest MEG that the average PEPC exceeds. The risk assessor will need to choose either the 5 L/day or the 15 L/day MEGs for comparison purposes. This choice should be based on knowledge of site conditions, climate, and expected consumption rates in the population at risk. For acute assessments the 5 L/day MEGs should be used for consumption rates not to exceed 10 L/day, while the 15-L/day MEGs should be used for consumption rates of 10-L/day or higher. Chronic assessments should use the 1-year 5L/day MEGs. If exact drinking rates are known for the exposure being assessed, the MEGs may be adjusted proportional to the drinking rate and used in the assessment (in this case the assessment should be reviewed by PHC before being finalized)
- **Non-drinking Water (e.g., used for hygiene or cooking).** For non-drinking water exposures, both the peak and average PEPCs across the selected exposure duration should be calculated from the risk assessment data set (see Section 3.4.4). A hazard severity of Negligible should be assigned to those chemicals with a PEPC less than 2.5 times the 14-day, 5-L/day Negligible MEG (see Section 3.5.2 for the basis of this criterion). If a 14-day Negligible MEG is unavailable or if a PEPC is greater than 2.5 times the 14-day, 5-L/day Negligible MEG, then contact USAPHC for assistance.

3.4.5.3 Rank Acute Hazard Probability

Acute hazard probability ranks should be determined for each PEPC that was given a hazard severity rank. The recommended method for ranking hazard probability involves developing a ranking score that jointly considers four hazard probability factors related to the degree of exposure, the representativeness of the field data, the duration of exposure, and the rate of exposure (see Section 3.3.3). For each exposure event or ambient environmental condition being assessed (i.e., for every PEPC), each of the four factors are scored as a 1, 2, or 3 and then summed for a total score. The decision-logic for ranking hazard probability using these factors is provided in Exhibit 3-3.

Exhibit 3-1. Decision-Logic for Ranking Acute Hazard Severity for Airborne Exposures

For most chemicals

<i>Exposure to MEG relationship</i>	<i>Hazard Severity</i>
PEPC ≤ 14 day Negligible MEG	Negligible
PEPC > 14 day Negligible MEG but ≤ 8 hr Negligible MEG	Negligible
PEPC > 8 hr Negligible MEG but ≤ 1 hr Negligible MEG	Negligible
PEPC > 1 hr Negligible MEG but ≤ 1 hr Marginal MEG	Negligible
PEPC > 1 hr Marginal MEG but ≤ 1 hr Critical MEG	Marginal *
PEPC > 1 hr Critical MEG	Critical – Catastrophic *

For PM

<i>Exposure to MEG relationship</i>	<i>Hazard Severity</i>
PEPC ≤ 24 hr Negligible MEG	Negligible
PEPC > 24 hr Negligible MEG but < 24 hr Marginal MEG	Negligible
PEPC ≥ 24 hr Marginal MEG but < 24 hr Critical MEG	Marginal *
PEPC ≥ 24 hr Critical MEG	Critical * †

For CWAs and key TICs

Unlike the other chemicals, there are multiple sets of MEGs available for these chemicals. That is, for each of the EDs of 10 minutes, 1 hour, 8 hours, and 24 hours, there are Negligible, Marginal, Critical, and sometimes Catastrophic MEGs. Severity should be ranked using the MEG exposure duration most closely aligned with the exposure duration experienced by the population.

<i>Exposure to MEG relationship</i>	<i>Hazard Severity</i>
PEPC < Negligible MEG	Negligible
PEPC ≥ Negligible MEG but < Marginal MEG	Negligible
PEPC ≥ Marginal MEG but < Critical MEG	Marginal *
PEPC ≥ Critical MEG (for key toxic industrial chemicals)	Critical – Catastrophic *
PEPC ≥ Critical MEG but < Catastrophic MEG (for CWAs)	Critical *
PEPC ≥ Catastrophic MEG (for CWAs)	Catastrophic *

Notes:

* In these situations, it is recommended that USAPHC be contacted in order to validate the severity ranking, provide technical support, and to identify the need for follow-on MEG development.

† Exposures greater than the Critical 24-hour MEG for coarse PM₁₀ are anticipated to result in significant irritation to eyes and respiratory system, but such exposures are not ever considered 'Catastrophic' from a *health standpoint*. However, it is acknowledged that certain blinding windstorms conditions can be so severe so has to halt most all outdoor operations (not technically a *health hazard per se*).

Exhibit 3-2. Decision-Logic for Ranking Acute Hazard Severity for Drinking Water Exposures

(1) Based on the exposure duration being assessed, either the 7-day or 14-day MEGs must be chosen for these comparisons. The 7-day MEGs are designed for EDs less than 7 days. The 14-day MEGs are designed for acute/short-term exposures that are longer than 7 days in length.

(2) The risk assessor must choose either the 5-L/day or 15-L/day MEGs for these comparisons. The choice must be consistent across all evaluations in the same risk assessment. This choice should be based on knowledge of site conditions, climate, and expected consumption rates in the population at risk. The 5-L/day MEGs should be used for consumption rates not to exceed 10-L/day, while the 15-L/day MEGs should be used for consumption rates of 10-L/day or higher.

<i>Exposure to MEG relationship</i>	<i>Hazard Severity</i>
PEPC \leq 7-day or 14-day Negligible MEG	Negligible
PEPC > 7-day or 14-day Negligible MEG	Negligible – Catastrophic *

Note:

* At this time Marginal and higher severity MEGs for water are not available. Until USAPHC establishes such MEGs for a chemical, the hazard severity determination for exposures greater than the Negligible MEG will need to be made by trained subject matter experts. In most cases, based on USAPHC experience, the acute hazard severity ranks for PEPC estimates that are greater than the 7-day or 14-day Negligible MEGs will be Negligible. However, when an acute PEPC estimate is substantially higher than the Negligible MEG, then the severity may be Marginal or greater. The severity rank should depend on the following factors:

- The WOE and confidence in the precision of the Negligible MEG as an estimate of the threshold for the health outcomes associated with the chronic hazard severity definition (see Section 3.3.2).
- The dose-response relationships for the health endpoints under consideration in relation to the magnitude of the estimated long-term PEPC.

Subject matter experts with appropriate understanding of the underlying chemical- and endpoint-specific toxicity data should be consulted to determine the most appropriate severity level when the next higher severity level MEG is unavailable.

In these situations, it is recommended that USAPHC be contacted in order to validate or determine the severity ranking, provide technical support, and to identify the need for follow-on MEG development.

Exhibit 3-3. Decision-Logic for Ranking OEH Hazard Probability for Acute and Chronic Assessments

Instructions—Rank hazard probability by developing a ranking score that jointly considers the four hazard probability factors related to the degree of exposure, the representativeness of the field data, the duration of exposure, and the rate of exposure. For each exposure event or ambient environmental condition being assessed, each of the four factors are scored as a 1, 2, or 3 and then summed for a total score. The total score is then used to rank hazard probability according to the following pre-defined scale. Note: Methodologic rationale is provided on the last page of the Exhibit.

Hazard probability rank →	Unlikely	Seldom	Occasional	Likely	Frequent
Total factor score →	4 – 6	7	8	9	10 – 12

Factor 1—Degree of exposure. Score this factor from the options below by locating the most accurate relationship between the PEPC and the selected MEGs. For any given case, Method A or Method B must be chosen for use, as they are mutually exclusive.

Method A: When the PEPC is between MEGs of different severity levels for the duration, then select a factor score from among the following options. For example, when a PEPC is between the Negligible and Marginal 8-hour MEGs.

<i>Option</i>	<i>Factor Score</i>
PEPC is below the 25 th percentile of the severity range	1
PEPC is at or between the 25 th and 75 th percentiles of the severity range	2
PEPC is above the 75 th percentile of the severity range	3

The demarcation of the 25th and 75th percentiles of the severity range are chemical-specific and can be calculated by using the following equations.

$$\text{25}^{\text{th}} \text{ percentile} = MEG_{lo} + \left(\frac{MEG_{hi} - MEG_{lo}}{4} \right) \quad \text{75}^{\text{th}} \text{ percentile} = MEG_{hi} - \left(\frac{MEG_{hi} - MEG_{lo}}{4} \right)$$

Method B: When the PEPC is not between MEGs of different severity levels for the duration, then select a factor score from the following options.

<i>Option</i>	<i>Factor Score</i>
PEPC ≤ Negligible MEG	1
PEPC > Negligible, Marginal, or Critical MEG (and the next higher severity MEG does not exist)	2

Factor 2—Representativeness of field data. Score this factor from the options below by using exposure assessment principles and professional judgment to determine if the field-collected data adequately represents the population exposure or if the field data likely under- or over-estimates exposure. Considerations include the sampling design, analytical method detection uncertainties, sample size, and data coverage across the exposure duration. A factor score of 2 is typically expected, especially if there is little-to-no information on any bias in the field data.

<i>Option</i>	<i>Factor Score</i>
Field data overestimates the population exposure	1
Field data adequately estimates population exposure	2
Field data underestimates the population exposure	3

[continued]

Exhibit 3-3. Decision-Logic for Ranking OEH Hazard Probability for Acute and Chronic Assessments (continued)

Factor 3—Duration of exposure. Score this factor from the options below by computing the ratio between the population's exposure duration and the exposure duration associated with the MEG. For example, if the field exposure is 9 months and the assessment is using a 1 year MEG, then the ratio is 0.75.

<i>Option</i>	<i>Factor Score</i>
Field exposure duration : MEG exposure duration ratio is less than 1	1
Field exposure duration : MEG exposure duration ratio is from 1 to 3	2
Field exposure duration : MEG exposure duration ratio is greater than 3	3

Factor 4—Rate of exposure. Score this factor from the options below by making a professional judgment of the actual field conditions associated with population exposure at the site. A factor score of 2 is typically expected, especially if little-to-no information about exposure rate is available.

For airborne exposures

<i>Level of activity related to inhalation rate</i>	<i>Factor Score</i>
Light exertion. Standing in foxhole. Guard duty. Desk work. Vehicle driving.	1
Typical exertion. Equipment maintenance. March with load-bearing equipment no rucksack. (Use this option for site-wide annual assessments of air quality.)	2
Heavy exertion. Forced load carriage march with 20-kg load. Repetitive lifting and carrying heavy loads (e.g., ammo handlers).	3

For drinking water exposures

<i>Estimated average water consumption rate</i>		<i>Factor Score</i>
<i>Evaluations using a 5-L/day MEG</i>	<i>Evaluations using a 15-L/day MEG</i>	
< 3 L/day	10 – 13 L/day	1
4 – 7 L/day	14 – 16 L/day	2
8 – 10 L/day	> 17 L/day	3

For non-drinking water exposures (e.g., hygiene and cooking)

<i>Existing facilities and level of activity related to water contact rate</i>	<i>Factor Score</i>
Little water contact or incidental consumption of water (e.g., temporary facilities, or field conditions without centralized facilities, preventing routine showering).	1
Typical and routine uses for hygiene and cooking (e.g., Garrison-type fixed facilities used for cooking, showering, and other hygiene uses).	2
Heavy water contact beyond normal activities (e.g., swimming, submersion for extended periods of time).	3

For exposures to soil

<i>Level of activity related to soil contact rate</i>	<i>Factor Score</i>
Minor contact with soil on an infrequent basis (office & shop maintenance work).	1
Moderate contact with soil on a regular basis (frequent patrols on unpaved areas, standard construction). (Use this option for site-wide assessments of soil quality.)	2
Heavy contact with soil on a daily basis (road construction, digging defensive positions).	3

[continued]

Exhibit 3-3. Decision-Logic for Ranking OEH Hazard Probability for Acute and Chronic Assessments (continued)

Rationale underlying the scoring methodology

The hazard probability scoring methodology was designed so that most assessments will result in a rank of Occasional. Occasional is interpreted to mean that “Personnel will occasionally experience exposures that are greater than that required to produce the health effect outcomes associated with the hazard severity level [chosen prior to ranking probability]” (see Table 3-5). The scoring methodology was designed so that a score of 2 for a factor represents the typical score for that factor. A score of 1 represents a down-grading of the probability and a score of 3 represents an up-grading of the probability. This is the case for each of the four factors. Thus, a score of 2 for each factor sums to a total probability score of 8, which translates into a probability ranking of Occasional, which is the middle rank. Higher ranks will indicate that the hazard severity outcomes become more likely and lower ranks indicate that the outcomes become less likely.

The situations that will tend to rank probability higher than Occasional are (1) when the estimated exposure term (i.e., the PEPC) is near the next higher MEG, (2) when site-specific information leads the analyst to believe that the calculated PEPC may actually underestimate exposure, (3) when the duration of exposure is longer than the duration used to derive the comparison MEG, and (4) when the exposure rate in the population is expected to be much higher than that assumed to derive the comparison MEG.

The situations that will tend to rank probability lower than Occasional are (1) when the estimated exposure term (i.e., the PEPC) is near the next lower MEG, (2) when site-specific information leads the analyst to believe that the calculated PEPC may actually overestimate exposure, (3) when the duration of exposure is shorter than the duration used to derive the comparison MEG, and (4) when the exposure rate in the population is expected to be much lower than that assumed to derive the comparison MEG.

3.4.5.4 Estimate Tactical Risks and Level of Confidence

As described above in Section 3.2.3, tactical risk is aligned to the ability of the field unit to complete the mission or maintain tactical readiness and is associated with potential so-called “acute” health effects that may occur during the mission. Tactical risk is first estimated by simply looking up the intersection of the acute hazard probabilities and acute hazard severities associated with the exposure event or environmental condition using the risk assessment matrix (see Table 3-1). A final risk estimate for the exposure event should be based on all the individual chemical risks.

As a final step, the risk assessor should validate whether the assigned risk levels are aligned with the doctrinal meaning of the tactical risk level definitions in Table 3-2. If a misalignment is perceived, then professional judgment (and possibly technical support from USAPHC) will be needed to adjust the conclusions in consideration of all relevant information.

Consultation with Subject Matter Experts — When MODERATE or higher risk levels are identified, it is recommended that USACHPPM subject matter experts, or other qualified medical/health professionals, be consulted in order to validate the risk assessment. If exposures actually occur, then such a validation should also review the need for increased medical surveillance and risk communication support.

Before the risk level is communicated to the decision maker, a level of confidence should be assigned to the final risk estimates according to the guidance provided in Section 3.3.4.

The final risk level selected for the acute health effects assessment will correspond to both the tactical and lifecycle risk level definitions. For example (and referencing Table 3-2 and Table 3-3), an OEH exposure resulting in a MODERATE tactical risk of an expected degradation of mission capabilities should also be linked to a MODERATE lifecycle risk of an expectation that a limited level of medical surveillance activity related to the exposure will occur.

3.4.6 Conduct a Chronic Risk Assessment

Based on the purpose of the risk assessment, a chronic assessment may not be needed. However, where there is sufficient data to estimate long-term exposure levels, then a chronic assessment can be conducted. This is important because there may be situations where insufficient environmental monitoring data exists in order to conduct a chronic assessment. There is an expectation that there is a minimum standard for data quality related to determining reasonably reliable estimates of long-term (or annual) exposure levels. Good risk management and medical surveillance decisions cannot be made using chronic assessments that are based on insufficient environmental monitoring data.

3.4.6.1 Screen for Hazardous Exposures that May Lead to Chronic Effects (chronic hazards)

Potential chronic (or latent) hazards are those exposures that are long term and may result in latent health effects that may arise after the deployment. In this step, hazardous chronic exposures are identified for each previously identified exposure pathway.

This screening is performed by calculating PEPCs for each chemical not eliminated by the prescreen step and comparing them to chronic screening criteria. The chronic screening criteria are the 1-year Negligible MEGs. These MEGs reflect the most conservative 'plausible worst-case' exposure assumptions (e.g., a repeated continuous exposure over 1 year's time). If the PEPC is equal to or falls below this level, then one may assume that the identified chemical exposure does not pose a chronic health hazard. The proper PEPC for identifying potential chronic hazards is the average concentration from the identified data set, which will ideally include results from applicable historic site data (if historical data is consistent with current environmental conditions). Those chemicals with a PEPC less than or equal to the screening criteria are eliminated from further consideration. Remaining chemical substances are then considered to be chronic hazards associated with the exposure event or condition.

The chronic screening algorithm is defined as follows.

- **Frequency of Detection Screen.** Eliminate from further consideration all chemical substances that are detected less than 5 percent of the time (EPA 1989, p. 5-22) within the sample set to be used to calculate exposure estimates for each exposure pathway.
- **Air and Soil.** Calculate the deployment-length PEPC from the risk assessment data set (see Section 3.4.4). At sites operating for multiple years, more than one annual average can be used. Eliminate from further consideration all chemical substances with deployment-length PEPCs that are less than or equal to the 1-year Negligible MEG.
- **Drinking Water.** Calculate the source PEPC from the risk assessment data set (see Section 3.4.4). Eliminate from further consideration all chemical substances with deployment-length PEPCs that are less than or equal to the 1-year Negligible MEG for the 5L/day consumption rate or the 14-day Negligible MEG for the 15 L/day consumption rate (whichever is lower).
- **Non-drinking Water (e.g., used for hygiene or cooking).** Calculate the source PEPC from the risk assessment data set (see Section 3.4.4). Eliminate from further consideration all chemical substances with deployment-length PEPCs that are less than or equal to 2.5 times the 5 L/day, 1-year Negligible MEG. (See Section 3.5.2 for the basis of this screening criterion.)

From this point forward, the assessment focuses upon the exposure pathways and chemicals with PEPCs that are greater than the chronic screening criteria.

3.4.6.2 Characterize Exposure and Rank Chronic Hazard Severity

At this point, the assessment focuses upon the exposure pathways and chemicals with average deployment-length PEPCs that are greater than the 1 year Negligible MEG.

When conducting a chronic exposure assessment, it is desirable to evaluate all the data available from the site that was collected over time. An examination of all of the data provides a better indication of the “true” environmental picture at the site over an extended period of time and how accurately a current data set represents chronic exposures. This complete data assessment can also assist with the acute evaluation since it demonstrates if the current data set is “in line” with past data or indicates a new trend and potential problems that require further investigation and additional sample collection. At sites operating longer than 1 year, then chronic hazard severity assignments for multiple years may be useful to assess trends over time.

For air, water, and soil exposures, chronic hazard severity should be ranked by comparing the calculated annual average PEPC, or deployment-length PEPC, to the long-term, 1 year MEGs using the decision-logic presented in Exhibit 3-4. Section 3.4.4 provides guidance on calculating the average PEPC.

For drinking water exposures, the risk assessor should choose either the 5-L/day or the 15-L/day water MEGs for comparison purposes based on knowledge of site conditions, climate, and expected consumption rates in the population at risk. The 5-L/day MEGs should be used for consumption rates not to exceed 10-L/day, while the 15-L/day MEGs should be used for consumption rates of 10-L/day or higher.

For non-drinking water exposures, USAPHC should be contacted for assistance. A standard methodology has not yet been developed to evaluate chemical exposures with deployment-length PEPCs that are greater than the screening criterion of 2.5 times the 5-L/day, 1-year Negligible MEG.

The final chronic hazard severity rank for the exposure event or environmental condition should not necessarily be an automatic decision based on the guidelines presented in Exhibit 3-4. Professional judgment should be applied before a final determination is reached if a higher than negligible rank is selected. Considerations include the basis and confidence in the MEG value, knowledge about the dose-response function, toxicological WOE, other alternative health criteria and their basis, the short-term MEGs, and any other relevant factors.

Exhibit 3-4. Decision-Logic for Ranking Chronic Hazard Severity for Long-Term Exposures to Air, Drinking Water, and Soil

<i>Exposure to MEG relationship</i>	<i>Hazard Severity</i>
PEPC \geq 1 yr Negligible MEG but < 1 yr Marginal MEG	Negligible *
PEPC \geq 1 year Marginal MEG	Marginal – Critical *

Note:

* At this time only one long-term Marginal MEG is available (for PM_{2.5}) and no long-term Critical MEGs are available. Until USAPHC establishes a long-term Marginal and Critical MEG for a chemical, the hazard severity determination for an exposure greater than the Negligible MEG will need to be made by trained subject matter experts. In most cases, based on USAPHC experience, the chronic hazard severity ranks for PEPC estimates that are greater than the 1 year Negligible MEG will be Negligible. However, when long-term PEPC estimates are substantially higher than the Negligible MEG, then the severity may be Marginal or, in rare cases, Critical. The severity rank should depend on the following factors:

- The weight of evidence and confidence in the precision of the MEG as an estimate of the threshold for the health outcomes associated with the chronic hazard severity definition (see Section 3.3.2).
- The dose-response relationships for the health endpoints under consideration in relation to the magnitude of the estimated long-term PEPC.

SMEs with appropriate understanding of the underlying chemical- and endpoint- specific toxicity data should be consulted to determine most appropriate severity level when the next higher severity level MEG is unavailable.

In these situations, it is recommended that USAPHC be contacted in order to validate or determine the severity ranking, provide technical support, and to identify the need for follow-on MEG development.

3.4.6.3 Rank Chronic Hazard Probability

Chronic hazard probability ranks should be determined for each PEPC that was given a hazard severity rank. The recommended method for ranking hazard probability involves developing a ranking score that jointly considers four hazard probability factors related to the degree, duration, and rate of exposure (see Section 3.3.3). For each exposure event or ambient environmental condition being assessed (i.e., for every PEPC), each of the four factors are scored as a 1, 2, or 3 and then summed for a total score. The decision-logic for ranking hazard probability using these factors is provided in Exhibit 3-3 (page 60).

3.4.6.4 Estimate Lifecycle Risk and Level of Confidence

As described above in Section 3.2.3, USAPHC recommends that lifecycle risk be aligned to the medical and related resources required to address personnel health outcomes post-deployment and into retirement, whereby, such potential health outcomes referred to as “chronic” (or latent) health effects using the terminology found in Joint policy (CJCS 2007).

Lifecycle risk is first estimated by simply looking up the intersection of the chronic hazard probabilities and chronic hazard severities associated with the exposure event or environmental condition using the risk assessment matrix (see Table 3-1). A final risk estimate for the exposure event should be based on all the individual chemical severity ranks.

As a final step, the risk assessor should validate whether the assigned risk levels are aligned with the USAPHC-recommended meaning of the lifecycle risk definitions in Table 3-3. If a misalignment is perceived, then professional judgment (and possibly technical support from USAPHC) will be needed to adjust the conclusions in consideration of all relevant information.

Consultation with Subject Matter Experts — When MODERATE or higher risk levels are identified, it is recommended that USAPHC subject matter experts, or other qualified medical/health professionals, be consulted in order to validate the risk assessment. If exposures actually occur, then such a validation should also review the need for increased medical surveillance and risk communication support.

Before the risk level is communicated to the decision maker, a level of confidence should be assigned to the final risk estimates according to the guidance provided in Section 3.3.4.

The final risk level selected for the chronic health effects assessment will only correspond to the lifecycle risk level definitions because the potential health effects would not be expected to occur during the deployment; whereby if they did, then they would impact the tactical mission and would have been assessed in the context of an acute assessment.

3.4.7 Risk Characterization Summary

Risk characterization summaries provide a quick review of the conclusions of the risk assessment—they represent the executive summaries for PVNTMED officers and Commanders. The risk characterization summary should provide the following three key elements.

- The risk assessment summary table
- Identification of the potential health effects that could occur in the population
- A suggested set of bottom-line-up-front briefing statements

The following subsections provide basic guidance for each of these points. In addition, the case studies in Appendix H provide examples.

3.4.7.1 The risk assessment summary table

The summary table should present the risk levels, associated impacts to the tactical and lifecycle missions, and the level of confidence associated with the assessments (Table 3–9). Recommended actions also can be presented. Table 3-9 demonstrates how the results of an assessment might be displayed. There are obviously numerous potential ways to format such summary tables. These formats are provided as examples.

Table 3-9. Example Risk Characterization Summary Table

OEH Hazard		Tactical Risk Estimate	Lifecycle Risk Estimate	Current Recommended Actions
Media/Source	Chemical	(acute effects)	(chronic effects)	
Ambient air impacted by local waste burning	Elemental mercury	<p>Low</p> <p>Expected losses have little or no impact on accomplishing the mission. <i>Little to no in-theater medical resources anticipated for protection and treatment. However, a summary of any negative or low level sampling results should be documented and archived particularly if some personnel express concerns.</i></p> <p>Confidence in the assessment is medium on a low-medium-high scale.</p>	<p>Low *</p> <p>No specific medical action required. <i>Documentation of environmental data in designated DoD archive.</i></p> <p>Confidence in the assessment is medium on a low-medium-high scale.</p>	<p>Continue monitoring ambient air.</p> <p>Document data in designated DoD archive.</p>

Note:

*This risk level was estimated in consultation with USAPHC subject matter experts.

The above table presents the definitions of the tactical and lifecycle Low risk combined with the possible medical responses associated with the predicted health effects in the population (see Table 3-2 and Table 3-3). The footnote in the above table reflects to the audience that the risk assessor received consultative support from USAPHC during the development of the risk estimates. There are scenarios in the TG 230 risk assessment process that recommend such consultations and/or there may be unique site-specific issues that can benefit from reach-back support. Communicating that reach-back SME support was used can increase the impact of the message.

3.4.7.2 Identification of Potential Health Effects

If OEH chemical hazards are identified in the risk assessment (i.e., those chemical exposures “failing” the acute and chronic screens), then the risk characterization summary ought to identify the potential health effects that could occur in the population based on the assessment of field

exposures. Also, there will be cases where no health effects are expected in the population because exposures are too low, and this should be stated when warranted.

Information on the health endpoints used to derive individual MEG values can be found in Appendix E. It is important to note that this list only includes health endpoints from the documentation provided with the source values that the MEGs are derived from, and is not a comprehensive list of all potential health effects that may occur from exposure to the chemical of interest.

The table in Appendix E only covers MEGs derived from the following data sources:

- USEPA's Integrated Risk Information System (IRIS) database
- USEPA's Provisional Peer Reviewed Toxicity Value (PPRTV) manuscripts
- ATSDR's Minimal Risk Levels (MRL)
- ACGIH Threshold Limit Values (TLV)
- NRC's Acute Exposure Guideline Levels (AEGL)

These sources have readily available health endpoint data published with the exposure guideline values. If a MEG is not listed in Appendix E, that typically indicates the health endpoint has not been collected from that source, or a health endpoint is not available from the source of the exposure guideline. A risk assessor may contact USAPHC to obtain this information if it is needed to complete an assessment. Future revisions of TG 230 are likely to update this table with the health endpoints of MEGs derived from other data sets as that information is collected or becomes available.

The Table in Appendix E is subdivided into air (Table E-1) and water (Table E-2) MEGs. Health endpoints for soil MEGs are not available in Appendix E due to limitations of the database used to derive the values. The MEGs in Appendix E are listed in the same format as the MEGs in Appendix C. When a MEG is exceeded a risk assessor may use the tables in Appendix E to determine if the health endpoint for the MEG is available. This information may be used to communicate the particular health effects that may be seen in populations that are exposed to chemical concentrations above the MEG. The health effects listed in Appendix E are limited to the effects the MEGs are based upon, whereas exposure to chemical concentrations in excess of a MEG may have additional effects that are not included in Appendix E.

When risk levels are Moderate or higher, the identification of potential health effects should be based on consultations with appropriately trained subject matter experts at USAPHC or another such service organization. This last point cannot be overly emphasized.

The following example illustrates what can be communicated based on the hypothetical assessment that supports the summary table (Table 3–9).

- Hypothetical Acute Exposure to Elemental Mercury: Acute health effects are not expected. The estimated exposure is below the threshold for neurological damage

based on occupational data. This threshold is based upon health endpoints that include impairment to central nervous systems and kidney damage.

- Hypothetical Chronic Exposure to Elemental Mercury: Chronic health effects are not expected.

3.4.7.3 Bottom-Line-Up-Front Briefing Statements

Bottom-line-up-front (BLUF) briefing statements are crucial for effective communication with Commanders in the deployment environment. Proven risk communication principles should be used to communicate findings to Command and unit Soldiers. Section 4 provides risk communication guidance.

The following example BLUF statements illustrate what can be communicated based on the hypothetical assessment that supports the above example summary table and potential health effects statements.

- This risk assessment evaluated the health risk associated with exposure to ambient air impacted by emissions from the local waste burning activities occurring just off-post.
- The estimated risk level is LOW. Expected losses will have little or no impact on accomplishing the mission. Little-to-no in-theater medical resources are anticipated for protection and treatment.
- Acrolein, mercury, and dioxin related compounds were detected in the air. However, only the levels of mercury pose a health hazard.
- The predicted population exposures at the base camp are unlikely to lead to actual health effects in the population at risk. The acute mercury exposure estimate is below the threshold for neurological damage based on occupational data.
- The confidence in the assessment is medium, but additional analysis is unlikely to increase confidence due to technical limitations.

3.5 UNIQUE SUBSTANCES AND RISK ASSESSMENT CONSIDERATIONS

The risk assessment methodology described above represents a standardized approach and will work for most situations. However, there will be cases requiring special considerations and deviations from the standard methodology. The following subsections provide guidance for some of these cases.

3.5.1 Actions to Take When No Appropriate MEG is Available

Every effort was made to develop MEGs for chemicals that are part of the standard sampling protocols used by U.S. Forces. Although the list of chemicals included in TG 230 is quite broad, there are occasions where identified chemicals will not have a specified guideline. As of the publication of this guide, USAPHC is fairly confident that there is a process to evaluate all the chemicals that are evaluated for with current methods. However, there will be cases where chemicals are detected, and there are no appropriate exposure guidelines. This will usually result when there is limited toxicity information available for the chemical. Occasionally, there may be a short-term guideline but no long-term guideline for a chemical. In these cases, it is likely that the chemical poses primarily an acute (short-term) hazard at higher concentrations; however, at lower concentrations there are no documented effects, even after continued long-term exposures. On the other hand, some chemicals may not pose a health risk unless the exposure is constant and repeated over a long-term exposure. In this case, there may not be any short-term MEGs.

In any situation where there is information lacking on a chemical, the risk assessor has two general options: (1) contact USAPHC to do research and characterize severity and risk, or (2) establish an overall risk estimate based on the other chemicals detected that have MEGs, and then document the uncertainty (i.e., reduced confidence) in the risk estimate by not including a chemical assessment of the chemical(s) without MEGs. Alternatively, if USAPHC assistance is not available for a time-critical need, the risk assessor may choose to assess other available sources of health and toxicity data to develop a temporary surrogate for a MEG value. If this is performed, USAPHC requests that the surrogate nature be noted and the basis be documented with a copy of the assessment sent to USAPHC for development of future MEGs.

3.5.2 Assessment of Water for Purposes Other than Consumption

The water MEGs were derived to assess ingestion exposure to drinking water. Ingestion is the route of exposure that generally contributes most to overall intake. However, there has been an increasing concern that dermal, inhalation, and incidental ingestion exposures resulting from non-drinking use of non-potable water (such as, showering and cooking) may also be important to evaluate. Water MEGs for non-drinking exposure scenarios have not been derived for several reasons: (1) there is limited data on dermal effects from exposure to chemicals in water, (2) government agencies have not published exposure standards for non-drinking purposes, and (3) use of the water MEGs should be protective for assessing most non-drinking exposures.

Nonetheless, screening criteria and risk assessment guidance for the assessment of water potentially used for hygiene, cooking, and other non-drinking uses have been provided in this section. The USAPHC currently recommends using 2.5 times the 5-L/day water MEGs (e.g., a 2-L/day MEG equivalent) for screening non-drinking water exposures (see Sections 3.4.3, 3.4.5.1, and 3.4.6.1). The water MEGs are based on toxicological data for health effects associated with ingestion of water and exposure assumptions of 5 and 15 L per day

consumption. These MEGS are often similar to civilian criteria and in some cases may be even lower (more protective) due to the assumption that deployed military personnel may consume significantly more than the typical US adult. The USEPA and other public health entities generally assume adults consume approximately 2 L per day when establishing water standards. These criteria are based on ingestion as a worst-case-exposure assumption, and therefore, the same criteria are considered adequate for other water usage, which would result in substantially less than 2 L/day ingestion. The use of a MEG adjusted to reflect USEPA-civilian exposure assumptions (that is, multiply by 2.5 to adjust from 5 L/day to 2 L/day) provides protective criteria for the prescreening and hazard identification of water supplies that are not drinking water supplies. Table 3-10 lists several water classifications and the MEGs that should be used to assess the different types of water based on the water classification and its intended use. These linkages provide general guidance for addressing water supplies; however, it is important to assess health risk based on the actual route(s) of exposure. For example, in assessing grey water use the non-drinking water MEG except in the unlikely scenario where grey water is ingested, in which case the drinking water MEGs should be used to assess the health risk from that exposure.

Table 3-10. MEGs to Use with Various Water Exposures*

Exposure Examples	MEG
Drinking water (ingestion) Water for brushing teeth Dining facilities food and drink prep.	Drinking Water MEG
Shower water Laundry water Heat casualty cooling Swimming SCUBA diving Dust abatement Construction Vehicle washing Mortuary Affairs	Non-Drinking Water MEG (2.5x the Water MEG) (used as the default)

Note:

* For these types of water, MEGs should only be used to characterize hazards associated with exposure to chemicals in the water. TB MED 577 is the guidance document to determine if water is potable, and MEGs should not be used for that purpose.

Note. According to military doctrine, potable water, including that used for nonconsumptive purposes, must still meet military field drinking water standards as described in TB MED 577. For those short-term MEGs that are based on TB MED standards, the standard itself, without adjustment, should be used to determine whether it meets potability requirements. The process described above may be used to assess severity of direct health risk from the specified parameter but does not reflect indirect effects such as those associated with aesthetic (taste/visual) qualities.

TB MED 577 includes Military Field Water Standards (MFWS) that are similar to the MEGs in many ways. The MFWS are intended to provide standards that ensure the sanitary use of water by troops in the field. TB MED 577 includes standards for many non-chemical parameters which are not covered by TG 230. TB MED 577 should always be the primary source used to assess the potability of a water supply and/or the sanitary use or disposal of non-drinking water. TG 230 should be used in conjunction with TB MED 577 to assess the health risk impact if water that does not meet the Tri-Service Field Water Standard (TSFWS) is consumed or used for non-drinking purposes. TB MED 577 provides guidance on when the TG 230 risk assessment process should be invoked to evaluate field water. TG 230 may also be used to assess the health risks of consuming drinking water or using non-drinking water that may contain any number of chemicals that are not included in the chemical parameters TB MED 577 covers. The MEGs have been carefully aligned with the MFWS in TB MED 577 to ensure that water that meets the MFWS for potability would not be flagged as a health risk by the TG 230 process.

The TB MED 577 2010 revision includes changes to the short- and long-term water quality standards. Compared to the 2005 version, the 2010 revision includes a reduction in the number of different short-term potability (STP) standards and a complete revision of the long-term potability (LTP) standards. The use of the 2005 TSFWS for short-term MEG development, as described within the USAPHC RD 230, does not cause conflicts with the 2010 STP standards because the revised STP standards are a subset of the 2005 standards. The revised LTP standards are primarily based on National Primary and Secondary Drinking Water Regulations for drinking water. FDA Bottled Water Standards are also included in the document for reference. During the development of the 1-year water MEGs, these Federal standards were examined in collaboration with the lead subject matter experts for the TB MED 577 revision so that the long-term (1-year) Negligible water MEGs would not conflict with the 2010 TB MED 577 LTP standards.

The water consumption rates of 5 L/day and 15 L/day for MEGs were established based on guidance from TB MED 577, the CASCOM water planning guide, and TB MED 507. Most civilian standards for drinking water tend to be based on a daily consumption rate of 2 L/day for a duration of 70 years. The increased consumption rates in TG 230 that are used to derive the MEGs are based on the previously mentioned documents that describe an increased consumption rate due to operational conditions and climate. Due to this, some MEG guidelines may be lower than guidelines derived using USEPA's default exposure assumptions even though they are based on the same dose of the chemical (i.e., drinking an increased amount of water daily would expose a person to a greater amount of a chemical each day, so the corresponding safe concentration of that chemical in the water would be lower). In many cases,

selection of the 5-L/day consumption rate for the water assessment after the prescreening step is advisable. Consumption rates approaching 15 L/day are unlikely in most scenarios, and are likely unsustainable for more than a few days. The “Heat: Work/Rest and water consumption chart” published by USAPHC recommends consumption of no more than 12 quarts (11.3L) of water per day (USAPHC Work/Rest Water Consumption Table available at <http://usaphcapps.amedd.army.mil/hioshoppingcart/viewItem.aspx?id=53>) (USAPHC 2011). Under strenuous combat conditions in hot arid climates, this limit may be exceeded, but is unlikely to be sustained for more than a few days. It is therefore recommended to use the 5 L/day consumption rate in TG 230 water assessments if a water sample fails the initial prescreen step unless there is clear evidence that water consumption rates were much higher during exposure.

While 7- and 14-day MEGs are published for 5-L/day and 15-L/day consumption rates and 1-year MEGs are published for 5-L/day consumption rates, these are general guideline intake rates. If more accurate intake rates are known, the MEGs can be adjusted on a proportional basis (linear interpolation between the higher and lower MEGs or extrapolation outside the available range) to match the known drinking rate and used in the assessment. This type of calculation should be reviewed by USAPHC before being finalized, and it is only recommended if the exposure fails the standard consumption rate water MEG pre-screen step.

If there are chemicals in water used for non-drinking purposes with concentrations greater than the above recommended screening criteria, USAPHC should be contacted for assistance.

3.5.3 Assessment of Airborne Particulate Matter

Particulate matter air pollution is a complex mixture of extremely small particles and liquid droplets in the air. When breathed in, some of these particles can reach the deepest regions of the lungs. Exposure to particle pollution is linked to a variety of significant health problems. Particulate matter pollution can be a major health and operational risk concern in some deployment environments. An accurate assessment of the health and operational risks of high concentrations of airborne PM in the deployment environment has been challenging for several reasons (see USAPHC RD 230).

Although PM may emanate from many sources, fossil-fuel combustion is the predominant source of particulate in areas with high population density, such as in the United States and the European Union. However, in some important deployed settings, blowing dust can be a major contributor to the total PM concentration. The size and composition of measured PM in deployment settings is directly relevant to the accurate assessment of PM health risks for deployed personnel. For this reason, the accurate health assessment of PM measurements must be accompanied by evaluations of the likely sources and composition of the measured particles.

3.5.3.1 Current Particulate Matter MEGs

Health criteria are not currently available for PM_{10} and $PM_{2.5}$ using the standard hierarchy of sources used for other chemical substances. Therefore, a specific methodology was developed for PM based, in part, on guidelines provided by the USEPA National Ambient Air Quality Standards (NAAQS) and air quality index (AQI) sub-indices, and recent USAPHC experience assessing PM risks in deployment settings.

Table 3-11 and Table 3-12 present the MEGs selected for PM. The USAPHC RD 230 provides a summary of the issues and the derivation of the current PM MEGs.

3.5.3.2 Limitations of the Current Particulate Matter MEGs

The level of protection provided by the short-term PM MEGs is uncertain due to a lack of directly relevant data and the limitations of the available data. Unfortunately, the long-term PM MEGs are considered highly uncertain, and their use should be associated with a low confidence ranking. Both sets of MEGs are likely to be revised pending continued USAPHC experience, new data and/or scientific analyses, and future recommendations of national scientific panels.

3.5.3.3 Evaluating Long-Term Exposures to Particulate Matter without $PM_{2.5}$ Data

The USAPHC no longer recommends any long-term MEGs for PM_{10} since the USEPA revoked the annual NAAQS for PM_{10} citing a lack of evidence linking health problems to long-term exposure to coarse particle pollution. Therefore, the current PM_{10} MEGs are for short-term exposures only; when PM_{10} exposures are assessed, the data must be evaluated to provide an acute health risk estimate for individual days and not averaged over a year. This is consistent with the current USEPA position, which considers the health risks of long-term exposures to PM to be primarily associated with the $PM_{2.5}$ fraction. Since historically many sampling protocols (to include both USEPA procedures as well as those developed for military deployments) have been designed to obtain PM_{10} data, there are many sites for which there may not yet be data for $PM_{2.5}$. In these situations, no long-term health risk to PM can be reasonably estimated without additional data. Where only PM_{10} data are available, health risk estimates should be limited to estimates of daily acute health effects. Site sampling for $PM_{2.5}$ is recommended in order to assess chronic exposure risks.

Table 3-11. Short-Term (24-hour) Particulate Matter Air MEGs*

Hazard Severity	PM _{2.5}	PM ₁₀	Description of Military Health and Operational Effects
Critical	500 µg/m ³	600 µg/m ³	Above these, most if not all personnel will experience very notable eye, nose, and throat irritation and respiratory effects. Visual acuity is impaired, as is overall aerobic capacity. Some personnel will not be able to perform assigned duties. Some lost-duty days are expected. Those with a history of asthma or cardiopulmonary disease will experience more severe symptoms.** Conditions may also result in adverse, non-health related materiel/logistical impacts.
Marginal	250 µg/m ³	420 µg/m ³	Above these, a majority of personnel will experience notable eye, nose, and throat irritation and some respiratory effects. Some lost-duty days are expected. Significant aerobic activity will increase risk. Those with a history of asthma or cardiopulmonary disease are expected to experience increased symptoms.**
Negligible	65 µg/m ³	250 µg/m ³	Above these, a few personnel may experience notable mild eye, nose, or throat irritation; most personnel will experience only mild effects. Pre-existing health conditions (e.g., asthma, or cardiopulmonary diseases) may be exacerbated.**

Notes:

* The MEGs and descriptors are based on professional judgment reflecting a consensus opinion of USAPHC subject matter experts.

** Diagnosis of pulmonary or cardiopulmonary diseases would prevent deployment, though some conditions may go undetected. A small percentage of deployed personnel fall into this sensitive group.

Table 3-12. Long-Term (1-year) Particulate Matter Air MEGs*

Hazard Severity	PM _{2.5}	PM ₁₀	Description of Military Health and Operational Effects
Marginal	65 µg/m ³	Not defined	With repeated exposures above this, it is plausible that development of chronic health conditions such as reduced lung function or exacerbated chronic bronchitis, chronic obstructive pulmonary disease (COPD), asthma, atherosclerosis, or other cardiopulmonary diseases could occur in generally healthy troops. Those with a history of asthma or cardiopulmonary disease are considered to be at particular risk. This guideline is an uncertain screening value—it is not a known health effects concentration.
Negligible	15 µg/m ³	Not defined	With repeated exposures above this, it is considered possible that a small percentage of personnel <u>may</u> have increased risk for developing chronic conditions, such as reduced lung function or exacerbated chronic bronchitis, COPD, asthma, atherosclerosis, or other cardiopulmonary diseases. Personnel with history of asthma or cardiopulmonary disease are considered to be at particular risk. Exposures below this are not expected to result in development of chronic health conditions in generally healthy troops.

Note:

* The MEGs and descriptors are based on professional judgment reflecting a consensus opinion of USAPHC subject matter experts. USAPHC no longer recommends long-term MEGs for PM₁₀. The Negligible MEG is the USEPA NAAQS standard reflecting a threshold level for the general population based on studies evaluating primarily children or individuals with cardiovascular and other diseases. Alternative standards for healthy adults do not yet exist. This MEG is considered a point of departure for further consideration and is not an action level.

3.5.4 Air MEGs and Aerosol Particle Size-Selector Issues

There are two basic types of air MEGS. Those developed for gasses/vapors and those developed for aerosols. The primary difference being that the gasses/vapors refer to the gaseous or vaporous state of the chemical, while aerosols refer to small particles (either solid or liquid droplets) in suspension in the air. Whenever air sampling for aerosols is conducted it is important to know the aerodynamic size range of aerosols the sampler is designed to collect. TG 230 strives to be a comprehensive source of information for as many chemicals as possible the data within is drawn from many different and varied sources, and therefore different aerosol MEGs may be based on different sampling methods with different particulate size selection behavior. At this time, it is important to note that there is the possibility that the field sample may collect a different particulate size range than those used in the studies underlying the development of the MEG. Therefore, this may result in an over or underestimation of risk,

depending on the actual size distribution of the aerosol in the field and the particle size-selective sampling device used.

When sampling for PM₁₀ or PM_{2.5} particulate matter for comparison to the respective MEGs, it is essential that the particle-size selective samplers conforming to PM₁₀ and PM_{2.5} criteria be used. Similarly, for other aerosols the sampling method used out in the field would ideally utilize a pre-selector that had the same particulate size selection behavior as the method used in setting the MEG; however, that is not always practical or even sometimes possible. For instance, some aerosol MEGs are based on or derived from an ACGIH TLV (see USAPHC RD 230). The ACGIH TLV booklet year used to derive the aerosol MEG should be consulted and the appropriate size-selective sampler should be used. Depending on the particular substance, the size-selective sampler should conform to size-selective criteria sampling criteria identified in the TLV booklet and will be identified as respirable (R), thoracic (T), inhalable (I), or will have no designation next to it. If there is no R, T, or I designation for the particular TLV, then it means that it is assessed as “total” particulate (TP) (using a 37-mm closed-face cassette).

3.5.5 Suggested Chemical Matching

Appendix D contains suggested matches between TG 230 chemical names and chemical names that may be used by the analytical laboratory. They should be used in situations where it would be inaccurate to publish a MEG under a particular chemical name or mixture. A table linking chemical names to the specific TG 230 MEG to use is provided in Table D-1, Appendix D.

3.5.5.1 Why Chemical Matches are Needed

There can be many ways to describe a chemical; some ways can be more specific than others, and in many cases two different names may describe the exact same chemical (e.g., tetrachloroethylene (CASRN: 127-18-4) is also referred to as perchloroethylene). The chemical matches in TG 230 are typically two slightly different chemicals that may be assessed utilizing a common MEG. These matches may be required because there is no toxicity data available from the standard sources used in USAPHC RD 230 to generate a MEG specific to the chemical or form of a chemical. In this case, a chemical match MEG is only assigned when another MEG is available for a generic form of the chemical, or there is evidence that a MEG for a similar chemical has a similar mode of action and the matched chemical is of equal or greater toxicity (thereby ensuring an equal or greater level of protection). Many times these links are required to match a form of a chemical from a laboratory analysis to the form that was sampled from the environment. A good example is the analysis of metals from PM filters. Most analytical methods used do not yield information on the compound within which the metal is contained. Instead, the laboratory typically only reports the total weight of the metal found on the filter. In these cases, the chemical match table may prove useful in directing risk assessors to utilize a specific air MEG that contains the metal the lab reported if there is no direct air MEG available.

3.5.5.2 When to use a Matched Chemical

Chemical matches should only be used when there is no MEG available for that chemical/media combination and a matched MEG is available. It is important to check the MEG tables in Appendix C for any common synonyms of the chemical of interest before using a matched MEG. It is typically easier to use the electronic MEG spreadsheet (distributed on the PHC website) to search for alternate MEG names and for CASRNs of chemicals. Table D-1 presents the suggested chemical matches. They are organized by the chemical and CASRN (if available) of interest and are linked to the primary MEG chemical name, CASRN, and MEG value. When using a matched MEG in a TG 230 risk assessment it is important to state which primary MEG (chemical and CASRN) was used in the write-up.

3.5.5.3 Uncertainty

It is important to emphasize that matched MEGs should only be used in an analysis when there are no standard MEGs available for that chemical. The use of matched MEGs introduces additional uncertainty in the final risk estimate due to the use of toxicity data not specifically for the chemical of interest. It is important to communicate this additional uncertainty alongside the final risk estimate at the end of the TG 230 process. In general, it is recommended that the use of matched MEGs would lower the uncertainty by a full degree (i.e., from high to medium or from medium to low); however, it is recommended that a Risk Assessment subject matter expert review any TG 230 assessments that make use of matched MEGs.

3.5.5.4 Chemical Match Types

Chemical matches can be divided up into different types based on the difference between the matched chemical and the MEG chemical to which it is linked. Some of these types are listed below with a brief description.

- **General Group:** Many of the current chemical matches are due to a group of similar chemicals being linked to a specific chemical. For example, toxicity data (and therefore a MEG for xylenes) may be available for a group of chemical such as xylenes, and the three xylene isomers (meta, para and ortho) would be matched to the xylenes MEG when there is no data available for the toxicity of the individual isomers.
- **Radionuclides and Deuterated compounds:** Laboratories may report radionuclides and/or deuterated compounds as part of their analysis of samples. TG 230 only applies to chemical toxicity of compounds, so chemical matches may be assigned to guide risk assessors to the correct MEG to use to assess chemical toxicity. Examples include using the Uranium soluble salts MEG to assess concentrations of U-238 and U-235 or using the benzene MEGs to assess concentrations of benzene-d6 found in samples.

- **Ions:** A laboratory may report a compound in a different ionic form than the form for which the toxicity data is reported. The herbicide Acifluorfen-sodium (CASRN 62476-59-9) may be listed as such in toxicity databases; however, in the environment Acifluorfen dissociates from the sodium ion and may be reported by a laboratory simply as Acifluorfen (CASRN 50594-66-6).
- **Environmental Form:** Many chemicals may be present in the environment in a different form than what the laboratory reports. Many metals in the environment are not present in their pure form, but oxidize to form metallic compounds that are then sampled. Most laboratory analyses for metals do not distinguish between these metallic compounds and simply report the total weight of metal in an environmental sample. Matched chemicals are used in this case to link a laboratory reported metal to the metallic compound MEG that should be used to assess these exposures. If specific metallic compounds are reported by the laboratory, these compounds should be used with their respective MEGs. However, when only a pure metallic compound is reported, matched chemicals should be used when a MEG is not available.
- **Multiple CASRNs and Synonyms:** Some chemicals may have multiple CASRNs associated with different chemical names. In this case, the matched chemical table is used to point the user to the CASRN and chemical name that is used in TG 230 (Table D-1). In this case, matched chemicals are more akin to synonyms and are used in lieu of duplicating chemical entries in the main MEG table with synonyms.
- **Special Instructions:** Some chemicals require special instructions to assess and do not have MEGs that apply to the individual chemical. Dioxin-like compounds are one such group. While there are no MEGs available for the individual dioxin-like conjoiners, TG 230 provides a method to assess these exposures. The matched chemical table (Table D-1) is used in this case to point the risk assessor to the correct section in TG 230 (Section 3.5.6 for dioxin-like compounds) that should be used to assess these exposures.

3.5.5.5 Updates to the Table

Table D-1 will be updated as needed. Chemicals that are candidates for inclusion into the table will typically lack toxicity data available from the standard sources used to generate the MEGs. There must also be an identified need for a MEG to complete an assessment. Chemicals that have available toxicity data outside the standard sources may be linked to a similar chemical with a similar mode of action and toxicity as an interim measure until the chemical specific toxicity data can be assessed and a standard MEG generated. Chemicals may be removed from the matched chemical table if a standard MEG is generated for that chemical or if there is additional data that indicates the current linkage does not adequately represent that chemical's toxicity.

3.5.5.6 Matched Chemicals as Defaults

The chemical matches are designed to guide a risk assessor to specific MEGs to use to assess environmental sampling data and as such are default choices. The assignment of the appropriate set of MEGs to the environmental data should be based on the most appropriate chemical match between the environmental data and the toxicity data used to generate the MEGs. Deviation from the default is expected when sufficient site-specific information is available to justify the use of a particular set of MEGs.

3.5.6 Dioxin-like Compounds

Dioxin-like compounds exist in the environment as mixtures and may include polychlorinated dibenzo-p-dioxins (PCDDs), polychlorinated dibenzofurans (PCDFs), and some coplanar polychlorinated biphenyls (PCBs). They share certain chemical structures and biological characteristics. Table 3-13 lists these compounds. The PCDDs and PCDFs are formed as a result of combustion processes such as commercial or municipal waste incineration and from burning fuels like wood, coal or oil. They are also produced naturally such as by forest fires and volcanic activity. Historically, commercial or municipal waste incineration, manufacture and use of certain herbicides, and chlorine bleaching of pulp and paper resulted in the major releases of dioxins to air and water. The dioxin-like PCBs are manufactured products that are no longer produced in the United States.

3.5.6.1 Prescreening

The maximum concentrations of the detected dioxin-like compounds should be summed without regard to toxicity equivalence factors (TEFs) and then evaluated relative to the standard rules (see Section 3.4.3) using the MEGs for 2,3,7,8-Tetrachlorinated dibenzo-p-dioxin (2,3,7,8-TCDD).

3.5.6.2 Acute Risk Assessments

Acute risk assessments of exposure to dioxin-like compounds should proceed as follows. The environmental concentrations for each congener should be summed without regard to the TEFs. This total concentration should then be compared to the short-term MEGs available for 2,3,7,8-TCDD.

3.5.6.3 Chronic Risk Assessments

Chronic risk assessments of exposure to dioxin-like compounds should proceed as follows. The environmental concentration (in air, water, or soil) for each congener is multiplied by the congener-specific TEF. Table 3-13 provides the most current, consensus-based TEFs for each congener (Van den Berg 2006). These TEQ concentrations are then summed across all detected dioxin-like compounds in the medium into a single value that represents the 2,3,7,8-

TCDD TEQ concentration for that medium. This single 2,3,7,8-TCDD TEQ concentration is then compared to the 2,3,7,8-TCDD MEG.

Table 3-13. Dioxin-like Compounds and Toxicity Equivalency Factors (TEFs)

Halogenated Aromatic Hydrocarbon Congener	CASRN	IUPAC No.	TEF
PCDD congeners			
2,3,7,8-Tetrachlorodibenzo- <i>p</i> -dioxin	1746-01-6	—	1
1,2,3,7,8-Pentachlorodibenzo- <i>p</i> -dioxin	40321-76-4	—	1
1,2,3,4,7,8-Hexachlorodibenzo- <i>p</i> -dioxin	39227-28-6	—	0.1
1,2,3,6,7,8-Hexachlorodibenzo- <i>p</i> -dioxin	57653-85-7	—	0.1
1,2,3,7,8,9-Hexachlorodibenzo- <i>p</i> -dioxin	19408-74-3	—	0.1
1,2,3,4,6,7,8-Heptachlorodibenzo- <i>p</i> -dioxin	35822-46-9	—	0.01
1,2,3,4,6,7,8,9-Octachlorodibenzo- <i>p</i> -dioxin	3268-87-9	—	0.0003
PCDF congeners			
2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	—	0.1
1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	—	0.03
2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	—	0.3
1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	—	0.1
1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	—	0.1
1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	—	0.1
2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	—	0.1
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	—	0.01
1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	—	0.01
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0	—	0.0003
PCB congeners			
3,3',4,4'-Tetrachlorobiphenyl	32598-13-3	77	0.0001
3,4,4',5-Tetrachlorobiphenyl	70362-50-4	81	0.0003
2,3,3',4,4'-Pentachlorobiphenyl	32598-14-4	105	0.00003
2,3,4,4',5-Pentachlorobiphenyl	74472-37-0	114	0.00003
2,3',4,4',5-Pentachlorobiphenyl	31508-00-6	118	0.00003
2',3,4,4',5-Pentachlorobiphenyl	65510-44-3	123	0.00003
3,3',4,4',5-Pentachlorobiphenyl	57465-28-8	126	0.1
2,3,3',4,4',5-Hexachlorobiphenyl	38380-08-4	156	0.00003
2,3,3',4,4',5'-Hexachlorobiphenyl	69782-90-7	157	0.00003
2,3',4,4',5,5'-Hexachlorobiphenyl	52663-72-6	167	0.00003
3,3',4,4',5,5'-Hexachlorobiphenyl	32774-16-6	169	0.03
2,3,3',4,4',5,5'-Heptachlorobiphenyl	39635-31-9	189	0.00003

Legend:

IUPAC = International Union of Pure and Applied Chemistry

3.5.7 Military Smokes and Obscurants

It is important to note that the MEGs for military smokes and obscurants should only be used for exposure to these specific smokes and not for the specific chemicals contained within the smoke (the converse is also true). There are air MEGs for the following military smokes and obscurants:

Hexachloroethane smoke
Diesel fuel smoke
White phosphorous smoke

Red phosphorous smoke
Titanium dioxide smoke
Brass smoke

Fog oil smoke
Graphite smoke

There are separate MEGs that should be used for inhalation exposure to diesel fuel vapor or hexachloroethane chemical exposure. For example, the inhalation toxicity of hexachloroethane smoke is attributed to the production of zinc chloride ($ZnCl_2$), the major component of the smoke, and not the chemical hexachloroethane (HC). Diesel fuel smoke is really a particulate in nature as it is composed of very small droplets of liquid diesel fuel. Therefore, even though there is diesel vapor in diesel fuel smoke, the diesel fuel smoke MEG covers the combination of both the droplets and vapor and should only be used as such.

3.5.8 Diesel Fuels, Diesel Engine Emissions, and Diesel Smoke

There are air MEGs for the following diesel-related compounds which represent different chemical mixtures and exposures. The information below provides clarity as to the similarities and differences between the compounds and how their MEGs should be applied.

- Diesel fuels (CASRN 68334-30-5). In general, diesel fuel usually refers to No. 2 fuel oil (standard heating oil) and what is purchased at the pump in the United States.
- Diesel fuel marine (CASRN 77650-28-3). Marine diesel is different from typical diesel fuel; whereas, it is usually a mixture of normal diesel (No.2 fuel oil) and some heavier fuel oil (No. 6, for example). This particular CAS number is usually compared to No. 4 diesel fuel. The air MEGs for diesel fuel marine are based on the inhalation of the vapors from the fuel.
- Diesel fuel smoke (no CASRN). Diesel fuel smoke refers to the military obscurant (i.e., smoke used to hide vehicles, troops, or their movements). This is usually formed by injecting diesel fuel into the exhaust manifold of a vehicle causing it to be vaporized and expelled with the exhaust (but not combusted). When it reaches the atmosphere it condenses into very small droplets that generate a white smoke. Diesel smoke is still uncombusted liquid diesel fuel that is suspended in the air in very small droplets. Diesel smoke contains a significant portion of diesel fuel vapors; additionally, it contains the small droplets of liquid in suspension. The air MEGs are based on the toxicity when these small droplets are inhaled in combination with the other constituents in the smoke.
- Diesel engine exhaust (no CASRN). Exposures to diesel engine exhaust are those associated with combusted diesel fuel that would come out of a standard engine exhaust. From past experience this is primarily a conglomerate of PM, sulfur oxide (SO_x), oxides of nitrogen (NO_x), carbon monoxide (CO), carbon dioxide (CO₂), and probably a very small portion of uncombusted or partially combusted fuel. Only a 1-year air MEG is available for this compound mixture, based on a chronic non-carcinogenic health endpoint from USEPA's IRIS database. The IRIS contains both carcinogenic and non-carcinogenic information for this compound. While IRIS does not provide a cancer-

based health criterion, it states that diesel exhaust is likely to be carcinogenic to humans by inhalation from environmental exposures.

3.5.9 Dealing with Typically Non-Hazardous Chemicals

Some chemical data received from routine laboratory analyses will include certain constituents that can be readily identified as “non-hazards.” These are primarily identified in soil analysis and include essential nutrients, minerals, and related parameters. They are found commonly in nature and are considered, at least at some level, beneficial or even necessary to the proper functioning of the human body. The USAPHC identified constituents as not being deployment hazards and in the past had not developed MEGs on the basis that they do not require evaluation. However, since the USEPA and other agencies have developed screening values presumably in an attempt to address laboratory results, the USAPHC felt compelled to follow suit. Soil constituents that are not considered to be hazards but may be reported with laboratory results are listed below.

Barium	Iron	Potassium
Calcium	Magnesium	Sodium

These substances do not need to be factored into a health risk assessment, but if laboratory results include these constituents and there is a need to address them, screening MEGs are now available consistent with USEPA and other agency publications. These constituents are generally only toxic when ingested in large amounts at high concentrations, which is not realistically feasible from soil ingestion at typical environmental concentrations.

The USAPHC notes that despite the health basis for the MEGs it has selected or derived, these constituents are generally of less concern than others detected. If concentrations of these constituents previously not identified as non-hazards are greater than the associated MEG, the significance is generally based on worst-case assumptions. The hazard severity should be considered Negligible.

3.5.10 Drinking Water Parameters

Drinking water analysis often includes parameters that may not cause adverse health effects but may aesthetically (e.g., color, taste, odor) make the water less palatable. This could lead to reduced consumption that could in turn result in indirect health effects from dehydration. The aesthetics of water is subjective and can develop into Soldiers’ perceptions of a health risk based on aesthetic factors only and not on sampling data. The context of how these perceptions are addressed will determine if concerns decrease or escalate. Therefore, integration of risk communication principles will be important when the aesthetics of water are in question. In addition, these parameters may be a useful source of information when evaluating water treatment system capabilities or as general indicators of potential unsanitary (microbial) conditions. The MEGs are not developed for physical, biological, or radiological parameters. Specific standards for these parameters are provided in TB MED 577 to ensure that aesthetic standards and general potable sanitary conditions are met.

4

RISK COMMUNICATION GUIDANCE

4.1 INTRODUCTION

According to the NRC, risk communication is defined as an “interactive process of information and opinion exchange with individuals, groups, or institutions about real or perceived risks” (NRC 1989). In the classic sense, risk communication situations are those that involve some level of concern/ conflict/ disagreement, and some degree of mistrust/ skepticism.

This widely accepted definition suggests that the most effective approach to communicating about risk involves both information exchange and/or communication processes. Delivery of information in a one-way fashion (e.g., via fact sheets or web pages) is traditionally a Public Affairs function within the Army/DOD and is vital to effective risk communication efforts. Informing and increasing awareness can be helpful to an individual’s assessment of risk.

However, one-way communication alone assumes that audience awareness, education, and understanding of a risk (and at times, support for risk mitigation measures) will increase as a result. However, social science research and the Army’s own experience/ history suggest this is not always the case. When concerns about possible deployment-related exposure are low, providing one-way information may be appropriate to address concerns adequately. Even then, one-way communication efforts should take place on a regular basis so that information transparency and availability is reinforced versus the layperson seeking information on their own (e.g., conducting a general internet search).

Defining high concern or what constitutes a risk communication situation will be issue- or site-dependent, but should be based on a risk-benefit analysis of possible outcomes (i.e., social, political, court of public opinion, and mission outcomes) if evidence-based risk communication tools are not adopted:

- Increased demand for additional environmental studies/ public health registries;
- Time/resources required to repeatedly discuss the same/ similar issues, allegations and concerns;
- Potential for unwanted or increased media/Congressional scrutiny; and
- Unit detraction from mission accomplishment as/if concerns become more widespread.

PVNTMED professionals can better assist in Command decision-making by effectively integrating proven risk communication tools and processes. This will help increase the chance

that communication actually takes place, while minimizing the risks of these unwanted outcomes. When done well, timely and effective risk communication can reduce stress, alleviate anxiety, and serve as a force multiplier by helping to ensure that deployed forces focus all of their physical and mental abilities on mission accomplishment.

It is important to note that while effective health risk communication will not guarantee a decrease in anxiety and/or stress levels, inadequate risk communication efforts will almost certainly increase them. Therefore, the goal of risk communication is to provide accurate and timely information in a manner that neutralizes or minimizes unnecessary concern about OEH risks in a deployed environment. Your goal is not to convince people of a particular position (e.g., the OEH risk is low), but to increase knowledge and understanding, build trust and credibility, and encourage appropriate decisions and behaviors (Center for Risk Communication 2006).

This section discusses basic risk communication concepts that would apply to situations where TG 230 methodologies are used, referenced or required, and it provides specific tools to assist in clearly communicating OEH risk assessment information when concerns and emotions are high.

Remember that risk communication expertise is available through USAPHC (see point of contact information at the end of Section 4).

4.2 DEPLOYMENT HEALTH RISK COMMUNICATION CHALLENGES

Communicating highly technical information by itself will be challenging due, in part to the level of technical detail and knowledge required to perform OEH risk assessments (e.g., results of an assessment, the associated risk matrix, rationale behind/ basis for assessment results). Other risk communication challenges will include the related uncertainties (e.g., field data quality, inhalation rate, exposure time), subjective assignment of confidence levels, “conservative” assumptions made (e.g., which in the end, depend on an individual’s perceptions of the suspected risk), and professional judgments applied. While helpful and necessary to risk assessment experts working to protect Soldier health, the OEH risk assessment process may be difficult to understand, and may be of little interest to those who are focused on identifying and mitigating specific health risks. Therefore, synthesizing and effectively communicating this process will present challenges for even the most skilled PVNTMED subject matter expert.

Consider three scenarios:

1. An OEH risk assessment of ambient environmental conditions results in low tactical and lifecycle risks and recommendations for no further sampling or risk mitigation action. However, base camp Soldiers still suspect an environmental cause for a negative health symptom/outcome may question the process used to assess the risk (e.g., why did you use the databases you did?), and possibly suspect the motives of those who conducted the assessment (e.g., an intentional “cover up” or “skewed” assessment) (MacGregor et. al. 1999). Ambient conditions throughout the world can generate any number of health

concerns, particularly when deployed settings are new, unfamiliar, involve extremes of any kind (e.g., high heat, little/ no precipitation), or the local environment results in environmental exposures just at or below the associated MEG. Depending on the location, temperature; air and water quality; local industrial operations or customs; and natural weather conditions, the geographic location of some deployed environments can create harsh living conditions, and result in deployment-related concerns. Although risk mitigation options for poor ambient conditions may be limited (e.g., naturally high dust levels), PVNTMED assets will still be required to communicate OEH risk assessments in a manner that increases awareness, confidence and understanding, yet appropriately minimizes health and/or safety concerns.

2. An unexpected exposure event occurs to a deployed unit (all or some portion), and concerns are understandably high. Although it is nearly impossible to collect environmental data during an actual event (unless sampling monitors are operating at the time or PVNTMED assets experience the same acute exposure), human nature will demand clear, near-instantaneous answers to exposure concerns. Modeling can certainly assist in defining potential past and/or future exposures and potential health outcomes, but on technical grounds, completely accurate predictions of health risk outcomes cannot be assigned to past, acute exposures. Communicating uncertainties, assumptions, and professional judgments in the face of high concern requires excellent risk communication tools and processes in order to be successful.
3. Finally, unit Commanders will look to PVNTMED assets to provide an accurate assessment of OEH risk that can readily be factored into overall risk management decisions. Commanders will want the BLUF, along with recommendations that can readily be turned into actions. Although communication needs may be different from the average Soldier, you will still be expected to communicate clearly, succinctly, logically, and with actionable items to make decision-making easier.

Although communicating technical information alone will be difficult, risk communication efforts can be clouded even further by psychological factors when concern is high and/or trust is low. Risks perceived to be involuntary, catastrophic or unfamiliar, for instance, will be psychologically processed as riskier than those that are not (Slovic 1987). These risk perception factors are just one of three identified sources of risk communication challenges:

1. High or widespread emotion (e.g., fear, anxiety, frustration, anger, etc.). Research by the CDC indicates that until emotions are acknowledged and addressed adequately, communication cannot take place (CDC 2009).
2. High degree of misperceptions/ misunderstandings. On average, the level of scientific understanding/ skill amongst Americans is low (~6th grade level) and media/social influence cannot be overstated.
3. Agendas that come into play (e.g., positioning for a specific outcome [e.g., lifetime healthcare, desire for a different job]).

Being aware of the mental heuristics in play and the potential sources of concern (e.g., emotion, perception, agenda) are crucial in defining appropriate risk communication messages and approaches. In risk communication situations, efforts should first focus on verifying or building the trust necessary to discuss risk issues productively, and include communication strategies to address the values and potential emotional outrage associated with a particular health risk (Sandman 2009).

Effective risk communication is no easy task. No one is born knowing what to say, how to respond, or when to begin communicating. Becoming a skilled risk communicator requires a:

- Willingness to get trained. Risk communication and media training can help broaden your skills, and increase your confidence in situations where mistrust/skepticism/scrutiny are high and understanding may be low.
- Willingness to consider the risks and benefits of not addressing concerns at the time they are identified; not considering the communication/involvement needs and expectations of those most directly affected by the risk; and not communicating well from the beginning.
- Commitment to communicating more effectively based on what science tells us. Although a relatively new field of research, risk communication findings and recommendations are based on decades of academic research.
- High degree of emotional and social intelligence (EI/SI), and willingness to identify/accept your own role in how concerns are addressed. Psychological research clearly indicates that people with high levels of EI/SI are more skilled at recognizing and managing emotions, have better listening skills, and are more democratic in dealing with others -- qualities necessary to be effective in risk communication situations (Goleman 1995).

4.3 GENERAL RISK COMMUNICATION GUIDELINES

Overall factors directly related to effective risk communication have been identified through years of evidence-based research. These factors can provide the context in which productive risk communication can take place, such as:

- **Trust/credibility** – Research clearly indicates that this is the foundation of effective risk communication efforts. In the absence of adequate knowledge and understanding about a risk, the layperson relies on trust in the institution and on the individual (“social trust”) to determine what is risky (Siegrist et al. 2001). Because this factor is so critical to effective risk communication, it is worth refocusing risk communication efforts over the long-term. Even though PVNTMED assets are assigned to 2- to 3-year tours, each individual’s risk communication abilities will impact those that follow you. Therefore,

trust-building actions, such as demonstrating empathy, offering open dialogue, transparent decision-making processes, accountability and timeliness should be factored into risk communication efforts to maintain or strengthen the social trust necessary to effectively discuss risk (Greenberg and Wartenberg 1991).

- **Importance of perceptions** – Perception of risk is reality for most people, regardless of the risk itself (e.g., health, safety, occupational), health risk results, and quantity or quality of data. From a public health perspective, the layperson’s perception about perceived exposures or possible latent health effects related to an acute or chronic exposure can be equally or more important than the quantitative technical data, in part due to the effort, resources and time required to address concerns effectively. Research indicates that “technical” (e.g., the PVNTMED expert) and “democratic” (e.g., the layperson) perceive risk differently, although both apply valid principles to do so: Technicals rely heavily on quantitative data and one-way education to communicate risk, while democrats focus on perceived equity of the risk, and violation of rights, particularly the right to be engaged in decisions about issues that directly affect them (Rowan 1994).
- **Non-standard meaning and inferences of language** – Scientific experts who perform OEH risk assessments rely heavily on standard “risk assessment” terminology to represent specific ideas or concepts: Environmental health risk, toxicity factors, exposure points, hazard, severity, probability, etc. However, social science research suggests that words and concepts, no matter how complex or simple, have different meanings to different people. Democrats’ processing of language and psychological determination of risk is also a complex process, involving mental heuristics, language interpretation, social trust (discussed above), and assessment of intent (Rowan 1994). Knowing that the meaning of words to some degree is processed by “inferring the intent of the speaker or communicator” reinforces the need for interactive risk communication processes to identify and understand expectations, attitudes and perceptions. This suggests that in risk communication situations, messages/ information should be developed carefully, balancing the information required to communicate OEH results clearly with the layperson’s communication needs/ expectations. Pre-tested messages/ information prior to use can be helpful in gauging clarity, intent, and meaning.
- **Two-way dialogue** – As mentioned above, addressing concerns about environmental exposures through a transparent process is known to be the most effective. Although the military operating tempo (OPTEMPO) often requires answers and decisions quickly, when time allows, two-way dialogue prior to or about a health risk decision is the most effective. To the extent possible, offering opportunities for discussions about health risk issues and related decisions can reinforce two-way dialogue; strengthen social trust between the layperson and leaders in charge of Force Health Protection; offer the layperson some level of control over the real/ perceived health risk; and increase understanding of the limitations and requirements involved in the decision-making process. For example, epidemiological difficulties associated with disease cluster investigations can often be overcome by developing a better understanding of the

public's awareness of an issue, their level and extent of emotion, and understanding of the investigation process itself to help build/ strengthen the trust necessary to effectively address community concern about the perceived presence or absence of a disease cluster (Williamson et al. 2005). Two-way risk communication processes can provide mutual benefits to the layperson and to the PVNTMED team by:

- **PVNTMED benefits –**
 - Better understanding the Soldier's level of knowledge and concerns about where/ when exposures may have occurred, and what health outcomes, if any, might warrant further assessment/ investigation;
 - Helping design the level of technical detail needed for Soldiers to better understand the assessment process (i.e., what the OEH risk assessment will and will not accomplish and why) and final results;
 - Helping identify what risk assessment methodologies and/or hypotheses may be acceptable to Soldiers;
 - Assisting in development of the most effective risk communication methods throughout the course of the assessment;
 - Helping garner the Soldier's understanding and "buy-in" of the evaluation process before final decisions are made regarding risk management or additional study.

- **Layperson benefits –**
 - Better understanding the OEH risk assessment process;
 - Better understanding the rationale behind why further health assessments and/or environmental monitoring may not be warranted;
 - Better understanding of the risk assessment methodological weaknesses and uncertainties faced by the PVNTMED experts; why they were unavoidable; and how they could impact the confidence level in the results;
 - Better understanding what questions the risk assessment will/ will not answer; what actions will/ will not be taken and why; and
 - Becoming more familiar with the technical concepts (e.g., assumptions, statistical significance, ascertainment), making the PVNTMED expert's job of communicating the risk results and progress easier, and potentially increasing the likelihood that Soldier concerns will be addressed more quickly.

4.4 COMMUNICATING RISK TO KEY AUDIENCES

Audiences potentially interested in and/or impacted by an OEH risk assessment are outlined below. Although the technical concepts and skills involved in an OEH risk assessment will likely not change (e.g., level of expertise, toxicity data), the most effective risk communication tools may vary based on audience communication needs, degree of social trust, expectations, and

real/ perceived impact of the health risk (e.g., infantry vs. communications). As a contributing factor in risk management decision-making, OEH information must be communicated to Command leaders first, followed by Soldier communications and risk communication to other audiences.

4.4.1 Communicating with Command Leadership

- Anticipate Command needs. Learn as much as possible about Command structure, to include leadership backgrounds, preferred briefing styles, level of technical knowledge, and expectations of you/PM support.
- Anticipate/identify:
 - The most difficult questions possible and develop key points to address them
 - Areas of high uncertainty and/or topics you wish to avoid and develop responses
 - Concerns related to confidence levels (e.g., if confidence level is low, why does the issue warrant a Commander's attention?) and develop responses
- Learn more about your predecessor's success (or failure) so you can be aware of potential baggage, "hot button" issues, areas of growing concern, etc.
- Coordinate ahead of time with all Command functions that may have a role in addressing/mitigating the OEH health risk being discussed/briefed (e.g., transportation, logistics, medical).
- Develop your briefing, keeping this suggested briefing outline in mind:
 - WHY: Gains attention, orients listeners to topic, purpose of briefing
 - WHAT: Contains 75 % of briefing content. Focus on three key messages with supporting data
 - HOW: Restate main points, include recommendations, issues to be followed up and by whom, conclude with final statement
- When possible, practice your presentation with colleagues whose feedback you value to increase your confidence level, polish your risk communication skills.

4.4.2 Communicating with Soldiers

- Accept that technical knowledge may be limited and take advantage of "teachable" moments. Although OEH risk assessments are difficult to explain and understand, use appropriate terminology when necessary followed immediately by a brief, understandable explanation.
- Know when facts/data should be secondary to a more empathetic response. Trivializing or discounting concerns/emotions will only serve to escalate them (e.g., "there's no

reason to worry about that..”). Verbally acknowledge validate risk perceptions and emotions related to a health risk, regardless of risk assessment findings.

- Limit technical data/statistics until perceptions/emotions related to the health risk have been identified/addressed, to the extent possible.
- Provide information in manageable “layers.” Offer concrete examples or actions. Doing so can help prioritize important information and provide the layperson with some level of control regarding the level of information detail.
- Reference 3rd party credible sources, when possible. For instance, stating that USEPA, OSHA, the National Research Council, etc., follow similar risk assessment guidelines can help demonstrate transparency, increase familiarity.
- Be sensitive that your own perceptions of Soldiers can make risk communication efforts more difficult. Assuming that a Soldier won’t understand the information, wouldn’t be interested in it, or is just trying to be difficult will only make risk communication efforts harder for you.
- Anticipate the most difficult questions and develop key points to reference in all potential responses:
 - “Will breathing high levels of dust for a year cause lung problems?”
 - “How did you determine the health risk to be low when I can smell chemical odors every night?”
 - “Why do you keep putting in burn pits when you know they’re bad for us?”
 - “What was I exposed to and how much?”
 - “How can the OEH air assessment be low when dust covers everything in camp?”
- Develop key messages/points that support the OEH assessment process and/or results that also balance the Soldiers’ communication needs, knowledge level, etc.. Messages should be short (7-15 words), understandable, memorable; use familiar words/terminology, active voice, personal pronouns (e.g., “I” vs. “the Army”). In risk communication situations, the ideal response is “key message + more detailed short answer.”
- Practice responding to difficult questions to increase your skill and confidence level (USACHPPM/Fulton Communications 2006):
 - Allow ventilation of emotions/opinions. Only you can decide how long this should last.
 - Express empathy. This must be sincere; faked empathy will backfire.
 - State key point(s). (see above)
 - Provide supporting facts for each point. Base the level of detail you provide on the layperson/audience preference.
 - Restate key point(s), to reinforce what you want the audience to remember.

- Discuss future steps/actions.
- Improve your non-verbal skills and strive to match words and actions.
- Be willing to say “I don’t know,” combined with specific actions and timeframes about how you will find the answer.

4.4.3 Communicating with Other Stakeholders (e.g., military family members, local nationals)

- Accept that technical knowledge about OEH risk assessments may be limited and take advantage of “teachable” moments.
- Know when facts/data should be secondary to a more empathetic response. Verbally acknowledge/validate risk perceptions and emotions related to a health risk, regardless of OEH findings.
- Limit technical data/statistics until perceptions/emotions related to the health risk have been identified/addressed to the extent possible.
- Provide information in manageable “layers.” Offer concrete examples or actions. Doing so can help prioritize important information and provide the layperson with some level of control regarding the level of information detail.
- Reference 3rd party credible sources, when possible. For instance, stating that USEPA, OSHA, the National Research Council, host nation government, etc., follow similar risk assessment guidelines can help demonstrate transparency, increase familiarity.
- Anticipate the most difficult questions/allegations and develop key points to reference in all potential responses:
 - “What are you going to do to get rid of the mold growing on my ceiling since it just started after Camp X was put in down the road?”
 - “I have lung cancer and I know it’s from your burn pits!”
 - “What was my husband exposed to at Camp X that could have caused his current health problems?”
 - “What kind of long-term health effects can I expect because I’ve been living near Camp “X” for so long?”
 - “Why didn’t you all tell us about this exposure before?”
- Develop key messages/points that support the OEH assessment process and/or results, but that also balance interests/concerns of the layperson.
- Practice responding to difficult questions to increase your skill and confidence level (see *Communicating with Soldiers* section above).

- Improve your non-verbal skills and strive to match words and actions.
- Be willing to say “I don’t know” combined with specific actions and timeframes about how you will find the answer.

4.4.4 Summary

Communication of health risk information requires very specialized skills gained by practiced and refined over time. Being aware of how risks are determined/ perceived and how to identify/ develop appropriate messages and two-way dialogue opportunities are critical to successful risk communication efforts. Discussions with media have not been covered in this section, since it too involves a specialized skill set. If you are approached by the media, you must coordinate with your unit Public Affairs Officer for guidance/ direction on how to proceed. Although risk communication can and will be challenging to PVNTMED experts involved in OEH risk assessments, adopting the proven tools and strategies discussed here will lead to successful interactions and more effective communications about health risk. Practice and preparation cannot be overstated enough, and risk communication support is available to you.

USAPHC’s risk communication experts are available to provide document development/review and consultation guidance on how to approach specific situations when needed.

USAPHC Health Risk Communication Program (HRCP):
Commercial: 410-436-3515 / Toll Free: 1-800-222-9698
USAPHC-HRCP@amedd.army.mil

**APPENDIX
A****REFERENCES**

ACGIH 2005. Threshold Limit Values for Chemical Substances and Physical Agents & Biological Exposure Indices. Cincinnati, OH: American Conference of Governmental Industrial Hygienists.

AR 11-35. Deployment Occupational and Environmental Health Risk Management, 16 May 2007.

AR 40-5. Preventive Medicine, 25 May 2007.

ASTM 2003. ASTM Standard E 2318-03, Standard Guide for Environmental Health Site Assessment Process for Military Deployments. ASTM International, December 2003.

ATSDR 2006a. Minimal Risk Levels (MRLs) for Hazardous Substances, Atlanta, Georgia: U.S. Department of Health and Human Services, Agency for Toxic Substances and Disease Registry [updated December 2006]. Available at: <http://www.atsdr.cdc.gov/mrls/index.html>.

ATSDR 2006b. Toxicological Profiles, Atlanta, Georgia: U.S. Department of Health and Human Services, Agency for Toxic Substances and Disease Registry. Available at: <http://www.atsdr.cdc.gov/toxpro2.html>.

AIHA 1989. American Industrial Hygiene Association. Odor Thresholds for Chemicals with Established Occupational Health Standards.

CASCOM 2008. Study Report: Water Planning Data. Prepared by Force Development Directorate, U.S. Army Combined Arms Support Command (CASCOM), Fort Lee, Virginia; 25 November 2008.

CDC 2009. Centers for Disease Control and Prevention, National Center for Health Marketing, Crisis and Emergency Risk Communication Guide. Available at: http://www.cdc.gov/communication/emergency/erc_overview.htm.

CDC 2005. Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, Pocket Guide to Chemical Hazards, NIOSH Publication No. 2005-149: September 2005. Available at: <http://www.cdc.gov/niosh/npg/>.

CDC 2004. Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health (NIOSH) Pocket Guide to Chemical Hazards, 97-140, February 2004.

Center for Risk Communication 2006. Center for Risk Communication Homepage. Available at: <http://www.centerforriskcommunication.com/home.htm>.

CJCS, 2007. Joint Staff Memorandum MCM-0028-07, Procedures for Deployment Health Surveillance. Office of the Chairman, The Joint Chiefs of Staff; 2 November 2007. Available at: https://ca.dtic.mil/cjcs_directives/cjcs/general.htm. (Supercedes Joint Staff Memorandum MCM-0006-02, Updated Procedures for Deployment Health Surveillance and Readiness. Office of the Chairman, The Joint Chiefs of Staff; 1 February 2002.)

DA 2007. Department of the Army, Telecommunications Subject: Change in Active-Duty Deployment Policy 1; signed by George W. Casey, Jr. Pete Geren, General, U.S. Army Acting Secretary of the Army Chief of Staff: April 13, 2007.

DA 2006. Department of the Army, Field Manual 5-19, Composite Risk Management, August 2006.

DA 2004. Department of the Army, Field Manual 1-02, Operational Terms and Graphics, 21 September 2004.

DA Pam 40-11. Preventive Medicine, Rapid Action Revision, 19 October 2009.

DATSD-CBD 2001. Memorandum, ATSD (CBD). SUBJECT: Interm Certification of Chemical and Biological Data. 27 Dec 2001.

DN 2012. Occupational and Environmental Health Site Assessment. (US Navy NTRP 4-02.9, U.S. Air Force AFTTP 3-2.82_IP, U.S. Army ATP 4-02.82) April 2012.

DoD 2009. Department of Defense Quality Systems Manual for Environmental Laboratories, Version 4. Prepared by the DoD Environmental Data Quality Workgroup; 19 March 2009.

DoD 2006a. Department of Defense Instruction (DoDI) Number 6490.03, Deployment Health, August 11, 2006.

DoD 2006b. Department of Defense Quality Systems Manual for Environmental Laboratories, Version 3. Prepared by the DoD Environmental Data Quality Workgroup, January 2006.

DoD 1999a. Department of Defense (DOD) Strategy to Address Low Level Exposures: 1999. "DOD Strategy to Address Low-Level Exposures to Chemical Warfare Agents (CWAs):" May 1999. (This document responds to the National Defense Authorization Act for Fiscal Year 1999 (H. Rpt. 105-736, sec.247: Chemical Warfare Defense, Public Law 105-261: October 17, 1998, p. 39 and p. 591)).

DoD 1999b. MIL-STD-1472F, Design Criteria Standard (Human Engineering), 23 August 1999.

DoD 1998. Department of Defense Instruction (DODI) Number 6055.1, DoD Safety and Occupational Health (SOH) Program, August 19, 1998.

EPA. 2006. EPA/600/R-06/063. Provisional Assessment of Recent Studies on Health Effects of Particulate Matter Exposure. July 2006.

EPA 2005a. Integrated Risk Information System (IRIS): accessed January 2005 and reviewed by ORNL/EPA in March 2005. Available at: <http://www.epa.gov/iriswebp/iris/index.html>.

EPA 2005b. EPA/630/P-03/001F. EPA Risk Assessment Forum, Guidelines for Carcinogen Risk Assessment. March 2005. Available at: <http://cfpub.epa.gov/ncea/raf/recordisplay.cfm?deid=116283>.

EPA 2005c. Special dataset update of the 1997 Health Effects Summary Tables (HEAST), provided to the U.S. Army Center for Health Promotion and Preventive Medicine, Environmental Health Risk Assessment Program. Washington DC: U.S. Environmental Protection Agency, Office of Superfund Remediation and Technology Innovation. March 2005.

EPA 2005d. Provisional Peer-Reviewed Toxicity Values for Superfund (PPRTV): U.S. Environmental Protection Agency. March 2005. Available at: <http://hhpprtv.ornl.gov/pprtv.shtml>.

EPA 2004. EPA/600-P-99/002bF. Air Quality Criteria for Particulate Matter Volume II of II. October 2004.

EPA 2003. Particle Pollution and Your Health. EPA-452/F-03-001: September, 2003. Office of Air and Radiation. U.S. Environmental Protection Agency, Washington, DC. Available at: <http://www.airnow.gov/index.cfm?action=static.publications>.

EPA 1989. EPA/50/189/002. Risk Assessment Guidance for Superfund, Volume I, Part A December 1989.

EPA 1988. Health Advisories for 50 Pesticides. U.S. Environmental Protection Agency, Washington, DC. (447 pages).

EPA 1987a. Health Advisories for 25 Organics. U.S. Environmental Protection Agency, Washington, DC. (397 pages).

EPA 1987b. Health Advisories for 16 Pesticides. U.S. Environmental Protection Agency, Washington, DC. (262 pages).

EPA 1986a. Guidelines for Carcinogen Risk Assessment, Federal Register 51:33992-34003. U.S. Environmental Protection Agency, Risk Assessment Forum, Washington, DC. September 24, 1986. Available at: <http://cfpub.epa.gov/ncea/raf/recordisplay.cfm?deid=116283>.

EPA/NRC 2007. Acute Exposure Guideline Levels. U.S. Environmental Protection Agency. Accessed May 2007. Available at: <http://www.epa.gov/oppt/aegl/chemlist.htm>.

FM 3-100.4/MCRP 4-11B. Environmental Considerations in Military Operations, June 15, 2001.

FM 3-100.12. Risk management: Multi-Service Tactics, Techniques, and Procedures for Risk management, 15 February 2001. (Also referred to as marine Corps Reference Publication 5-12.1C; Navy Tactics, Techniques, and Procedures 5-03-5; and Air Force Tactics, Techniques, and Procedures (MTTPs) (1) 3-2.34.)

Gilbert RO. 1987. Statistical Methods for Environmental Pollution Monitoring. New York (NY): John Wiley & Sons Inc.

Goleman D. 1995. Emotional Intelligence. Bantam Books, New York. pp 283-285.

Greenberg M, Wartenberg D. 1991. Communicating To an Alarmed Community About Cancer Clusters: A Fifty State Survey. *Journal of Community Health* 1991; 16(2):71-82.

Hauschild VD and Bratt GM. 2005. Prioritizing Industrial Chemical Hazards, *Journal of Toxicology and Environmental Health, Part A*, 68:857-876.

IARC 2006. IARC Monographs on the Evaluation of Carcinogenic Risks to Humans, Vol 1-88, IARC Press, Lyon, France, December 2006. Available at: <http://monographs.iarc.fr/index.php>.

IOM 1999. Potential Radiation Exposure in Military Operations: Protecting the Soldier Before, During, and After. Thaul, S and O'Maonaigh H (eds). Institute of Medicine, Committee on Battlefield Exposure Criteria, Medical Follow-up Agency, National Academy Press, Washington, DC. Available at: <http://www.nap.edu>.

Joint Publication (JP) 4-02 2006. Health Service Support, 31 October 2006. Available at: http://www.dtic.mil/doctrine/jel/new_pubs/jp4_02.pdf.

JP 4-02 2001. Doctrine for Health Services Support in Joint Operations, 30 July 2001.

MacGregor DG, Slovic P, Malmfors T. 1999. How Exposed Is Exposed Enough? Lay Inferences About Chemical Exposure. *Risk Analysis*, 1999; 19(4):649-659.

National Library of Medicine (NLM) 2006. Hazardous Substances Data Bank (HSDB). Accessed online in August 2006. Available at: <http://toxnet.nlm.nih.gov/>.

NMCPHC 2008. NMCPHC TM-PM 6490.2, Technical Guide for Collection of Environmental Sampling Data Related to Environmental Health Site Assessments for Military Deployments. Navy and Marine Corps Public Health Center, December 2008.

NRC 2004. Review of the Army's Technical Guides on Assessing and Managing Chemical Hazards to Deployed Personnel, Committee on Toxicology, Subcommittee on the Toxicological

Risks to Deployed Military Personnel, National Academy Press, Washington, DC. Available at: <http://www.nap.edu>.

NRC/COT 2003. Acute Exposure Guideline Levels for Selected Airborne Chemicals, Volume 3. Committee on Toxicology, Subcommittee on Acute Exposure Guideline Levels. National Academy Press, Washington, DC. Available at: <http://www.nap.edu>.

NRC 1999. Strategies to Protect the Health of Deployed U.S. Forces; Force Protection and Decontamination. Wartell, MA, Kleinman MT, Huey BM, and Duffy LM (eds). Commission on Engineering and Technical Systems, Division of Military Science and Technology, National Academy Press, Washington, DC. Available at: <http://www.nap.edu>.

NRC 1989. Improving Risk Communication. Committee on Risk Perception and Communication. National Academy Press, Washington, DC. Available at <http://www.nap.edu>.

NRC 1986. Criteria and Methods for Preparing Emergency Exposure Guidance Level (EEGL), Short-Term Public Emergency Guidance Level (SPEGL), and Continuous Exposure Guidance Levels, National Academy Press, Washington, DC. Available at <http://www.nap.edu>.

NSTC/PRD 1998. National Science and Technology Council/Presidential Review Directive 5, A National Obligation: Planning for Health Preparedness for and Readjustment of the Military, Veterans, and Their Families after Future Deployments. Office of Science and Technology Policy, Executive Office of the President.

Rowan K. 1994. Why Rules for Risk Communication Are Not Enough: A Problem-Solving Approach to Risk Communication. *Risk Analysis* 1994: 14(3):365-374.

Ruth J.H. 1986. Odor Thresholds and Irritation Levels of Several Chemical Substances: A Review. *American Industrial Hygiene Association Journal* (47), p. A-142-151.

Sandman P. 2009. The Peter M. Sandman Risk Communication Website. Accessed online in October 2009. Available at: <http://www.PSandman.com>.

Siegrist J, Cvetkovich GT, Gutscher H. 2001. Shared Values, Social Trust, and the Perception of Geographic Cancer Clusters. *Risk Analysis* 2001: 21(6):1047-1053.

Slovic P. 1987. Perception of Risk. *Science* 1987 (236):280-285.

TB MED 507. Heat Stress Control and Heat Casualty Management, 7 March 2003.

TB MED 577. Sanitary Control and Surveillance of Field Water Supplies, 1 May 2010.

USAPHC 2011. Health Information Product: "Heat: Work/Rest and Water Consumption Table Poster. Directorate of Environmental Medicine. August 2011

USAPHC (Prov) 2010. Reference Document 230, Methodology for Developing Chemical Exposure Guidelines for Deployed Military Personnel, June 2010 Revision.

USACHPPM 2009. Technical Guide 317, Technical Guide for Collection of Environmental Sampling Data Related to Environmental Health Site Assessments for Military Deployments., February 2009.

USACHPPM 2008. Technical Report No. 64-FF-07Z2-07, Health-Based Chemical Vapor Concentration Levels for Future Systems Acquisition and Development, July 2008. (Update to February 2008 report.)

USACHPPM 2006. USACHPPM Fact Sheet: Chlorine Improvised Explosive Devices and Preventive Medicine Actions 36-015-0407.

USACHPPM 2004. Technical Report No. 47-EM-5863-04, Acute Toxicity Estimation and Operational Risk Management of Chemical Warfare Agent Exposures, May 2004.

USACHPPM 2003. Technical Report No. 47-EM-6154-03, Industrial Chemical Prioritization and Determination of Critical Hazards of Concern, Technical Annex and Supporting documents for International Task Force (ITF)-40 (FOUO), 2003.

USACHPPM 2001a. TG 248, Guide for Deployed Military Personnel on Health Risk Management, October 2010.

USACHPPM/Fulton Communications 2006. Answering Difficult Questions (brochure). Available from the USACHPPM Risk Communication Program.

Van den Berg 2006. The 2005 World Health Organization Reevaluation of Human and Mammalian Toxic Equivalency Factors for Dioxin and Dioxin-Like Compounds. *Toxicological Sciences*, 93:223-241.

Weese C 2001. The Role of Susceptibility in Establishing Exposure Standards for Deployed Troops. U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM), Occupational and Environmental Medicine Program; December 2001. Published as Appendix F of the USACHPPM Reference Document 230 (RD 23) May 2003 Update.

Williamson DM, Millette D, Beauboeuf-Lafontant T, Henry JP, Atherton C. 2005. Including Residents in Epidemiologic Studies of Adverse Health Effects in Communities with Hazardous Exposures. *Journal of Environmental Health* 2005: 27(6):23-27.

29 CFR 1910.1025, Appendix C. Medical Surveillance Guidelines, July 2009.

40 CFR 58 (2006). "Appendix G –Uniform Air Quality (AQI) and Daily Reporting." Code of Federal Regulations Title 40, Part 58, Revised July 1, 2006.

71 Fed. Reg. (17 Oct 2006). “National Ambient Air Quality Standards for Particulate Matter: Final Rule.” Federal Register 61144, October 17, 2006.

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**APPENDIX
B**

**LIST OF ACRONYMS AND
HEALTH EFFECTS DESCRIPTIONS**

CONTENTS

Table B-1. Acronym List

Table B-2. Health Effects Acronyms and Descriptions

Table B–1. Acronym List

Acronym	Full Name
μci/L	microcurie per liter
μg/dL	microgram per decaliter
μg/kg	microgram per kilogram
μg/L	microgram per Liter
μg/m ³	microgram per cubic meter
μg/mg	microgram per milligram
μm	micrometer
ABS	dermal absorption fraction for soil
ABSGI	gastrointestinal absorption rate
ACGIH	American Conference of Governmental Industrial Hygienists
ADP	agent degradation product
AEGL	Acute Exposure Guideline Level
AEL	Airborne Exposure Limit
AF	soil-to-skin adherence factor
AFs/d	soil/dust absorption
Ah	Aryl hydrocarbon
AIHA	American Industrial Hygiene Association
Al	aluminum
ALM	adult lead model
AMEDD	U.S. Army Medical Department
AMEG	Air Military Exposure Guideline
AO	area of operation
AOR	area of responsibility
AQI	air quality index
As	arsenic
AT	averaging time
ATca	averaging time for carcinogens
ATnc	averaging time for non-carcinogens
ATSDR	Agency for Toxic Substances and Disease Registry
Ba	barium
BDU	battle dress uniform
BEI	biological exposure index
BW	body weight

Table B–1. Acronym List

Acronym	Full Name
C	ceiling limit
Ca	calcium
ca	cancer
CASRN	Chemical Abstract Service Registry Number
Cat	catastrophic
CBRN	Chemical, Biological, Radiological, and Nuclear
Cd	cadmium
CDC	Centers for Disease Control and Prevention
CEGL	Continuous Exposure Guidance Level
CENTCOM	Central Command
CF	conversion factor
CFR	Code of Federal Regulations
chr	chronic
cm	centimeter
cm/L	centimeter per liter
cm ²	square centimeter
cm ² /sec	square centimeter per second
cm ³	cubic centimeter
cm ³ /day	cubic centimeter per day
cm ³ /g	cubic centimeter per gram
cm ³ /hr	cubic centimeter per hour
cm ³ /kg	cubic centimeter per kilogram
CN	cyanide
CN/L	cyanide per liter
CO	carbon monoxide
CO ₂	carbon dioxide
COA	course of action
CONUS	continental United States
COPD	chronic obstructive pulmonary disease
COT	Committee on Toxicology
Crit	critical
CRM	composite risk management
CSF	cancer slope factor

Table B–1. Acronym List

Acronym	Full Name
CSFabs	dermal absorption cancer slope factor
CSFi	inhalation cancer slope factor
CSFo	oral cancer slope factor
CSM	Conceptual Site Model
CWA	chemical warfare agent
DA	U.S. Department of the Army
DA Pam	U.S. Department of the Army Pamphlet
DATSD-CBD	Deputy Assistant to the Secretary of Defense - Chemical and Biological (Warfare Agent) Defense
DIMP	diisopropyl methylphosphate
DL	detection limit
DMDC	Defense Manpower Data Center
DNBI	disease and non-battle injuries
DOD	Department of Defense
DODI	Department of Defense Instruction
DODVSA	Department of Defense Veterinary Service Activity
DOE	U.S. Department of Energy
DOEHRS	Defense Occupational Environmental Health Readiness System
EC	effective concentration
ECt01_severe	exposure concentration causing severe effects in 1 percent of the given population
ECt50_mild	exposure concentration causing mild effects in 50 percent of the given population
ECt50_severe	exposure concentration causing severe effects in 50 percent of the given population
ED	exposure duration
ED01	effective dose causing effects in 1 percent of the given population
ED50	effective dose causing effects in 50 percent of the given population
EEGL	Emergency Exposure Guidance Level
EF	exposure frequency
EGL	exposure guidance level
EPA	U.S. Environmental Protection Agency
EPMSP	Enhanced Particulate Matter Surveillance Program
ERPG	Emergency Response Planning Guideline
EV	event frequency
FDA	U.S. Food and Drug Administration

Table B–1. Acronym List

Acronym	Full Name
Fe	iron
FHP	Force Health Protection
FI	fraction ingested
FM	Field Manual
g/m ²	grams per square meter
g/mol	grams per mole
GA	tabun
GB	sarin
GD	soman
GF	cyclosarin
GI	gastrointestinal
GPL	general population limit
HA	drinking water health advisory
HAadj	adjusted drinking water health advisory
HAH	halogenated aromatic hydrocarbon
HBESL	Health-Based Environmental Screening Levels
HC	hexachloroethane
HCN	hydrogen cyanide
HD	sulfur mustard
HEAST	Health Effects Assessment Summary Tables
HQ	hazard quotient
HQDA	Headquarters Department of the Army
hr	hour
HSDB	Hazardous Substance Databank
IARC	International Agency for Research on Cancer
IDA	Institute for Defense Analysis
IDLH	Immediately Dangerous to Life and Health
IED	improvised explosive device
IMP	isopropyl methylphosphonate
IMPA	isopropyl methyl phosphonic acid
inter	intermediate
IOM	Institute of Medicine
IPB	Intelligence Preparatin of the Battlefield

Table B–1. Acronym List

Acronym	Full Name
IR	inhalation rate
IRA	adult inhalation rate
IRIS	Integrated Risk Information System
IRM	military inhalation rate
IRR	residential inhalation rate
IRs	soil ingestion rate
IRw	drinking water ingestion rate
IUPAC	International Union of Pure and Applied Chemistry
JP	joint publication
K	potassium
Kd	soil-water partition coefficient
kg	kilogram
kg/m ³	kilogram per cubic meter
L	liter
L/day	liter per day
LC	lethal concentration
LC01	statistically determined lethal concentration for 1 percent of the exposed population
LC50	statistically determined lethal concentration for 50 percent of the exposed population
LCLO	lowest lethal concentration
LCt	lethal concentration
LCt16	lethal concentration in 16 percent of a given population
LOAEL	lowest-observed adverse effect level
LOD	limit of detection
LOQ	limit of quantification
LTP	Long-Term Potability Standards
m/hr	meters per hour
m/s	meters per second
m ³ /day	cubic meter per day
m ³ /hr	cubic meter per hour
m ³ /kg	cubic meter per kilogram
Marg	marginal
MAX	maximum soil concentration
MCL	maximum contaminant level

Table B–1. Acronym List

Acronym	Full Name
MCLG	Maximum Contaminant Level Goal
MDL	method detection limit
MEG	Military Exposure Guideline
METT-TC	Mission, Enemy, Terrain and Weather, Troops, Time, Civilian Considerations
MFWS	Military Field Water Standards
Mg	magnesium
mg/cm ²	milligram per square centimeter
mg/day	milligram per day
mg/kg	milligram per kilogram
mg/kg-day	milligram per kilogram per day
mg/L	milligram per liter
mg/m ³	milligram per cubic meter
MIL-STD	Military Standard
MOPP	mission-oriented protective posture
MPA	methyl phosphonic acid
MRL	Minimal Risk Level
MSSL	medium-specific screening levels
MW	molecular weight
NA	not applicable
NAAQS	National Ambient Air Quality Standards
NAPL	non-aqueous phase liquid
nc	non-cancer
NCEA	National Center for Environmental Assessment
NCHS	National Center for Health Statistics
NCI	National Cancer Institute
Neg	negligible
NG	National Guard
NIOSH	National Institute of Occupational Safety and Health
NLM	National Library of Medicine
NMCPHC	Navy and Marine Corps Public Health Center
NO	nitric oxide
NO ₂	nitrogen dioxide
NOAEL	no-observable adverse effect level

Table B–1. Acronym List

Acronym	Full Name
NO _x	oxides of nitrogen
NRC	National Research Council
NRC/COT	National Research Council Committee on Toxicology
NSTC	National Science and Technology Council
NSTC/PRD 5	National Science and Technology Council/Presidential Review Directive 5
NTU	nephelometric turbidity units
O ₃	ozone
OAQPS	EPA Office of Air Quality Planning and Standards
OCONUS	outside the continental United States
OEF	Operation Enduring Freedom
OEH	occupational and environmental health
OIF	Operation Iraqi Freedom
ORD	EPA Office of Research and Development
ORISE	Oak Ridge Institute for Science and Education
ORM	Operational Risk Management
ORNL	Oak Ridge National Laboratory
OSHA	Occupational Safety and Health Administration
PAH	polycyclic aromatic hydrocarbon
Pb	lead
PbB1	background blood lead concentration in adult male
PbB2	target blood lead level
PCB	polychlorinated biphenyl
PCDD	polychlorinated dibenzo-p-dioxin
PCDF	polychlorinated dibenzofuran
PEF	soil particulate emission factor
PEGL	permissible exposure guidance level
PEL	Permissible Exposure Limit
PEPC	population exposure point concentration
PHC	Public Health Command
PM	particulate matter
PM ₁₀	particles with an aerodynamic diameter 10 microns or smaller
PM _{2.5}	particles with an aerodynamic diameter 2.5 microns or smaller
PMEG	preliminary 1-year AMEG

Table B–1. Acronym List

Acronym	Full Name
PNOR	particles not otherwise regulated
PNOS	Particles (insoluble or poorly soluble) not otherwise specified
PPEGL	permissible public exposure guidance level
ppm	parts per million
PPRTV	Provisional Peer Reviewed Toxicity Values
PRD	Presidential Review Directive
PRG	Preliminary Remediation Goal
PTE	population threshold estimate
RAGS	Risk Assessment Guidance for Superfund
Rb	rubidium
RBC	Risk-Based Concentration
RD	reference document
RDX	cyclotrimethylenetrinitramine
REGL	repeated exposure level
REL	Recommended Exposure Limit
RfC	reference concentration
RfCchr	chronic reference concentration
RfCsub	subchronic reference concentration
RfD	reference dose
RfDabs	dermal absorption reference dose
RfDo	oral reference dose
RL	reporting limit
RPEGL	repeated public exposure guidance level
RSC	relative source contribution
S	water solubility
SA	skin surface area
SAT	soil saturation concentration
Sb	antimony
SCAPA	Subcommittee on Consequence Assessment and Protective Actions
sec/hr	seconds per hour
Si	silicon
SMEG	Soil Military Exposure Guideline
SO ₂	sulfur dioxide

Table B–1. Acronym List

Acronym	Full Name
SOH	DOD Safety and Occupational Health Program
SOx	sulfur oxides
SPEGL	Short-Term Public Emergency Guidance Level
Sr	strontium
SRC	Syracuse Research Corporation
SSL	soil screening level
STANAG	Standardization Agreement
STEL	short-term exposure limit
STP	Short-Term Potability Standards
sub	subchronic
SVOC	semivolatile organic compound
TB MED	Technical Bulletin, Medical
TCDD	2,3,7,8-Tetrachlorodibenzo-p-dioxin
TCR	target cancer risk
TDS	total dissolved solids
TEEL	Temporary Emergency Exposure Limits
TEF	toxicity equivalence factor
TEQ	toxicity equivalence
TG	technical guide
THQ	target hazard quotient
Ti	titanium
TIC	toxic industrial chemical
TIM	toxic industrial material
TLV	threshold limit value
TLVadj	adjusted threshold limit value
TLVc	threshold limit value ceiling limit
TMM	Textbook of Military Medicine
TPH	total petroleum hydrocarbon
TRW	Technical Review Workgroup
TSFWS	Tri-Service Field Water Standard
TSP	total suspended particulate
TWA	time-weighted average
UF	uncertainty factor

Table B–1. Acronym List

Acronym	Full Name
UR	unit risk
URF	unit risk factor
URFi	inhalation unit risk factor
URFo	oral unit risk factor
URi	inhalation unit risk factor
URo	oral unit risk factor
USACASCOM	U.S. Army Combined Arms Support Command
USACHPPM	U.S. Army Center for Health Promotion and Preventive Medicine
USAMEDD	U.S. Army Medical Department
USAPHC	U.S. Army Public Health Command
USARIEM	U.S. Army Research Institute of Environmental Medicine
USCENTCOM	U.S. Central Command
V	vanadium
VF	soil-to-air volatilization factor
VOC	volatile organic compound
VX	nerve agent VX
WHO	World Health Organization
WMEG	Water Military Exposure Guideline
WOE	weight-of-evidence
WPL	worker population limit
yr	year
Zn	zinc
ZnCl ₂	zinc chloride
Zr	zirconium

Table B–2. Health Effects Acronyms and Descriptions

Acronym	Full Name	Description
abdom	abdominal	The part of the body occupying the space between the chest and the pelvis.
abnor	abnormal/abnormalities	Not conforming to type or standard.
	acidosis	Decrease of alkali in the blood, which may result in a decrease in the pH. Symptoms include very deep respirations, dehydration, drowsiness, stupor, or coma.
album	albuminuria	The finding of albumin on urine analysis, which may indicate kidney disease.
	alopecia	Loss of hair (in humans), wool or feathers (in animals).
	analgesia	Insensibility to pain without loss of consciousness.
	anemia	A condition in which the blood is deficient in red blood cells, in hemoglobin, or in total volume.
anes	anesthesia	Loss of sensation, usually produced in order to permit a painless surgical operation.
	angina	A disease marked by spasmodic attacks of intense suffocative pain; often of the chest and as a result of coronary artery spasm.
anor	anorexia	Lack or loss of the appetite for food.
anos	anosmia	Loss of the sense of smell.
	anoxia	Lack of oxygen.
	anuria	Complete urinary suppression or failure of kidney function.
	anxi	anxiety
anxi	aphonia	Loss of voice and of all but whispered speech.
	aplastic	Pertaining to a anatomical undevelopment of organs or cells; aplastic anemia is a condition in which the bone marrow may not be producing adequate numbers of blood elements.
	apnea	Transient cessation of respiration.
arrhy	arrhythmias	Lack of rhythm, applied especially to irregularities of heart beat.
	asbestosis	A pneumoconiosis due to asbestos particles.
asphy	asphyxia	Suffocation.
aspir	aspiration	Sucking up a fluid or solid into the respiratory tract.
	asthenia	Lack or loss of strength.

Table B–2. Health Effects Acronyms and Descriptions

Acronym	Full Name	Description
	asthma	A condition often of allergic origin that is marked by continuous or paroxysmal labored breathing accompanied by wheezing, by a sense of constriction in the chest, and often by attacks of coughing or gasping.
	ataxia	Inability to coordinate muscles in movement.
	atrophy	Decrease in size or wasting away of a body part or tissue.
	azotemia	An excess of urea and other nitrogenous waste in the blood resulting from kidney damage or failure.
	berylliosis	Poisoning resulting from exposure to fumes and dusts of beryllium compounds or alloys and occurring chiefly as an acute pneumonitis or as a granulomatosis involving esp. the lungs.
	blepharospasm	A twitching or spasmodic contraction of eyelid.
BP	blood pressure	The force or pressure exerted by the heart in pumping blood from its chambers.
	bradycardia	Abnormally slow heartbeat below a rate of 60 beats per minute.
breath	breath/breathing	Air which is inhaled and exhaled.
bron	bronchitis	Inflammation of the bronchial tubes.
	byssinosis	An occupational respiratory disease associated with inhalation of cotton, flax, or hemp dust and characterized initially by chest tightness, shortness of breath, and cough, and eventually by irreversible lung disease -- called also brown lung.
	cachexia	A state of ill health, malnutrition and wasting.
	calcification	The deposit of calcium in tissues of the body.
carc	carcinogen	Potential occupational carcinogen.
card	cardiac	Relating to the heart.
	casts	Usually renal casts, found in the urine (can denote kidney disease).
	chloracne	Acne-like disruptions over the body resulting from exposure to certain chlorinated hydrocarbons such as dioxins.
	cholestasis	Blockage of the flow of bile resulting in increases of bilirubin in the blood.
chol	cholinesterase	An enzyme that breaks down the neurotransmitter acetylcholine to stop its action.
ChE Inh	cholinesterase inhibitor	
	chorea	A nervous disease characterized by involuntary and irregular movements of the muscles of the limbs and face.

Table B–2. Health Effects Acronyms and Descriptions

Acronym	Full Name	Description
cirr	cirrhosis	An inflammatory disease of the liver associated with the replacement of liver cells by fibrous tissue.
	clonic	Referring to jerky muscle contractions or spasms.
	colic	Severe abdominal pain.
conc	concentration	The total quantity of a substance present in a given volume of a gas or liquid.
conf	confusion	A mental state marked by mingling of ideas and feelings resulting in disorientation and inability to resolve a problem.
conj	conjunctivitis	Inflammation of the mucous membrane that lines the inner surface of the eyelids and is continued over the forepart of the eyeball.
constip	constipation	Difficult bowel evacuation, occurring at prolonged intervals.
convuls	convulsions	A violent, uncontrolled muscle spasm, or a series of them, sometimes repeated at rapid intervals.
corn	corneal	The tissue that covers the pupil and iris of the eye.
	coryza	The common cold; acute rhinitis.
cyan	cyanosis	Bluish discoloration of the skin, caused by inadequate oxygenation of the blood.
	cystitis	Inflammation of the urinary bladder; accompanied by pain and frequency of urination.
decr	decreased	
depres	depressed/depression	Dejection; melancholia.
derm	dermatitis	Inflammation of the skin.
	desquamation	Shedding of outer layer of skin.
diarr	diarrhea	Increased frequency and liquid consistency of the stools.
dist	disturbance	
	diuresis	An increased excretion of urine.
dizz	dizziness	The condition of being dizzy; a sensation of unsteadiness accompanied by a feeling of movement within the head.
drow	drowsiness	
	dysphagia	Difficulty in swallowing.
	dysphonia	Difficulty in speaking; hoarseness.
dysp	dyspnea	Breathing difficulty.
	dysuria	Impaired ability to pass urine.

Table B–2. Health Effects Acronyms and Descriptions

Acronym	Full Name	Description
	ectopic	Occurring in an abnormal position.
	eczema	An inflammatory condition of the skin characterized by redness, itching, and oozing vesicular lesions which become scaly, crusted, or hardened.
	edema	An abnormal excess accumulation of serous fluid in connective tissue or in a serous cavity.
EKG	electrocardiogram	The recording of the electrical impulses of the heart.
EEG	electroencephalogram	Tracing of brain waves produced by an encephalograph (an apparatus for detecting and recording brain waves).
emphy	emphysema	A condition in which the air spaces in the lungs are enlarged.
	encephalopathy	A disease of the brain.
eosin	eosinophilia	An abnormally large number of eosinophils (red staining white blood cells) in the circulating blood.
	epigastric	Refers to the upper central portion of the abdomen between the lower ribs and the umbilicus (belly button).
epilep	epileptiform	Resembling that of epilepsy.
epis	epistaxis	Nose bleed.
equi	equilibrium	Balance.
eryt	erythema	Skin redness.
euph	euphoria	An exaggerated state of well-being.
	exertional	Referring to a condition that develops upon the act, or following the expenditure, of effort.
	expectoration	The act or an instance of expectorating (to eject matter from the throat or lungs by coughing or hawking and spitting).
	extrasystoles	A heartbeat occurring before its normal time; extrasystoles create an irregular rhythm, commonly referred to as a "skipped beat".
fail	failure	A state of inability to perform a vital function.
fasc	fasciculation	A small local contraction of muscles; visible through the skin.
ftg	fatigue	Tiredness; weariness; exhaustion.
fib	fibrosis	Replacement of the normal components of a structure by fibrous tissue.
	flush	To blush, to become red; to cleanse a wound by dowsing it with water or salt solution.
FEV	forced expiratory volume	
func	function	Any of a group of related actions contributing to a larger action.

Table B–2. Health Effects Acronyms and Descriptions

Acronym	Full Name	Description
	gastritis	Inflammation esp. of the mucous membrane of the stomach.
	gastroenteritis	Inflammation of the stomach and intestines, usually accompanied by vomiting and diarrhea.
	gingival	Referring to the gums; the tissue surrounding the teeth.
	goiter	An enlargement of the thyroid gland that is commonly visible as a swelling of the anterior part of the neck.
	granuloma	A mass or nodule of chronically inflamed tissue with granulations that can be associated with an infective process, trauma, presence of a foreign body (e.g., talc, oil, beryllium), or exposure to certain salts.
	granulomatous pneumonitis	Inflammation of the lung which may result from inhalation of organic dusts by persons sensitized to antigens in the dusts ("farmer's lung").
halu	hallucinations	Imagined or false sense perception.
head	headache	Pain in the head.
	hematoma	A mass of usually clotted blood that forms in a tissue, organ, or body space as a result of a broken blood vessel; "blood blister".
hemato	hematopoietic	The formation of blood or blood cells in the body.
hema	hematuria	Blood in the urine.
	hemoglobinuria	The presence of hemoglobin the urine.
	hemolysis	Destruction of red blood cells and escape of the hemoglobin within the bloodstream.
	hemolytic anemia	Abnormal destruction of red blood cells resulting in a decrease in the number of cells in the blood and presence of free hemoglobin, which can lead to acute renal failure.
	hemoptysis	Spitting of blood arising from hemorrhage of the larynx, trachea, bronchial tubes, or lungs.
hemorr	hemorrhage	Escape of blood from the blood vessels,
	hepatitis	Inflammation of the liver.
	hyperkeratosis	Overgrowth of the of the horny layer of the skin (stratum corneum); can also be an overgrowth of the tissue covering the pupil of the eye (cornea).
hyperpig	hyperpigmentation	Excess pigmentation in a bodily part or tissue (as the skin).
	hyperplasia	Abnormal but non-cancerous increase in the number of cells in a tissue or organ.
	hyperpnea	Abnormally rapid or deep breathing.
	hyper-reflexia	Over-activity of physiological reflexes.

Table B–2. Health Effects Acronyms and Descriptions

Acronym	Full Name	Description
	hypertension	Elevated blood pressure.
	hyperthermia	Elevated body temperature.
	hypochromic	Deficiency of color or pigmentation; deficiency of hemoglobin in the red blood cells.
	hypokalemia	A deficiency of potassium in the blood.
	hypotension	Reduced blood pressure.
	hypothermia	Decreased body temperature.
hypox	hypoxemia	Reduced oxygen in the blood.
	immunosuppression	Suppression of the immunologica response, leading to decreased resistance to disease.
inco	incoordination	Lack of coordination; inability to control muscle activity.
incr	increased	
inebri	inebriation	Drunkenness.
inflamm	inflammation	The reaction of tissues to injury; manifested by pain, heat, swelling, and redness.
ing	ingestion	To eat.
inh	inhalation	The act of breathing in.
inj	injury	Hurt, damage, or loss sustained.
insom	insomnia	Sleeplessness.
irreg	irregular/irregularities	Lacking perfect symmetry of form.
irrity	irritability	The property of protoplasm and of living organisms that permits them to react to stimuli.
irrit	irritation	A condition of inflammation, soreness, or irritability of a bodily organ or part.
jaun	jaundice	A yellow staining or darkening of the skin, whites of the eyes, and excreta due to increased bile pigments in the blood and tissues.
kera	keratitis	Inflammation of the cornea.
kerato-conj	keratoconjunctivitis	Combined inflammation of the cornea and conjunctiva.
lac	lacrimation	Discharge of tears.
	laryngitis	Inflammation of the larynx.
lar	laryngeal	Of, relating to, affecting, or used on the larynx.

Table B–2. Health Effects Acronyms and Descriptions

Acronym	Full Name	Description
lass	lassitude	Weakness, exhaustion.
	leucoplakia	A condition commonly considered precancerous in which thickened white patches of epithelium occur on the mucous membranes esp. of the mouth, vulva, and renal pelvis.
leucyt	leukocytosis	Increased blood leukocytes.
leupen	leukopenia	Reduced blood leukocytes.
liq	liquid	Flowing freely in a manner similar to that of water; neither solid nor gaseous.
local	localized	Occurs at the site of bodily contact.
	lymphocytosis	An increase in the number of lymphocytes in the blood usually associated with chronic infections or inflammations.
mal	malaise	Vague feeling of discomfort.
malnut	malnutrition	State of being undernourished or poorly nourished.
	mania	Excitement of psychotic proportions manifested by mental and physical hyperactivity, disorganization of behavior, and elevation of mood.
methemo	methemoglobinemia	Condition in which the oxidation state of iron in hemoglobin is abnormal leading to decreased availability of oxygen to the body tissues.
	miosis	Contraction of the pupil (pin-pointed pupil).
	monocytosis	Excessive number of monocytes (a type of white blood cell) in the blood.
	mucosa	Mucous membrane; membrane lining bodily channels that communicate with air (i.e., mouth, respiratory tract, eye); glands of mucous membranes secrete mucous.
muc memb	mucous membrane	A surface membrane composed of cells which secrete various forms of mucus.
musc	muscle	Tissue composed of fibers which have the ability to elongate and shorten, thus causing bones and joints to move.
	myalgia	Pain in one or more muscles.
	mydriasis	Dilation of the pupil.
	myocardial	Of, relating to, or involving the myocardium (the middle muscular layer of the heart wall).
	myoclonic	Of, relating to, characterized by, or being myoclonus (seizures).
narco	narcosis	Stupor or deep unconsciousness; can be caused by exposure to a number of chemicals. Differs from anesthesia which refers to the loss of sensation (e.g., pain) or touch and can be local or general.

Table B–2. Health Effects Acronyms and Descriptions

Acronym	Full Name	Description
nau	nausea	The feeling that one may vomit.
nec	necrosis	Death of tissue.
neph	nephritis	Inflammation of the kidneys.
numb	numb/numbness	Diminished sensation.
	ochronosis	A metabolic condition associated with brown discoloration of the facial skin, whites of the eyes, and tissues of the muscle and cartilage.
opac	opacity	The quality of not being transparent.
	pallor	Paleness of the skin.
	palmar/plantar hyperkeratoses	An overgrowth of the horny layer of skin (stratum corneum) found on either the palm of the hand (palmar) or the sole of the foot (plantar).
palp	palpitations	Perceptible irregular or rapid beating or pulsation of the heart.
	palsy	Nerve paralysis or degeneration; a common manifestation is trembling of the hands.
	papule	A small solid usually conical elevation of the skin caused by inflammation, accumulated secretion, or overgrowth of tissue elements.
para	paralysis	Inability to use muscles because of disease or injury of the nerves which supply them.
	paresis	Slight or partial paralysis.
pares	paresthesia	Burning prickling, tingling, or tickling sensation.
	paroxysmal	Recurring in sudden, periodic attacks or intensification of symptoms of a disease.
perf	perforation	Pierced, ruptured; having a hole through it.
periorb	periorbital	Situated around the eye.
peri neur	peripheral neuropathy	Abnormal state of the nerves supplying the hands, arms and legs, and other areas outside of the central nervous system.
phar	pharyngeal	Relating to or located in the region of the pharynx.
photo	photophobia	Abnormal visual intolerance to light.
	pneumoconiosis	A disease of the lungs caused by the habitual inhalation of irritants (as coal dust).
pneu	pneumonitis	Inflammation of the lung.
polyneur	polyneuropathy	Disease involving a number of peripheral nerves (e.g., nerves in the hands, feet or legs).
	polyuria	Excessive secretion of urine.

Table B–2. Health Effects Acronyms and Descriptions

Acronym	Full Name	Description
	porphyria	A metabolic (often hereditary) condition often characterized by skin photosensitivity and lesions, abdominal colic, mental disturbance, etc.
	porphyria cutanea tarda	A metabolic disorder in which reddish pigments or porphyrins are produced in the liver. The excess pigments accumulate in the skin where they are activated by visible light which causes photosensitive skin reactions characterized by skin erosions and blistering. These painful sores resolve slowly and may result in scarring, hair loss, and skin atrophy. Excess porphyrins are excreted in the urine which becomes colored dark red or brown as a result.
	precordial	Pertaining to the region over the heart and lower part of the thorax.
	prostration	Marked loss of strength; exhaustion.
prot	proteinuria	Albuminuria; the appearance of any protein in the urine.
	pruritus	Localized or generalized itching due to irritation of sensory nerve endings from organic or psychogenic causes.
	ptosis	Medical term for a drooping eyelid.
pulm	pulmonary	Pertaining to the lungs.
	pulmonary edema	Buildup of fluid in the lung.
	pulsus alternans	Alternation of strong and weak beats of the arterial pulse due to alternate strong and weak ventricular contractions.
	rales	An abnormal sound heard accompanying the normal respiratory sounds during stethoscopic examination of the chest.
RBC	red blood cell	Any of the hemoglobin-containing cells that carry oxygen to the tissues and are responsible for the red color of blood.
repro	reproductive	The act or process of reproducing.
resp	respiratory/respiration	Breathing.
restless	restlessness	Deprived of rest or sleep.
retster	retrosternal	Occurring behind the sternum.
	rhinitis	Inflammation of the mucous membrane of the nose.
rhin	rhinorrhea	Discharge of thin nasal mucus.
salv	salivation	Excess secretion of saliva from the various salivary glands.
	scotomas	Blind or dark spots in the visual field.
sens	sensitization	The action or process of making sensitive or hypersensitive.

Table B–2. Health Effects Acronyms and Descriptions

Acronym	Full Name	Description
short	shortness	
	silicosis	A chronic fibrous lung condition found among miners who have inhaled silicon dust over a period of years.
	sinusitis	Inflammation of a sinus of the skull.
con	skin and/or eye contact	
sneez	sneezing	To make a sudden violent spasmodic audible expiration of breath through the nose and mouth esp. as a reflex act following irritation of the nasal mucous membrane.
sol	solid	A substance that does not flow perceptibly under moderate stress; neither gaseous nor liquid.
soln	solution	The mixture of a solid, liquid or gas with another liquid.
	spasticity	Hypertonicity of muscles causing stiff and awkward movements.
	spermatogenesis	Development of sperm cells.
	sputum	Expectorated matter made up of saliva and often discharges from the respiratory passages.
	stannosis	Benign pneumoconiosis due to the inhalation of tin oxide; it is symptomless unless accompanied by silicosis.
	stenosis	Constriction or narrowing of a passage or orifice.
	stomatitis	Inflammation of the mucous membranes of the mouth.
	strabismus	Inability of one eye to attain binocular vision with the other because of imbalance of the muscles of the eyeball ("cross-eye," "squint").
	stupor	A condition of greatly dulled or completely suspended sense or sensibility.
subs	substernal	Occurring beneath the sternum.
sweat	sweating	To excrete moisture in visible quantities through the opening of the sweat glands.
swell	swelling	To become distended or puffed up.
	syncope	A transient form of unconsciousness during which the person slumps to the ground resulting from cerebral anoxia (insufficient oxygen in the brain).
sys	system	A set of organs performing one main function.
tacar	tachycardia	Excessive rapidity in the action of the heart.
	tachypnea	Increased rate of respiration.
tend	tenderness	Pain on touching a part.
terato	teratogenic	Of, relating to, or causing malformations of an embryo or fetus.

Table B–2. Health Effects Acronyms and Descriptions

Acronym	Full Name	Description
throb	throbbing	To pulsate or pound esp. with abnormal force or rapidity.
tight	tightness	
	tinnitus	Noise (typically ringing) in the ears.
	tonic	Characterized by tonus (contraction of muscle); marked by or being prolonged muscular contraction.
twitch	twitching	A short spastic contraction of muscle fibers.
	ulcer	A break in skin or mucous membrane with loss of surface tissue.
uncon	unconsciousness	Asleep, or in a coma, or under anesthesia.
UT	urogenital tract	Denotes the organs involved in reproduction and urination.
	vacuolization	The development or formation of vacuoles (small cavity or space in the tissues of an organism containing air or fluid).
vap	vapor	A substance in the gaseous state as distinguished from the liquid or solid state.
	vascular thrombus	A blood clot within a blood vessel.
	ventricular fibrillation	Rapid contractions or twitching of the muscle fibers that replace normal contraction of the ventricular chambers of the heart.
	vertigo	Dizziness; sense of spinning.
vesic	vesiculation	Formation of a small blister-like small elevation on the skin containing serous fluid.
vis	visual	Of, relating to, or used in vision.
vomit	vomiting	To throw up the contents of the stomach.
weak	weak/weakness	
low-wgt	weight loss	
wheez	wheezing	Noisy or difficult breathing.

**APPENDIX
C**

**MILITARY EXPOSURE
GUIDELINES**

CONTENTS

Table C-1. Military Exposure Guidelines for Air

Table C-2. Military Exposure Guidelines for Water

Table C-3. Military Exposure Guidelines for Soil

Note:

See Appendix B for definitions of acronyms used in all the tables in this appendix.

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Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
(2H3)Acetonitrile				2206-26-0	1,2-Bis(2-Chloroethoxy)ethane				112-26-5
1.3E+03	mg/m3	1hour	Critical	TEEL3	1.0E+02	mg/m3	1hour	Critical	TEEL3
6.0E+02	mg/m3	1hour	Marginal	TEEL2	2.0E+01	mg/m3	1hour	Marginal	TEEL2
2.0E+01	mg/m3	1hour	Negligible	TEEL1	3.0E+00	mg/m3	1hour	Negligible	TEEL1
(C12-C18) Alkyl dimethylbenzyl ammonium chloride				68391-01-5	1,2-Cyclohexanediamine				694-83-7
1.3E+02	mg/m3	1hour	Critical	TEEL3	3.5E+02	mg/m3	1hour	Critical	TEEL3
2.5E+01	mg/m3	1hour	Marginal	TEEL2	6.0E+01	mg/m3	1hour	Marginal	TEEL2
3.5E+00	mg/m3	1hour	Negligible	TEEL1	1.0E+01	mg/m3	1hour	Negligible	TEEL1
1,1,1,2,2,3,4,5,5-Decafluoropentane				138495-42-8	1,2-Dimethylimidazole				1739-84-0
1.3E+04	mg/m3	1hour	Critical	TEEL3	4.0E+02	mg/m3	1hour	Critical	TEEL3
4.0E+03	mg/m3	1hour	Marginal	TEEL2	7.5E+01	mg/m3	1hour	Marginal	TEEL2
2.0E+03	mg/m3	1hour	Negligible	TEEL1	1.3E+01	mg/m3	1hour	Negligible	TEEL1
1,1,1,3,3,3-Hexafluoro-2-propanol				920-66-1	1,3,6-Naphthalenetrisulfonic acid sodium salt				19437-42-4
6.0E+03	mg/m3	1hour	Critical	TEEL3	2.5E+02	mg/m3	1hour	Critical	TEEL3
1.0E+03	mg/m3	1hour	Marginal	TEEL2	5.0E+01	mg/m3	1hour	Marginal	TEEL2
1.5E+02	mg/m3	1hour	Negligible	TEEL1	3.0E+01	mg/m3	1hour	Negligible	TEEL1
1,1,1,3,3-Pentafluoropropane				460-73-1	1,3-Diisopropylbenzene				99-62-7
3.0E+05	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
3.0E+05	mg/m3	1hour	Marginal	TEEL2	5.0E+02	mg/m3	1hour	Marginal	TEEL2
5.0E+03	mg/m3	1hour	Negligible	TEEL1	5.0E+02	mg/m3	1hour	Negligible	TEEL1
1,1,2,2-Tetrafluoroethane				359-35-3	1,3-Propanediol				504-63-2
1.0E+05	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
5.0E+04	mg/m3	1hour	Marginal	TEEL2	4.0E+02	mg/m3	1hour	Marginal	TEEL2
3.5E+04	mg/m3	1hour	Negligible	TEEL1	6.0E+01	mg/m3	1hour	Negligible	TEEL1
1,1,3,3-Tetramethoxypropane				102-52-3	1,4-Dichloro-cis-2-butene				1476-11-5
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.1E-03	mg/m3	1year	Negligible	PPRTV
1.5E+02	mg/m3	1hour	Marginal	TEEL2	1,5-Pentanediol				111-29-5
2.5E+01	mg/m3	1hour	Negligible	TEEL1	5.0E+02	mg/m3	1hour	Critical	TEEL3
1,1'-Methylenebis(isocyanato-benzene)				26447-40-5	1.5E+02	mg/m3	1hour	Marginal	TEEL2
1.2E+02	mg/m3	1hour	Critical	TEEL3	2.5E+01	mg/m3	1hour	Negligible	TEEL1
1.2E+02	mg/m3	1hour	Marginal	TEEL2	1,6-Dibromohexane				629-03-8
7.2E+01	mg/m3	1hour	Negligible	TEEL1	1.0E+02	mg/m3	1hour	Critical	TEEL3
1,2,3,5-Tetramethylbenzene				527-53-7	2.0E+01	mg/m3	1hour	Marginal	TEEL2
5.0E+02	mg/m3	1hour	Critical	TEEL3	3.5E+00	mg/m3	1hour	Negligible	TEEL1
3.5E+00	mg/m3	1hour	Marginal	TEEL2	1,6-Hexanediol diacrylate				13048-33-4
5.0E-01	mg/m3	1hour	Negligible	TEEL1	5.0E+02	mg/m3	1hour	Critical	TEEL3
1,2,3,6-Tetrahydropyridine				694-05-3	2.5E+01	mg/m3	1hour	Marginal	TEEL2
2.5E+02	mg/m3	1hour	Critical	TEEL3	3.5E+00	mg/m3	1hour	Negligible	TEEL1
5.0E+01	mg/m3	1hour	Marginal	TEEL2	1,8-Diazabicyclo(5.4.0)undec-7-ene				6674-22-2
3.0E+01	mg/m3	1hour	Negligible	TEEL1	1.5E+02	mg/m3	1hour	Critical	TEEL3
1,2,4,5-Tetramethylbenzene				95-93-2	3.5E+01	mg/m3	1hour	Marginal	TEEL2
5.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+00	mg/m3	1hour	Negligible	TEEL1
5.0E+02	mg/m3	1hour	Marginal	TEEL2	1-Bromo-3-methoxybenzene				2398-37-0
1.0E+02	mg/m3	1hour	Negligible	TEEL1	2.5E+02	mg/m3	1hour	Critical	TEEL3
					5.0E+01	mg/m3	1hour	Marginal	TEEL2
					3.0E+01	mg/m3	1hour	Negligible	TEEL1

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
1-Bromo-3-methylbutane				107-82-4	1-Nonene				124-11-8
2.5E+03	mg/m3	1hour	Critical	TEEL3	2.5E+02	mg/m3	1hour	Critical	TEEL3
5.0E+02	mg/m3	1hour	Marginal	TEEL2	5.0E+01	mg/m3	1hour	Marginal	TEEL2
7.5E+01	mg/m3	1hour	Negligible	TEEL1	7.5E+00	mg/m3	1hour	Negligible	TEEL1
1-Bromodecane				112-29-8	1-Octanamine				111-86-4
1.5E+03	mg/m3	1hour	Critical	TEEL3	4.0E+01	mg/m3	1hour	Critical	TEEL3
3.0E+02	mg/m3	1hour	Marginal	TEEL2	7.5E+00	mg/m3	1hour	Marginal	TEEL2
4.0E+01	mg/m3	1hour	Negligible	TEEL1	1.3E+00	mg/m3	1hour	Negligible	TEEL1
1-Bromododecane				143-15-7	1-Propanol, zirconium(4+) salt				23519-77-9
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.8E+02	mg/m3	1hour	Critical	TEEL3
1.5E+02	mg/m3	1hour	Marginal	TEEL2	9.0E+01	mg/m3	1hour	Marginal	TEEL2
2.5E+01	mg/m3	1hour	Negligible	TEEL1	3.6E+01	mg/m3	1hour	Negligible	TEEL1
1-Bromooctane				111-83-1	1R-(-)-10-Camphorsulfonic Acid				35963-20-3
2.0E+03	mg/m3	1hour	Critical	TEEL3	4.0E+02	mg/m3	1hour	Critical	TEEL3
4.0E+02	mg/m3	1hour	Marginal	TEEL2	7.5E+01	mg/m3	1hour	Marginal	TEEL2
6.0E+01	mg/m3	1hour	Negligible	TEEL1	1.3E+01	mg/m3	1hour	Negligible	TEEL1
1-Fluoro-2-nitrobenzene				1493-27-2	2-(2-Ethyloxy)ethanol				1559-35-9
5.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
1.5E+02	mg/m3	1hour	Marginal	TEEL2	5.0E+02	mg/m3	1hour	Marginal	TEEL2
2.5E+01	mg/m3	1hour	Negligible	TEEL1	3.5E+02	mg/m3	1hour	Negligible	TEEL1
1h-Tetrazole				288-94-8	2-(Methylamino)ethanol				109-83-1
1.5E+02	mg/m3	1hour	Critical	TEEL3	1.0E+03	mg/m3	1hour	Critical	TEEL3
3.5E+01	mg/m3	1hour	Marginal	TEEL2	2.0E+02	mg/m3	1hour	Marginal	TEEL2
5.0E+00	mg/m3	1hour	Negligible	TEEL1	3.0E+01	mg/m3	1hour	Negligible	TEEL1
1-Hydroxybenzotriazole				2592-95-2	2-(N-Morpholino)ethanesulfonic acid monohydrate				4432-31-9
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.3E+02	mg/m3	1hour	Critical	TEEL3
5.0E+02	mg/m3	1hour	Marginal	TEEL2	2.5E+01	mg/m3	1hour	Marginal	TEEL2
1.3E+02	mg/m3	1hour	Negligible	TEEL1	4.0E+00	mg/m3	1hour	Negligible	TEEL1
1-Iodoheptafluoropropane				754-34-7	2,2,2-Trichloroethanol				115-20-8
5.0E+01	mg/m3	1hour	Critical	TEEL3	2.5E+02	mg/m3	1hour	Critical	TEEL3
2.5E+00	mg/m3	1hour	Marginal	TEEL2	2.5E+02	mg/m3	1hour	Marginal	TEEL2
2.5E+00	mg/m3	1hour	Negligible	TEEL1	3.5E+01	mg/m3	1hour	Negligible	TEEL1
1-Iodopentane				628-17-1	2,2,6,6-Tetramethyl-3,5-heptanedione				1118-71-4
2.5E+01	mg/m3	1hour	Critical	TEEL3	2.5E+02	mg/m3	1hour	Critical	TEEL3
1.6E+00	mg/m3	1hour	Marginal	TEEL2	5.0E+01	mg/m3	1hour	Marginal	TEEL2
1.6E+00	mg/m3	1hour	Negligible	TEEL1	3.0E+01	mg/m3	1hour	Negligible	TEEL1
1-Methyl-1-propanethiol				513-53-1	2,2-Dichloro-1,1,1-trifluoroethane				306-83-2
7.5E+02	mg/m3	1hour	Critical	TEEL3	6.3E+04	mg/m3	1hour	Critical	ERPG3
1.5E+02	mg/m3	1hour	Marginal	TEEL2	6.3E+03	mg/m3	1hour	Marginal	ERPG2
2.0E+01	mg/m3	1hour	Negligible	TEEL1	7.5E+02	mg/m3	1hour	Negligible	TEEL1
1-Naphthol				90-15-3	2,2-Diethoxyethylamine				645-36-3
5.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
5.0E+02	mg/m3	1hour	Marginal	TEEL2	1.5E+02	mg/m3	1hour	Marginal	TEEL2
7.5E+01	mg/m3	1hour	Negligible	TEEL1	2.5E+01	mg/m3	1hour	Negligible	TEEL1

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME					CASRN	CHEMICAL NAME					CASRN
MEG	Units	Timeframe	Severity	Basis		MEG	Units	Timeframe	Severity	Basis	
2,2-Dimethoxyethylamine					22483-09-6	2,6-Diisopropylaniline					24544-04-5
2.5E+02 mg/m3		1hour	Critical	TEEL3		5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3	
5.0E+01 mg/m3		1hour	Marginal	TEEL2		5.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2	
3.0E+01 mg/m3		1hour	Negligible	TEEL1		1.0E+02 mg/m3	1hour	1hour	Negligible	TEEL1	
2,2-Dimethoxypropane					77-76-9	2,6-Lutidine					108-48-5
1.5E+02 mg/m3		1hour	Critical	TEEL3		3.5E+04 mg/m3	1hour	1hour	Critical	TEEL3	
3.5E+01 mg/m3		1hour	Marginal	TEEL2		6.0E+03 mg/m3	1hour	1hour	Marginal	TEEL2	
5.0E+00 mg/m3		1hour	Negligible	TEEL1		1.0E+03 mg/m3	1hour	1hour	Negligible	TEEL1	
2,2-Dimethyl-1,3-propanediol					126-30-7	2-Bromoethanol					540-51-2
2.0E+04 mg/m3		1hour	Critical	TEEL3		6.0E+01 mg/m3	1hour	1hour	Critical	TEEL3	
4.0E+03 mg/m3		1hour	Marginal	TEEL2		1.5E+00 mg/m3	1hour	1hour	Marginal	TEEL2	
6.0E+02 mg/m3		1hour	Negligible	TEEL1		2.0E-01 mg/m3	1hour	1hour	Negligible	TEEL1	
2,2-Dimethylbutyric acid					595-37-9	2-Bromomesitylene					576-83-0
5.0E+02 mg/m3		1hour	Critical	TEEL3		2.5E+02 mg/m3	1hour	1hour	Critical	TEEL3	
1.5E+02 mg/m3		1hour	Marginal	TEEL2		5.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2	
2.5E+01 mg/m3		1hour	Negligible	TEEL1		3.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1	
2,2-Dimethylpentane					590-35-2	2-Bromomethyl-1,3-dioxolane					4360-63-8
1.6E+03 mg/m3		8hour	Negligible	TLV_TWA		5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3	
4.0E+02 mg/m3		14day	Negligible	TLV_TWA		1.5E+02 mg/m3	1hour	1hour	Marginal	TEEL2	
4.0E+02 mg/m3		1year	Negligible	TLVadj		2.5E+01 mg/m3	1hour	1hour	Negligible	TEEL1	
2,2'-Sulfonylbis-ethanol					2580-77-0	2-Chloro-1,1,1,2-Tetrafluoroethane					2837-89-0
1.5E+02 mg/m3		1hour	Critical	TEEL3		5.6E+04 mg/m3	1hour	1hour	Critical	ERPG3	
3.5E+01 mg/m3		1hour	Marginal	TEEL2		2.8E+04 mg/m3	1hour	1hour	Marginal	ERPG2	
5.0E+00 mg/m3		1hour	Negligible	TEEL1		5.6E+03 mg/m3	1hour	1hour	Negligible	ERPG1	
2,3-Dimethylpentane					565-59-3	2-Chloroethyl vinyl sulfide					81142-02-1
1.6E+03 mg/m3		8hour	Negligible	TLV_TWA		1.5E+01 mg/m3	1hour	1hour	Critical	TEEL3	
4.0E+02 mg/m3		14day	Negligible	TLV_TWA		3.0E+00 mg/m3	1hour	1hour	Marginal	TEEL2	
4.0E+02 mg/m3		1year	Negligible	TLVadj		4.0E-01 mg/m3	1hour	1hour	Negligible	TEEL1	
2,4,4-Trimethyl-1-pentene					107-39-1	2-Dimethylaminoethyl chloride hydrochloride					4584-46-7
7.5E+03 mg/m3		1hour	Critical	TEEL3		1.0E+02 mg/m3	1hour	1hour	Critical	TEEL3	
1.5E+03 mg/m3		1hour	Marginal	TEEL2		1.5E+01 mg/m3	1hour	1hour	Marginal	TEEL2	
1.0E+03 mg/m3		1hour	Negligible	TEEL1		2.0E+00 mg/m3	1hour	1hour	Negligible	TEEL1	
2,4-Dimethylpentane					108-08-7	2-Dodecen-1-yl succinic anhydride					19780-11-1
1.6E+03 mg/m3		8hour	Negligible	TLV_TWA		2.5E+02 mg/m3	1hour	1hour	Critical	TEEL3	
4.0E+02 mg/m3		14day	Negligible	TLV_TWA		5.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2	
4.0E+02 mg/m3		1year	Negligible	TLVadj		3.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1	
2,5,8,11-Tetraoxadodecane					112-49-2	2-Ethyl-1,3-hexanediol					94-96-2
7.5E+02 mg/m3		1hour	Critical	TEEL3		4.0E+03 mg/m3	1hour	1hour	Critical	TEEL3	
1.5E+02 mg/m3		1hour	Marginal	TEEL2		1.5E+03 mg/m3	1hour	1hour	Marginal	TEEL2	
2.0E+01 mg/m3		1hour	Negligible	TEEL1		2.5E+02 mg/m3	1hour	1hour	Negligible	TEEL1	
2,6-Diaminopyridine					141-86-6	2-Ethyl-2-oxazoline					10431-98-8
4.0E+01 mg/m3		1hour	Critical	TEEL3		4.0E+01 mg/m3	1hour	1hour	Critical	TEEL3	
7.5E+00 mg/m3		1hour	Marginal	TEEL2		7.5E+00 mg/m3	1hour	1hour	Marginal	TEEL2	
1.3E+00 mg/m3		1hour	Negligible	TEEL1		1.3E+00 mg/m3	1hour	1hour	Negligible	TEEL1	

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
2-Hydroxyethyl acrylate				818-61-1	2-Phenoxyethanol				122-99-6
2.5E+02 mg/m3		1hour	Critical	TEEL3	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
3.5E+01 mg/m3		1hour	Marginal	TEEL2	1.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
5.0E+00 mg/m3		1hour	Negligible	TEEL1	1.0E+02 mg/m3	1hour	1hour	Negligible	TEEL1
2-Methoxypropyl-1-acetate				70657-70-4	2-Phenyl-2-oxazoline				7127-19-7
2.7E+04 mg/m3		1hour	Critical	ERPG3	1.5E+02 mg/m3	1hour	1hour	Critical	TEEL3
5.4E+03 mg/m3		1hour	Marginal	ERPG2	3.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
2.7E+02 mg/m3		1hour	Negligible	ERPG1	1.5E+01 mg/m3	1hour	1hour	Negligible	TEEL1
2-Methyl-1-pentanol				105-30-6	2-Thiosalicylic acid				147-93-3
6.0E+02 mg/m3		1hour	Critical	TEEL3	2.0E+01 mg/m3	1hour	1hour	Critical	TEEL3
2.0E+01 mg/m3		1hour	Marginal	TEEL2	4.0E+00 mg/m3	1hour	1hour	Marginal	TEEL2
3.0E+00 mg/m3		1hour	Negligible	TEEL1	6.0E-01 mg/m3	1hour	1hour	Negligible	TEEL1
2-Methyl-2-butene				513-35-9	3-(Chloropropyl)trimethoxysilane				2530-87-2
6.0E+02 mg/m3		1hour	Critical	TEEL3	3.0E+03 mg/m3	1hour	1hour	Critical	TEEL3
1.3E+02 mg/m3		1hour	Marginal	TEEL2	1.5E+03 mg/m3	1hour	1hour	Marginal	TEEL2
1.5E+01 mg/m3		1hour	Negligible	TEEL1	2.5E+02 mg/m3	1hour	1hour	Negligible	TEEL1
2-Methyl-8-quinolinol				826-81-3	3-(Cyclohexylamino)-1-propanesulfonic acid				1135-40-6
2.5E+02 mg/m3		1hour	Critical	TEEL3	1.3E+02 mg/m3	1hour	1hour	Critical	TEEL3
5.0E+01 mg/m3		1hour	Marginal	TEEL2	2.5E+01 mg/m3	1hour	1hour	Marginal	TEEL2
3.0E+01 mg/m3		1hour	Negligible	TEEL1	4.0E+00 mg/m3	1hour	1hour	Negligible	TEEL1
2-Methylheptane				592-27-8	3-(Trimethoxysilyl)-1-propanamine				13822-56-5
1.0E+03 mg/m3		1hour	Critical	TEEL3	2.5E+02 mg/m3	1hour	1hour	Critical	TEEL3
2.0E+02 mg/m3		1hour	Marginal	TEEL2	5.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
3.0E+01 mg/m3		1hour	Negligible	TEEL1	3.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
2-Methylhexane				591-76-4	3,3',5,5'-Tetramethylbenzidine				54827-17-7
1.6E+03 mg/m3		8hour	Negligible	TLV_TWA	6.0E+01 mg/m3	1hour	1hour	Critical	TEEL3
4.0E+02 mg/m3		14day	Negligible	TLV_TWA	1.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
4.0E+02 mg/m3		1year	Negligible	TLVadj	1.5E+00 mg/m3	1hour	1hour	Negligible	TEEL1
2-Naphthol				135-19-3	33 SN				20820-80-8
5.0E+02 mg/m3		1hour	Critical	TEEL3	6.0E-02 mg/m3	1hour	1hour	Critical	TEEL3
5.0E-02 mg/m3		1hour	Marginal	TEEL2	1.3E-02 mg/m3	1hour	1hour	Marginal	TEEL2
7.5E-03 mg/m3		1hour	Negligible	TEEL1	1.5E-03 mg/m3	1hour	1hour	Negligible	TEEL1
2-Naphthol-8-sulfonic acid, sodium salt				832-85-9	3-Aminopropylmethyldiethoxysilane				3179-76-8
2.0E+02 mg/m3		1hour	Critical	TEEL3	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
4.0E+01 mg/m3		1hour	Marginal	TEEL2	4.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
6.0E+00 mg/m3		1hour	Negligible	TEEL1	5.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
2-Nitro-m-xylene				81-20-9	3-Carene				13466-78-9
5.0E+02 mg/m3		1hour	Critical	TEEL3	1.1E+02 mg/m3	8hour	1hour	Negligible	TLV_TWA
2.0E+02 mg/m3		1hour	Marginal	TEEL2	2.7E+01 mg/m3	14day	1hour	Negligible	TLV_TWA
3.0E+01 mg/m3		1hour	Negligible	TEEL1	2.7E+01 mg/m3	1year	1hour	Negligible	TLVadj
2-Octanol				123-96-6	3-Chloropropanol				627-30-5
3.5E+02 mg/m3		1hour	Critical	TEEL3	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
2.5E+02 mg/m3		1hour	Marginal	TEEL2	2.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
3.5E+01 mg/m3		1hour	Negligible	TEEL1	3.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
3-Mercaptopropionic acid				107-96-0	4-Methoxybenzyl alcohol				105-13-5
4.0E+01	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
6.0E+00	mg/m3	1hour	Marginal	TEEL2	2.0E+02	mg/m3	1hour	Marginal	TEEL2
7.5E-01	mg/m3	1hour	Negligible	TEEL1	2.5E+01	mg/m3	1hour	Negligible	TEEL1
3-Methylhexane				589-34-4	4-Methyldecane				2847-72-5
1.6E+03	mg/m3	8hour	Negligible	TLV_TWA	2.5E+02	mg/m3	1hour	Critical	TEEL3
4.0E+02	mg/m3	14day	Negligible	TLV_TWA	5.0E+01	mg/m3	1hour	Marginal	TEEL2
4.0E+02	mg/m3	1year	Negligible	TLVadj	3.0E+01	mg/m3	1hour	Negligible	TEEL1
3-Methylpentane				96-14-0	4-Methylmorpholine				109-02-4
7.5E+03	mg/m3	1hour	Critical	TEEL3	7.5E+02	mg/m3	1hour	Critical	TEEL3
1.5E+03	mg/m3	1hour	Marginal	TEEL2	1.5E+02	mg/m3	1hour	Marginal	TEEL2
1.5E+03	mg/m3	1hour	Negligible	TEEL1	2.5E+01	mg/m3	1hour	Negligible	TEEL1
3-Nitrobenzenesulfonic acid, sodium salt				127-68-4	4-Methylnonane				17301-94-9
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.3E+03	mg/m3	1hour	Critical	TEEL3
5.0E+02	mg/m3	1hour	Marginal	TEEL2	2.5E+02	mg/m3	1hour	Marginal	TEEL2
1.3E+02	mg/m3	1hour	Negligible	TEEL1	4.0E+01	mg/m3	1hour	Negligible	TEEL1
3-Trimethoxysilyl-1-Propanethiol				4420-74-0	4-Nitro-3-trifluoromethylphenol				88-30-2
3.0E+02	mg/m3	1hour	Critical	TEEL3	6.0E+01	mg/m3	1hour	Critical	TEEL3
6.0E+01	mg/m3	1hour	Marginal	TEEL2	1.3E+01	mg/m3	1hour	Marginal	TEEL2
7.5E+00	mg/m3	1hour	Negligible	TEEL1	1.5E+00	mg/m3	1hour	Negligible	TEEL1
3-Trimethoxysilylpropyl methacrylate				2530-85-0	4-Pyridinecarboxaldehyde				872-85-5
5.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
1.3E+02	mg/m3	1hour	Marginal	TEEL2	2.5E+02	mg/m3	1hour	Marginal	TEEL2
1.5E+01	mg/m3	1hour	Negligible	TEEL1	4.0E+01	mg/m3	1hour	Negligible	TEEL1
3-Tris((hydroxymethyl)methylamino)propane-1-sulphonic acid				29915-38-6	4-Tert-butylpyridine				3978-81-2
2.5E+02	mg/m3	1hour	Critical	TEEL3	2.5E+02	mg/m3	1hour	Critical	TEEL3
5.0E+01	mg/m3	1hour	Marginal	TEEL2	5.0E+01	mg/m3	1hour	Marginal	TEEL2
3.0E+01	mg/m3	1hour	Negligible	TEEL1	3.0E+01	mg/m3	1hour	Negligible	TEEL1
4-Chlorobutryl chloride				4635-59-0	5-chloro-2-benzenesulfonic acid				0-306*
2.5E+02	mg/m3	1hour	Critical	TEEL3	2.0E+02	mg/m3	1hour	Critical	TEEL3
5.0E+01	mg/m3	1hour	Marginal	TEEL2	5.0E+01	mg/m3	1hour	Marginal	TEEL2
7.5E+00	mg/m3	1hour	Negligible	TEEL1	6.0E+00	mg/m3	1hour	Negligible	TEEL1
4-Hydroxy-3-methoxybenzaldehyde				121-33-5	5-Chloro-methyl-isothiazolin-3-one				26172-55-4
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.0E+00	mg/m3	1hour	Critical	TEEL3
1.3E+02	mg/m3	1hour	Marginal	TEEL2	1.0E+00	mg/m3	1hour	Marginal	TEEL2
3.0E+01	mg/m3	1hour	Negligible	TEEL1	6.0E-01	mg/m3	1hour	Negligible	TEEL1
4-Hydroxybenzenesulfonic acid				98-67-9	5-Methyl-2-(1-methylethyl)phenol				89-83-8
5.0E+02	mg/m3	1hour	Critical	TEEL3	4.0E+02	mg/m3	1hour	Critical	TEEL3
5.0E+02	mg/m3	1hour	Marginal	TEEL2	1.5E+00	mg/m3	1hour	Marginal	TEEL2
7.5E+01	mg/m3	1hour	Negligible	TEEL1	2.5E-01	mg/m3	1hour	Negligible	TEEL1
4-Hydroxybenzoic acid				99-96-7	6-Benzyl aminopurine				1214-39-7
5.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
4.0E+02	mg/m3	1hour	Marginal	TEEL2	1.0E+02	mg/m3	1hour	Marginal	TEEL2
6.0E+01	mg/m3	1hour	Negligible	TEEL1	1.5E+01	mg/m3	1hour	Negligible	TEEL1

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
6-Ethyl-2-methyl octane				62016-19-7	Acetic acid				64-19-7
2.0E+02	mg/m3	1hour	Critical	TEEL3	6.1E+02	mg/m3	1hour	Critical	ERPG3
4.0E+01	mg/m3	1hour	Marginal	TEEL2	8.6E+01	mg/m3	1hour	Marginal	ERPG2
6.0E+00	mg/m3	1hour	Negligible	TEEL1	1.2E+01	mg/m3	1hour	Negligible	ERPG1
6-Methyl-2-Heptanone				928-68-7	Acetic acid 2-methylbutyl ester				624-41-9
2.5E+02	mg/m3	1hour	Critical	TEEL3	1.2E+01	mg/m3	8hour	Negligible	ERPG1*
5.0E+01	mg/m3	1hour	Marginal	TEEL2	8.4E+00	mg/m3	14day	Negligible	TLV_TWA_irr
3.0E+01	mg/m3	1hour	Negligible	TEEL1	8.4E+00	mg/m3	1year	Negligible	TLVirr
6-S-Hexadecyl-2-methoxythioascorbic acid				8065-53-0	Acetic acid ethenyl ester				27360-07-2
6.0E+01	mg/m3	1hour	Critical	TEEL3	2.5E+02	mg/m3	1hour	Critical	TEEL3
1.5E+01	mg/m3	1hour	Marginal	TEEL2	5.0E+01	mg/m3	1hour	Marginal	TEEL2
3.0E+00	mg/m3	1hour	Negligible	TEEL1	3.0E+01	mg/m3	1hour	Negligible	TEEL1
9-Octadecenoic acid				112-80-1	Acetic acid, allyl ester				591-87-7
5.0E+02	mg/m3	1hour	Critical	TEEL3	2.0E+02	mg/m3	1hour	Critical	TEEL3
4.0E-01	mg/m3	1hour	Marginal	TEEL2	4.0E+01	mg/m3	1hour	Marginal	TEEL2
5.0E-02	mg/m3	1hour	Negligible	TEEL1	6.0E+00	mg/m3	1hour	Negligible	TEEL1
Acacia				9000-01-5	Acetic acid, lithium salt				546-89-4
5.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
5.0E+02	mg/m3	1hour	Marginal	TEEL2	2.5E+02	mg/m3	1hour	Marginal	TEEL2
5.0E+02	mg/m3	1hour	Negligible	TEEL1	3.5E+01	mg/m3	1hour	Negligible	TEEL1
Acenaphthene				83-32-9	Acetic acid, manganese(2+) salt, tetrahydrate				6156-78-1
2.5E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
7.5E+00	mg/m3	1hour	Marginal	TEEL2	2.2E+01	mg/m3	1hour	Marginal	TEEL2
1.3E+00	mg/m3	1hour	Negligible	TEEL1	1.3E+01	mg/m3	1hour	Negligible	TEEL1
Acenaphthylene				208-96-8	Acetic acid, manganese(II) salt (2:1)				638-38-0
5.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
1.5E+00	mg/m3	1hour	Marginal	TEEL2	1.6E+01	mg/m3	1hour	Marginal	TEEL2
2.0E-01	mg/m3	1hour	Negligible	TEEL1	9.4E+00	mg/m3	1hour	Negligible	TEEL1
Acetaldehyde				75-07-0	Acetic anhydride				108-24-7
1.5E+03	mg/m3	1hour	Critical	AEGL3_1hr	4.2E+02	mg/m3	1hour	Critical	ERPG3
4.9E+02	mg/m3	1hour	Marginal	AEGL2_1hr	6.3E+01	mg/m3	1hour	Marginal	ERPG2
8.1E+01	mg/m3	1hour	Negligible	AEGL1_1hr	2.1E+00	mg/m3	1hour	Negligible	ERPG1
8.1E+01	mg/m3	8hour	Negligible	AEGL1_8hr	Acetol				116-09-6
3.6E+00	mg/m3	14day	Negligible	CEGL	5.0E+02	mg/m3	1hour	Critical	TEEL3
6.2E-02	mg/m3	1year	Negligible	IRIS_sub	2.0E+02	mg/m3	1hour	Marginal	TEEL2
Acetamide				60-35-5	Acetone				67-64-1
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.4E+04	mg/m3	1hour	Critical	AEGL3_1hr
5.0E+02	mg/m3	1hour	Marginal	TEEL2	7.6E+03	mg/m3	1hour	Marginal	AEGL2_1hr
7.5E+01	mg/m3	1hour	Negligible	TEEL1	4.7E+02	mg/m3	1hour	Negligible	AEGL1_1hr
Acetanilide				103-84-4	Acetone				67-64-1
5.0E+01	mg/m3	1hour	Critical	TEEL3	4.7E+02	mg/m3	8hour	Negligible	AEGL1_8hr
7.5E+00	mg/m3	1hour	Marginal	TEEL2	4.7E+02	mg/m3	14day	Negligible	CEGL
1.0E+00	mg/m3	1hour	Negligible	TEEL1	2.1E+01	mg/m3	1year	Negligible	MRL_inter

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Acetone cyanohydrin				75-86-5	Acetylaminofluorenone, 2-				3096-50-2
5.2E+01 mg/m3		1hour	Critical	AEGL3_1hr	7.5E+01 mg/m3		1hour	Critical	TEEL3
2.5E+01 mg/m3		1hour	Marginal	AEGL2_1hr	1.5E+01 mg/m3		1hour	Marginal	TEEL2
7.0E+00 mg/m3		1hour	Negligible	AEGL1_1hr	2.5E+00 mg/m3		1hour	Negligible	TEEL1
3.5E+00 mg/m3		8hour	Negligible	AEGL1_8hr	Acetylene				74-86-2
4.1E-02 mg/m3		1year	Negligible	PPRTV_sub	6.0E+03 mg/m3		1hour	Critical	TEEL3
Acetone thiosemicarbazide				1752-30-3	2.5E+03 mg/m3		1hour	Marginal	TEEL2
1.0E+02 mg/m3		1hour	Critical	TEEL3	3.5E+02 mg/m3		1hour	Negligible	TEEL1
1.0E+02 mg/m3		1hour	Marginal	TEEL2	Acetylene tetrabromide				79-27-6
6.0E+01 mg/m3		1hour	Negligible	TEEL1	1.0E+02 mg/m3		1hour	Critical	TEEL3
Acetone-d6				666-52-4	1.0E+02 mg/m3		1hour	Marginal	TEEL2
1.5E+04 mg/m3		1hour	Critical	TEEL3	7.5E+01 mg/m3		1hour	Negligible	TEEL1
7.5E+03 mg/m3		1hour	Marginal	TEEL2	1.4E+00 mg/m3		8hour	Negligible	TLV_TWA
5.0E+02 mg/m3		1hour	Negligible	TEEL1	3.5E-01 mg/m3		14day	Negligible	TLV_TWA
Acetonitrile				75-05-8	3.5E-01 mg/m3		1year	Negligible	TLVadj
1.1E+03 mg/m3		1hour	Critical	AEGL3_1hr	Acetylsalicylic acid				50-78-2
5.4E+02 mg/m3		1hour	Marginal	AEGL2_1hr	5.0E+00 mg/m3		8hour	Negligible	TLV_TWA
2.2E+01 mg/m3		1hour	Negligible	AEGL1_1hr	1.2E+00 mg/m3		14day	Negligible	TLV_TWA
2.2E+01 mg/m3		8hour	Negligible	AEGL1_8hr	1.2E+00 mg/m3		1year	Negligible	TLVadj
8.2E+00 mg/m3		14day	Negligible	TLV_TWA	Acridine orange				494-38-2
4.1E-02 mg/m3		1year	Negligible	IRIS_chr	4.0E+01 mg/m3		1hour	Critical	TEEL3
Acetophenone				98-86-2	7.5E+00 mg/m3		1hour	Marginal	TEEL2
3.5E+02 mg/m3		1hour	Critical	TEEL3	1.3E+00 mg/m3		1hour	Negligible	TEEL1
5.0E+01 mg/m3		1hour	Marginal	TEEL2	Acrolein				107-02-8
4.9E+01 mg/m3		1hour	Negligible	TLV_TWA_irr*	3.2E+00 mg/m3		1hour	Critical	AEGL3_1hr*
4.9E+01 mg/m3		8hour	Negligible	TLV_TWA_irr	2.3E-01 mg/m3		1hour	Marginal	AEGL2_1hr*
1.7E+01 mg/m3		14day	Negligible	TLV_TWA_irr	7.0E-02 mg/m3		1hour	Negligible	AEGL1_1hr*
1.7E+01 mg/m3		1year	Negligible	TLVirr	7.0E-02 mg/m3		8hour	Negligible	AEGL1_8hr*
Acetyl bromide				506-96-7	4.6E-02 mg/m3		14day	Negligible	CEGL
1.0E+02 mg/m3		1hour	Critical	TEEL3	1.4E-04 mg/m3		1year	Negligible	IRIS_sub
2.0E+01 mg/m3		1hour	Marginal	TEEL2	7.0E-02 mg/m3		10min	Negligible	AEGL1_10min
3.0E+00 mg/m3		1hour	Negligible	TEEL1	2.3E-01 mg/m3		8hour	Marginal	AEGL2_8h*
Acetyl chloride				75-36-5	6.2E-01 mg/m3		8hour	Critical	AEGL3_8h*
4.0E+02 mg/m3		1hour	Critical	TEEL3	1.0E+00 mg/m3		10min	Marginal	AEGL2_10min
1.5E-01 mg/m3		1hour	Marginal	TEEL2	1.4E+01 mg/m3		10min	Critical	AEGL3_10min
2.0E-02 mg/m3		1hour	Negligible	TEEL1	Acrylamide				79-06-1
Acetyl triethyl citrate				77-89-4	6.0E+01 mg/m3		1hour	Critical	TEEL3
5.0E+02 mg/m3		1hour	Critical	TEEL3	6.0E+01 mg/m3		1hour	Marginal	TEEL2
1.3E+02 mg/m3		1hour	Marginal	TEEL2	7.5E+00 mg/m3		1hour	Negligible	TEEL1
2.0E+01 mg/m3		1hour	Negligible	TEEL1	3.0E-02 mg/m3		8hour	Negligible	TLV_TWA
Acetylaminofluorene, 2-				53-96-3	7.3E-03 mg/m3		14day	Negligible	TLV_TWA
3.5E+02 mg/m3		1hour	Critical	TEEL3	4.1E-03 mg/m3		1year	Negligible	IRIS_chr
1.3E+02 mg/m3		1hour	Marginal	TEEL2					
1.5E+01 mg/m3		1hour	Negligible	TEEL1					

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Acrylic acid				79-10-7	Adiponitrile				111-69-3
5.3E+02	mg/m3	1hour	Critical	AEGL3_1hr	7.5E+02	mg/m3	1hour	Critical	TEEL3
1.4E+02	mg/m3	1hour	Marginal	AEGL2_1hr	1.5E+01	mg/m3	1hour	Marginal	TEEL2
4.4E+00	mg/m3	1hour	Negligible	AEGL1_1hr	1.5E+01	mg/m3	1hour	Negligible	TEEL1
4.4E+00	mg/m3	8hour	Negligible	AEGL1_8hr	8.8E+00	mg/m3	8hour	Negligible	TLV_TWA
2.0E+00	mg/m3	14day	Negligible	TLV_TWA_irr	2.2E+00	mg/m3	14day	Negligible	TLV_TWA
2.1E-03	mg/m3	1year	Negligible	IRIS_sub	4.1E-02	mg/m3	1year	Negligible	PPRTV_sub
Acrylic acid 2-ethylhexyl ester				103-11-7	Adogen 464				63393-96-4
7.5E+01	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
7.5E+01	mg/m3	1hour	Marginal	TEEL2	5.0E+02	mg/m3	1hour	Marginal	TEEL2
1.3E+01	mg/m3	1hour	Negligible	TEEL1	7.5E+01	mg/m3	1hour	Negligible	TEEL1
Acrylonitrile				107-13-1	Aerosol A 102				39354-45-5
1.6E+02	mg/m3	1hour	Critical	ERPG-3*	5.0E+02	mg/m3	1hour	Critical	TEEL3
7.6E+01	mg/m3	1hour	Marginal	ERPG-2*	5.0E+02	mg/m3	1hour	Marginal	TEEL2
2.2E+01	mg/m3	1hour	Negligible	ERPG-1*	4.0E+02	mg/m3	1hour	Negligible	TEEL1
4.3E+00	mg/m3	8hour	Negligible	TLV-TWA*	Agar-agar				9002-18-0
1.5E-01	mg/m3	14day	Negligible	MRLi_acute	5.0E+02	mg/m3	1hour	Critical	TEEL3
7.1E-02	mg/m3	1year	Negligible	IRIS	5.0E+02	mg/m3	1hour	Marginal	TEEL2
1.0E+01	mg/m3	10min	Negligible	AEGL1_10min	5.0E+02	mg/m3	1hour	Negligible	TEEL1
1.9E+01	mg/m3	8hour	Marginal	AEGL2_8h*	Agarose, type VII				9012-36-6
4.1E+01	mg/m3	8hour	Critical	AEGL3_8h*	2.5E+02	mg/m3	1hour	Critical	TEEL3
6.3E+02	mg/m3	10min	Marginal	AEGL2_10min	5.0E+01	mg/m3	1hour	Marginal	TEEL2
1.0E+03	mg/m3	10min	Critical	AEGL3_10min	3.0E+01	mg/m3	1hour	Negligible	TEEL1
Acrylyl chloride				814-68-6	Alachlor				15972-60-8
3.5E+01	mg/m3	1hour	Critical	TEEL3	1.0E+00	mg/m3	8hour	Negligible	TLV_TWA
7.5E-01	mg/m3	1hour	Marginal	TEEL2	2.4E-01	mg/m3	14day	Negligible	TLV_TWA
4.0E-01	mg/m3	1hour	Negligible	TEEL1	2.4E-01	mg/m3	1year	Negligible	TLVadj
Adamsite				578-94-9	Alamine 336				68814-95-9
6.4E+00	mg/m3	1hour	Critical	AEGL3_1hr	5.0E+02	mg/m3	1hour	Critical	TEEL3
2.6E+00	mg/m3	1hour	Marginal	AEGL2_1hr	5.0E+02	mg/m3	1hour	Marginal	TEEL2
1.6E-02	mg/m3	1hour	Negligible	AEGL1_1hr	6.0E+01	mg/m3	1hour	Negligible	TEEL1
8.3E-04	mg/m3	8hour	Negligible	AEGL1_8hr	Alcohol oxidase				9073-63-6
Adipic acid				124-04-9	2.5E+02	mg/m3	1hour	Critical	TEEL3
1.3E+02	mg/m3	1hour	Critical	TEEL3	5.0E+01	mg/m3	1hour	Marginal	TEEL2
5.0E+00	mg/m3	1hour	Marginal	TEEL2	3.0E+01	mg/m3	1hour	Negligible	TEEL1
5.0E+00	mg/m3	1hour	Negligible	TEEL1	Alcohols, C6-C12				68603-15-6
5.0E+00	mg/m3	8hour	Negligible	TLV_TWA_irr	2.5E+02	mg/m3	1hour	Critical	TEEL3
1.7E+00	mg/m3	14day	Negligible	TLV_TWA_irr	5.0E+01	mg/m3	1hour	Marginal	TEEL2
1.7E+00	mg/m3	1year	Negligible	TLVirr	3.0E+01	mg/m3	1hour	Negligible	TEEL1
Adipic acid-TDI				68609-57-4	Aldicarb				116-06-3
2.5E+02	mg/m3	1hour	Critical	TEEL3	2.6E-01	mg/m3	1hour	Critical	AEGL3_1hr
5.0E+01	mg/m3	1hour	Marginal	TEEL2	8.7E-02	mg/m3	1hour	Marginal	AEGL2_1hr
3.0E+01	mg/m3	1hour	Negligible	TEEL1	3.0E-04	mg/m3	1hour	Negligible	TEEL1

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Aldrin				309-00-2	Allyl Alcohol				107-18-6
2.5E+01	mg/m3	1hour	Critical	TEEL3	4.8E+01	mg/m3	1hour	Critical	AEGL3_1hr*
1.0E+01	mg/m3	1hour	Marginal	TEEL2	1.0E+01	mg/m3	1hour	Marginal	AEGL2_1hr*
2.5E-01	mg/m3	1hour	Negligible	TEEL1	5.0E+00	mg/m3	1hour	Negligible	AEGL1_1hr*
5.0E-02	mg/m3	8hour	Negligible	TLV_TWA	5.0E+00	mg/m3	8hour	Negligible	AEGL1_8hr*
1.2E-02	mg/m3	14day	Negligible	TLV_TWA	4.1E-01	mg/m3	14day	Negligible	TLV_TWA_irr
9.8E-04	mg/m3	1year	Negligible	IRIS	6.8E-04	mg/m3	1year	Negligible	PPRTV_sub
Aldrithiol				2127-03-9	Allyl bromide				106-95-6
2.5E+02	mg/m3	1hour	Critical	TEEL3	1.0E+01	mg/m3	10min	Marginal	AEGL2_10min
5.0E+01	mg/m3	1hour	Marginal	TEEL2	1.0E+01	mg/m3	8hour	Marginal	AEGL2_8h*
3.0E+01	mg/m3	1hour	Negligible	TEEL1	2.4E+01	mg/m3	8hour	Critical	AEGL3_8h*
Aliphatic Hydrocarbon				X-068*	Allyl chloride				107-05-1
2.0E+02	mg/m3	1hour	Critical	TEEL3	4.4E+02	mg/m3	1hour	Critical	AEGL3_1hr
4.0E+01	mg/m3	1hour	Marginal	TEEL2	1.7E+02	mg/m3	1hour	Marginal	AEGL2_1hr
6.0E+00	mg/m3	1hour	Negligible	TEEL1	8.8E+00	mg/m3	1hour	Negligible	AEGL1_1hr
Aliphatic Naphtha				64742-89-8 (2)	Allyl chloroformate				2937-50-0
5.0E+02	mg/m3	1hour	Critical	TEEL3	8.8E+00	mg/m3	8hour	Negligible	AEGL1_8hr
4.0E+02	mg/m3	1hour	Marginal	TEEL2	7.7E-01	mg/m3	14day	Negligible	TLV_TWA
6.0E+01	mg/m3	1hour	Negligible	TEEL1	6.8E-03	mg/m3	1year	Negligible	IRIS_sub
Alizarin Red B				72-48-0	Allyl formate				1838-59-1
1.3E+02	mg/m3	1hour	Critical	TEEL3	4.0E+02	mg/m3	1hour	Critical	TEEL3
2.5E+01	mg/m3	1hour	Marginal	TEEL2	7.5E+01	mg/m3	1hour	Marginal	TEEL2
4.0E+00	mg/m3	1hour	Negligible	TEEL1	1.3E+01	mg/m3	1hour	Negligible	TEEL1
Alizarine Red S				130-22-3	Allyl glycidyl ether				106-92-3
6.0E+01	mg/m3	1hour	Critical	TEEL3	4.7E+00	mg/m3	8hour	Negligible	TLV_TWA_irr
1.3E+01	mg/m3	1hour	Marginal	TEEL2	1.6E+00	mg/m3	14day	Negligible	TLV_TWA_irr
1.5E+00	mg/m3	1hour	Negligible	TEEL1	1.6E+00	mg/m3	1year	Negligible	TLVirr
Alkyl dimethylbenzyl ammonium chloride				8001-54-5	Allyl isothiocyanate				57-06-7
1.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+01	mg/m3	1hour	Critical	TEEL3
1.0E+02	mg/m3	1hour	Marginal	TEEL2	1.0E+01	mg/m3	1hour	Marginal	TEEL2
2.0E+01	mg/m3	1hour	Negligible	TEEL1	4.0E+00	mg/m3	1hour	Negligible	TEEL1
Alkylamines				0-305*	Allyl propyl disulfide				2179-59-1
2.5E+02	mg/m3	1hour	Critical	TEEL3	3.0E+00	mg/m3	8hour	Negligible	TLV_TWA_irr
5.0E+01	mg/m3	1hour	Marginal	TEEL2	1.0E+00	mg/m3	14day	Negligible	TLV_TWA_irr
3.0E+01	mg/m3	1hour	Negligible	TEEL1	1.0E+00	mg/m3	1year	Negligible	TLVirr
Alkylbenzene (C10-C16)				68648-87-3					
5.0E+02	mg/m3	1hour	Critical	TEEL3					
5.0E+02	mg/m3	1hour	Marginal	TEEL2					
2.5E+02	mg/m3	1hour	Negligible	TEEL1					
Allene				463-49-0					
6.0E+03	mg/m3	1hour	Critical	TEEL3					
1.3E+03	mg/m3	1hour	Marginal	TEEL2					
2.0E+02	mg/m3	1hour	Negligible	TEEL1					

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Allylamine				107-11-9	Aluminum hexafluorosilicate				17099-70-6
4.2E+01	mg/m3	1hour	Critical	AEGL3_1hr	3.5E+02	mg/m3	1hour	Critical	TEEL3
7.7E+00	mg/m3	1hour	Marginal	AEGL2_1hr	1.8E+01	mg/m3	1hour	Marginal	TEEL2
9.8E-01	mg/m3	1hour	Negligible	AEGL1_1hr	1.1E+01	mg/m3	1hour	Negligible	TEEL1
9.8E-01	mg/m3	8hour	Negligible	AEGL1_8hr	Aluminum hydroxide				21645-51-2
Allylmagnesium bromide				1730-25-2	1.3E+02	mg/m3	1hour	Critical	TEEL3
2.5E+02	mg/m3	1hour	Critical	TEEL3	1.3E+02	mg/m3	1hour	Marginal	TEEL2
5.0E+01	mg/m3	1hour	Marginal	TEEL2	1.2E+01	mg/m3	1hour	Negligible	TEEL1
3.0E+01	mg/m3	1hour	Negligible	TEEL1	Aluminum nitrate				13473-90-0
Allyltrichlorosilane				107-37-9	5.0E+02	mg/m3	1hour	Critical	TEEL3
2.4E+02	mg/m3	1hour	Critical	AEGL3_1hr	3.5E+02	mg/m3	1hour	Marginal	TEEL2
5.2E+01	mg/m3	1hour	Marginal	AEGL2_1hr	5.0E+01	mg/m3	1hour	Negligible	TEEL1
4.3E+00	mg/m3	1hour	Negligible	AEGL1_1hr	Aluminum nitrate nonahydrate				7784-27-2
4.3E+00	mg/m3	8hour	Negligible	AEGL1_8hr	5.0E+02	mg/m3	1hour	Critical	TEEL3
Alpha,alpha,4-trimethyl-3-cyclohexene-1-methanol, (S)-				10482-56-1	1.5E+02	mg/m3	1hour	Marginal	TEEL2
5.0E+02	mg/m3	1hour	Critical	TEEL3	7.0E+01	mg/m3	1hour	Negligible	TEEL1
5.0E+02	mg/m3	1hour	Marginal	TEEL2	Aluminum oxide				1344-28-1
3.5E+02	mg/m3	1hour	Negligible	TEEL1	2.5E+01	mg/m3	1hour	Critical	TEEL3
Alphahydroxybenzeneacetic acid, (+)-				611-72-3	1.5E+01	mg/m3	1hour	Marginal	TEEL2
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.5E+00	mg/m3	1hour	Negligible	TEEL1
3.5E+02	mg/m3	1hour	Marginal	TEEL2	Aluminum oxide hydrate				1333-84-2
5.0E+01	mg/m3	1hour	Negligible	TEEL1	2.5E+01	mg/m3	1hour	Critical	TEEL3
Aluminon				569-58-4	1.5E+01	mg/m3	1hour	Marginal	TEEL2
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.5E+00	mg/m3	1hour	Negligible	TEEL1
7.5E-03	mg/m3	1hour	Marginal	TEEL2	Aluminum phosphate				7784-30-7
1.3E-03	mg/m3	1hour	Negligible	TEEL1	5.0E+02	mg/m3	1hour	Critical	TEEL3
Aluminum acetate, basic				7360-44-3	5.0E+02	mg/m3	1hour	Marginal	TEEL2
2.0E+02	mg/m3	1hour	Critical	TEEL3	1.0E+02	mg/m3	1hour	Negligible	TEEL1
4.5E+01	mg/m3	1hour	Marginal	TEEL2	Aluminum phosphate solution				13530-50-2
2.7E+01	mg/m3	1hour	Negligible	TEEL1	3.0E+02	mg/m3	1hour	Critical	TEEL3
Aluminum carbide				1299-86-1	6.0E+01	mg/m3	1hour	Marginal	TEEL2
3.5E+01	mg/m3	1hour	Critical	TEEL3	6.0E+01	mg/m3	1hour	Negligible	TEEL1
6.7E+00	mg/m3	1hour	Marginal	TEEL2	Aluminum phosphide				20859-73-8
6.7E+00	mg/m3	1hour	Negligible	TEEL1	8.5E+00	mg/m3	1hour	Critical	AEGL3_1hr
Aluminum chloride				7446-70-0	4.7E+00	mg/m3	1hour	Marginal	AEGL2_1hr
5.0E+02	mg/m3	1hour	Critical	TEEL3	Aluminum potassium sulfate				10043-67-1
6.0E+01	mg/m3	1hour	Marginal	TEEL2	1.0E+02	mg/m3	1hour	Critical	TEEL3
9.9E+00	mg/m3	1hour	Negligible	TEEL1	4.8E+01	mg/m3	1hour	Marginal	TEEL2
Aluminum chloride hexahydrate				7784-13-6	4.8E+01	mg/m3	1hour	Negligible	TEEL1
5.0E+02	mg/m3	1hour	Critical	TEEL3	Aluminum potassium sulfate, dodecahydrate				7784-24-9
1.5E+02	mg/m3	1hour	Marginal	TEEL2	5.0E+02	mg/m3	1hour	Critical	TEEL3
2.5E+01	mg/m3	1hour	Negligible	TEEL1	1.3E+02	mg/m3	1hour	Marginal	TEEL2
Aluminum fluoride				7784-18-1	8.8E+01	mg/m3	1hour	Negligible	TEEL1
4.0E+01	mg/m3	1hour	Critical	TEEL3	Aluminum sulfate				10043-01-3
7.5E+00	mg/m3	1hour	Marginal	TEEL2	5.0E+02	mg/m3	1hour	Critical	TEEL3
6.2E+00	mg/m3	1hour	Negligible	TEEL1	3.2E+01	mg/m3	1hour	Marginal	TEEL2
					3.2E+01	mg/m3	1hour	Negligible	TEEL1

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Aluminum yellow 4A				10343-58-5	Amberlite ZAD-16				9003-69-4
2.5E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
2.5E+01	mg/m3	1hour	Marginal	TEEL2	1.5E+02	mg/m3	1hour	Marginal	TEEL2
1.5E+01	mg/m3	1hour	Negligible	TEEL1	2.5E+01	mg/m3	1hour	Negligible	TEEL1
Aluminum(III) isopropylate				555-31-7	Amberlyst 15				9037-24-5
5.0E+02	mg/m3	1hour	Critical	TEEL3	2.5E+02	mg/m3	1hour	Critical	TEEL3
3.8E+01	mg/m3	1hour	Marginal	TEEL2	5.0E+01	mg/m3	1hour	Marginal	TEEL2
3.8E+01	mg/m3	1hour	Negligible	TEEL1	3.0E+01	mg/m3	1hour	Negligible	TEEL1
Aluminum, elemental				7429-90-5	Amino-1,3-naphthalenedisulfonic acid, 7-				86-65-7
5.0E+02	mg/m3	1hour	Critical	TEEL3	4.0E+02	mg/m3	1hour	Critical	TEEL3
5.0E+02	mg/m3	1hour	Marginal	TEEL2	7.5E+01	mg/m3	1hour	Marginal	TEEL2
5.0E+00	mg/m3	1hour	Negligible	TEEL1	1.0E+01	mg/m3	1hour	Negligible	TEEL1
1.0E+00	mg/m3	8hour	Negligible	TLV_TWA_irr	Amino-1-propanol, 3-				156-87-6
3.4E-01	mg/m3	14day	Negligible	TLV_TWA_irr	5.0E+02	mg/m3	1hour	Critical	TEEL3
3.4E-03	mg/m3	1year	Negligible	PPRTV_chr	3.0E-01	mg/m3	1hour	Marginal	TEEL2
Amberjet 4200-CI				60177-39-1	4.0E-02	mg/m3	1hour	Negligible	TEEL1
2.5E+02	mg/m3	1hour	Critical	TEEL3	Amino-2,6-dinitrotoluene, 4-				6393-42-6
5.0E+01	mg/m3	1hour	Marginal	TEEL2	2.5E+02	mg/m3	1hour	Critical	TEEL3
3.0E+01	mg/m3	1hour	Negligible	TEEL1	5.0E+01	mg/m3	1hour	Marginal	TEEL2
Amberlite				100915-96-6	7.5E+00	mg/m3	1hour	Negligible	TEEL1
5.0E+02	mg/m3	1hour	Critical	TEEL3	Amino-2-methyl-2-propanol, 1-				2854-16-2
4.0E+02	mg/m3	1hour	Marginal	TEEL2	5.0E+02	mg/m3	1hour	Critical	TEEL3
6.0E+01	mg/m3	1hour	Negligible	TEEL1	2.0E+02	mg/m3	1hour	Marginal	TEEL2
Amberlite IR-120(PLUS) ion-exchange resin				78922-04-0	3.0E+01	mg/m3	1hour	Negligible	TEEL1
2.0E+02	mg/m3	1hour	Critical	TEEL3	Amino-4,6-dinitrotoluene, 2-				35572-78-2
4.0E+01	mg/m3	1hour	Marginal	TEEL2	5.0E+02	mg/m3	1hour	Critical	TEEL3
6.0E+00	mg/m3	1hour	Negligible	TEEL1	1.3E+02	mg/m3	1hour	Marginal	TEEL2
Amberlite IR-120plus				9002-23-7	1.5E+01	mg/m3	1hour	Negligible	TEEL1
2.0E+02	mg/m3	1hour	Critical	TEEL3	Aminoanthraquinone, 2-				117-79-3
4.0E+01	mg/m3	1hour	Marginal	TEEL2	5.0E+02	mg/m3	1hour	Critical	TEEL3
6.0E+00	mg/m3	1hour	Negligible	TEEL1	1.5E+02	mg/m3	1hour	Marginal	TEEL2
Amberlite IRA-400(CI)				9002-24-8	2.5E+01	mg/m3	1hour	Negligible	TEEL1
2.5E+02	mg/m3	1hour	Critical	TEEL3	Aminobenzoic acid, 2-				118-92-3
5.0E+01	mg/m3	1hour	Marginal	TEEL2	5.0E+02	mg/m3	1hour	Critical	TEEL3
3.0E+01	mg/m3	1hour	Negligible	TEEL1	1.0E+02	mg/m3	1hour	Marginal	TEEL2
Amberlite XAD-16, -7, -4 resin				104219-63-8	1.3E+01	mg/m3	1hour	Negligible	TEEL1
5.0E+02	mg/m3	1hour	Critical	TEEL3	Aminobenzoic acid, 4-				150-13-0
4.0E+02	mg/m3	1hour	Marginal	TEEL2	5.0E+02	mg/m3	1hour	Critical	TEEL3
6.0E+01	mg/m3	1hour	Negligible	TEEL1	1.0E+02	mg/m3	1hour	Marginal	TEEL2
Amberlite XAD-2				9060-05-3	1.5E+01	mg/m3	1hour	Negligible	TEEL1
2.5E+02	mg/m3	1hour	Critical	TEEL3	Aminodiphenyl, p-				92-67-1
5.0E+01	mg/m3	1hour	Marginal	TEEL2	2.0E+02	mg/m3	1hour	Critical	TEEL3
3.0E+01	mg/m3	1hour	Negligible	TEEL1	1.0E+01	mg/m3	1hour	Marginal	TEEL2
Amberlite XAD-7				37380-43-1	1.5E+00	mg/m3	1hour	Negligible	TEEL1
2.5E+02	mg/m3	1hour	Critical	TEEL3					
5.0E+01	mg/m3	1hour	Marginal	TEEL2					
3.0E+01	mg/m3	1hour	Negligible	TEEL1					

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Aminoethylethanolamine				111-41-1	Amiton oxalate				3734-97-2
5.0E+02 mg/m3		1hour	Critical	TEEL3	3.0E+00 mg/m3	1hour	1hour	Critical	TEEL3
2.5E+02 mg/m3		1hour	Marginal	TEEL2	3.0E+00 mg/m3	1hour	1hour	Marginal	TEEL2
3.5E+01 mg/m3		1hour	Negligible	TEEL1	1.5E+00 mg/m3	1hour	1hour	Negligible	TEEL1
Aminoethylpiperazine, 1-				140-31-8	Amitrole				61-82-5
5.0E+02 mg/m3		1hour	Critical	TEEL3	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
5.0E+01 mg/m3		1hour	Marginal	TEEL2	1.3E+02 mg/m3	1hour	1hour	Marginal	TEEL2
7.5E+00 mg/m3		1hour	Negligible	TEEL1	6.0E-01 mg/m3	1hour	1hour	Negligible	TEEL1
Aminoheptane, 3-				28292-42-4	Ammonia				7664-41-7
3.0E+01 mg/m3		1hour	Critical	TEEL3	2.0E-01 mg/m3	8hour	8hour	Negligible	TLV_TWA
6.0E+00 mg/m3		1hour	Marginal	TEEL2	4.9E-02 mg/m3	14day	14day	Negligible	TLV_TWA
7.5E-01 mg/m3		1hour	Negligible	TEEL1	4.9E-02 mg/m3	1year	1year	Negligible	TLVadj
Aminophenol, 2-				95-55-6	Ammonium acetate				631-61-8
5.0E+02 mg/m3		1hour	Critical	TEEL3	2.5E+02 mg/m3	1hour	1hour	Critical	TEEL3
1.0E+01 mg/m3		1hour	Marginal	TEEL2	5.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
1.5E+00 mg/m3		1hour	Negligible	TEEL1	7.5E+00 mg/m3	1hour	1hour	Negligible	TEEL1
Aminophenol, 3-				591-27-5	Ammonium aluminum fluoride				7784-19-2
1.3E+02 mg/m3		1hour	Critical	TEEL3	4.3E+02 mg/m3	1hour	1hour	Critical	TEEL3
2.0E+01 mg/m3		1hour	Marginal	TEEL2	7.5E+01 mg/m3	1hour	1hour	Marginal	TEEL2
3.0E+00 mg/m3		1hour	Negligible	TEEL1	1.3E+01 mg/m3	1hour	1hour	Negligible	TEEL1
Aminopropiophenone, 4-				70-69-9	Ammonium benzoate				1863-63-4
7.5E+01 mg/m3		1hour	Critical	TEEL3	3.5E+02 mg/m3	1hour	1hour	Critical	TEEL3
5.6E+00 mg/m3		1hour	Marginal	TEEL2	7.5E+01 mg/m3	1hour	1hour	Marginal	TEEL2
3.5E+00 mg/m3		1hour	Negligible	TEEL1	1.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
Aminopterin				54-62-6	Ammonium bicarbonate				1066-33-7
2.5E+01 mg/m3		1hour	Critical	TEEL3	2.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
2.5E+01 mg/m3		1hour	Marginal	TEEL2	4.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
1.5E+01 mg/m3		1hour	Negligible	TEEL1	6.0E+00 mg/m3	1hour	1hour	Negligible	TEEL1
Aminopyrazine				5049-61-6	Ammonium bifluoride				1341-49-7
2.0E+01 mg/m3		1hour	Critical	TEEL3	3.8E+02 mg/m3	1hour	1hour	Critical	TEEL3
1.0E+01 mg/m3		1hour	Marginal	TEEL2	7.5E+01 mg/m3	1hour	1hour	Marginal	TEEL2
6.0E+00 mg/m3		1hour	Negligible	TEEL1	1.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
Aminopyridine, 2-				504-29-0	Ammonium bisulfate				7803-63-6
1.9E+00 mg/m3		8hour	Negligible	TLV_TWA	2.5E+00 mg/m3	1hour	1hour	Critical	TEEL3
4.7E-01 mg/m3		14day	Negligible	TLV_TWA	5.0E-01 mg/m3	1hour	1hour	Marginal	TEEL2
4.7E-01 mg/m3		1year	Negligible	TLVadj	7.5E-02 mg/m3	1hour	1hour	Negligible	TEEL1
Aminopyridine, 4-				504-24-5					
2.0E+01 mg/m3		1hour	Critical	TEEL3					
2.0E+01 mg/m3		1hour	Marginal	TEEL2					
1.3E+01 mg/m3		1hour	Negligible	TEEL1					
Amiton				78-53-5					
3.3E+00 mg/m3		1hour	Critical	TEEL3					
3.3E+00 mg/m3		1hour	Marginal	TEEL2					
2.0E+00 mg/m3		1hour	Negligible	TEEL1					

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Ammonium bisulfite				10192-30-0	Ammonium fluoroborate				13826-83-0
2.5E+02 mg/m3		1hour	Critical	TEEL3	3.5E+02 mg/m3	1hour	1hour	Critical	TEEL3
5.0E+01 mg/m3		1hour	Marginal	TEEL2	6.0E+00 mg/m3	1hour	1hour	Marginal	TEEL2
3.0E+01 mg/m3		1hour	Negligible	TEEL1	3.5E+00 mg/m3	1hour	1hour	Negligible	TEEL1
Ammonium bromide				12124-97-9	Ammonium formate				540-69-2
5.0E+02 mg/m3		1hour	Critical	TEEL3	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
2.0E+02 mg/m3		1hour	Marginal	TEEL2	2.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
3.5E+01 mg/m3		1hour	Negligible	TEEL1	2.5E+01 mg/m3	1hour	1hour	Negligible	TEEL1
Ammonium carbamate				1111-78-0	Ammonium hydrogen oxalate hemihydrate				37541-72-3
3.5E+01 mg/m3		1hour	Critical	TEEL3	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
6.0E+00 mg/m3		1hour	Marginal	TEEL2	1.5E+02 mg/m3	1hour	1hour	Marginal	TEEL2
1.0E+00 mg/m3		1hour	Negligible	TEEL1	2.5E+01 mg/m3	1hour	1hour	Negligible	TEEL1
Ammonium carbonate				506-87-6	Ammonium hydroxide				1336-21-6
7.5E+01 mg/m3		1hour	Critical	TEEL3	1.5E+02 mg/m3	1hour	1hour	Critical	TEEL3
1.5E+01 mg/m3		1hour	Marginal	TEEL2	6.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
2.5E+00 mg/m3		1hour	Negligible	TEEL1	7.5E+00 mg/m3	1hour	1hour	Negligible	TEEL1
Ammonium chloride				12125-02-9	Ammonium iodide				12027-06-4
5.0E+02 mg/m3		1hour	Critical	TEEL3	4.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
5.0E+02 mg/m3		1hour	Marginal	TEEL2	7.5E+01 mg/m3	1hour	1hour	Marginal	TEEL2
2.0E+01 mg/m3		1hour	Negligible	TEEL1	1.3E+01 mg/m3	1hour	1hour	Negligible	TEEL1
1.0E+01 mg/m3		8hour	Negligible	TLV_TWA_irr	Ammonium iron (III) sulfate				10138-04-2
3.4E+00 mg/m3		14day	Negligible	TLV_TWA_irr	1.3E+02 mg/m3	1hour	1hour	Critical	TEEL3
3.4E+00 mg/m3		1year	Negligible	TLVirr	2.5E+01 mg/m3	1hour	1hour	Marginal	TEEL2
Ammonium chromate				7788-98-9	Ammonium lactate				515-98-0
4.4E+01 mg/m3		1hour	Critical	TEEL3	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
7.5E+00 mg/m3		1hour	Marginal	TEEL2	2.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
1.3E+00 mg/m3		1hour	Negligible	TEEL1	3.5E+01 mg/m3	1hour	1hour	Negligible	TEEL1
Ammonium citrate				7632-50-0	Ammonium lignin sulfonate				8061-53-8
1.5E+02 mg/m3		1hour	Critical	TEEL3	2.5E+02 mg/m3	1hour	1hour	Critical	TEEL3
3.0E+01 mg/m3		1hour	Marginal	TEEL2	5.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
4.0E+00 mg/m3		1hour	Negligible	TEEL1	3.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
Ammonium citrate tribasic				3458-72-8	Ammonium molybdate				13106-76-8
1.9E+02 mg/m3		1hour	Critical	TEEL3	3.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
3.5E+01 mg/m3		1hour	Marginal	TEEL2	1.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
5.0E+00 mg/m3		1hour	Negligible	TEEL1	6.1E+01 mg/m3	1hour	1hour	Negligible	TEEL1
Ammonium dichromate				7789-09-5	Ammonium molybdate (VI) tetrahydrate				12054-85-2
3.6E+01 mg/m3		1hour	Critical	TEEL3	1.5E+02 mg/m3	1hour	1hour	Critical	TEEL3
7.5E+00 mg/m3		1hour	Marginal	TEEL2	3.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
1.0E+00 mg/m3		1hour	Negligible	TEEL1	1.8E+01 mg/m3	1hour	1hour	Negligible	TEEL1
Ammonium ferrous sulfate hexahydrate				7783-85-9	Ammonium molybdenum oxide				27546-07-2
5.0E+02 mg/m3		1hour	Critical	TEEL3	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
1.6E+01 mg/m3		1hour	Marginal	TEEL2	8.8E+00 mg/m3	1hour	1hour	Marginal	TEEL2
9.6E+00 mg/m3		1hour	Negligible	TEEL1	8.8E+00 mg/m3	1hour	1hour	Negligible	TEEL1
Ammonium fluoride				12125-01-8					
4.9E+02 mg/m3		1hour	Critical	TEEL3					
4.9E+00 mg/m3		1hour	Marginal	TEEL2					
4.9E+00 mg/m3		1hour	Negligible	TEEL1					

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Ammonium molybdophosphate				12026-66-3	Ammonium picrate				131-74-8
4.0E+02 mg/m3		1hour	Critical	TEEL3	2.5E+02 mg/m3	1hour	1hour	Critical	TEEL3
8.2E+01 mg/m3		1hour	Marginal	TEEL2	5.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
4.9E+01 mg/m3		1hour	Negligible	TEEL1	3.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
Ammonium molybdate				11098-84-3	Ammonium polyacrylate				9003-03-6
5.0E+02 mg/m3		1hour	Critical	TEEL3	2.5E+02 mg/m3	1hour	1hour	Critical	TEEL3
5.0E+02 mg/m3		1hour	Marginal	TEEL2	5.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
3.5E+00 mg/m3		1hour	Negligible	TEEL1	3.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
Ammonium nitrate				6484-52-2	Ammonium salt				14307-43-8
5.0E+02 mg/m3		1hour	Critical	TEEL3	2.5E+02 mg/m3	1hour	1hour	Critical	TEEL3
3.0E-01 mg/m3		1hour	Marginal	TEEL2	5.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
4.0E-02 mg/m3		1hour	Negligible	TEEL1	3.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
Ammonium oxalate				1113-38-8	Ammonium silicofluoride				16919-19-0
2.0E+01 mg/m3		1hour	Critical	TEEL3	3.9E+02 mg/m3	1hour	1hour	Critical	TEEL3
4.0E+00 mg/m3		1hour	Marginal	TEEL2	2.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
5.0E-01 mg/m3		1hour	Negligible	TEEL1	1.2E+01 mg/m3	1hour	1hour	Negligible	TEEL1
Ammonium oxalate hydrate				6009-70-7	Ammonium sulfamate				7773-06-0
1.5E+02 mg/m3		1hour	Critical	TEEL3	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
3.0E+01 mg/m3		1hour	Marginal	TEEL2	3.5E+02 mg/m3	1hour	1hour	Marginal	TEEL2
4.0E+00 mg/m3		1hour	Negligible	TEEL1	3.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
Ammonium oxalate monohydrate				5972-73-6	Ammonium sulfate				7783-20-2
1.5E+02 mg/m3		1hour	Critical	TEEL3	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
3.0E+01 mg/m3		1hour	Marginal	TEEL2	5.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
4.0E+00 mg/m3		1hour	Negligible	TEEL1	1.3E+02 mg/m3	1hour	1hour	Negligible	TEEL1
Ammonium pentaborate				12007-89-5	Ammonium sulfite				10196-04-0
2.5E+02 mg/m3		1hour	Critical	TEEL3	1.0E+01 mg/m3	1hour	1hour	Critical	TEEL3
5.0E+01 mg/m3		1hour	Marginal	TEEL2	1.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
3.0E+01 mg/m3		1hour	Negligible	TEEL1	1.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
Ammonium perchlorate				7790-98-9	Ammonium sulfite monohydrate				7783-11-1
5.0E+02 mg/m3		1hour	Critical	TEEL3	2.5E+02 mg/m3	1hour	1hour	Critical	TEEL3
1.0E+02 mg/m3		1hour	Marginal	TEEL2	5.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
1.5E+01 mg/m3		1hour	Negligible	TEEL1	3.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
Ammonium perfluorooctanoate				3825-26-1	Ammonium tartrate				3164-29-2
1.0E-02 mg/m3		8hour	Negligible	TLV_TWA	2.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
2.4E-03 mg/m3		14day	Negligible	TLV_TWA	4.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
2.4E-03 mg/m3		1year	Negligible	TLVadj	5.0E+00 mg/m3	1hour	1hour	Negligible	TEEL1
Ammonium permanganate				13446-10-1	Ammonium thiocyanate				1762-95-4
5.0E+02 mg/m3		1hour	Critical	TEEL3	2.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
5.0E+00 mg/m3		1hour	Marginal	TEEL2	2.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
3.0E+00 mg/m3		1hour	Negligible	TEEL1	3.5E+01 mg/m3	1hour	1hour	Negligible	TEEL1
Ammonium persulfate				7727-54-0	Ammonium thiosulfate				7783-18-8
1.0E+02 mg/m3		1hour	Critical	TEEL3	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
2.0E+01 mg/m3		1hour	Marginal	TEEL2	2.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
2.5E+00 mg/m3		1hour	Negligible	TEEL1	2.5E+01 mg/m3	1hour	1hour	Negligible	TEEL1

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Ammonium tungstate(VI)				11120-25-5	Anhydrone				10034-81-8
4.1E+00	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
4.1E+00	mg/m3	1hour	Marginal	TEEL2	1.3E+02	mg/m3	1hour	Marginal	TEEL2
4.1E+00	mg/m3	1hour	Negligible	TEEL1	1.5E+01	mg/m3	1hour	Negligible	TEEL1
Ammonium vanadate				7803-55-6	Aniline				62-53-3
7.5E-01	mg/m3	1hour	Critical	TEEL3	7.6E+01	mg/m3	1hour	Critical	AEGL3_1hr
3.2E-01	mg/m3	1hour	Marginal	TEEL2	4.6E+01	mg/m3	1hour	Marginal	AEGL2_1hr
4.0E-02	mg/m3	1hour	Negligible	TEEL1	3.0E+01	mg/m3	1hour	Negligible	AEGL1_1hr
Ammonium-d4 deuterioxide				13550-49-7	Anisidine, o-				90-04-0
7.5E+02	mg/m3	1hour	Critical	TEEL3	3.8E+00	mg/m3	8hour	Negligible	AEGL1_8hr
1.3E+02	mg/m3	1hour	Marginal	TEEL2	1.9E+00	mg/m3	14day	Negligible	TLV_TWA
2.5E+01	mg/m3	1hour	Negligible	TEEL1	6.8E-03	mg/m3	1year	Negligible	IRIS_sub
Amosite				12172-73-5	Anisidine, p-				104-94-9
1.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+01	mg/m3	1hour	Critical	TEEL3
2.0E+01	mg/m3	1hour	Marginal	TEEL2	2.5E+00	mg/m3	1hour	Marginal	TEEL2
5.0E-02	mg/m3	1hour	Negligible	TEEL1	1.5E+00	mg/m3	1hour	Negligible	TEEL1
Amphetamine				300-62-9	Anisole				100-66-3
2.0E+01	mg/m3	1hour	Critical	TEEL3	5.0E-01	mg/m3	8hour	Negligible	TLV_TWA
2.0E+01	mg/m3	1hour	Marginal	TEEL2	1.2E-01	mg/m3	14day	Negligible	TLV_TWA
1.3E+01	mg/m3	1hour	Negligible	TEEL1	1.2E-01	mg/m3	1year	Negligible	TLVadj
Amyl acetate				628-63-7	Anisidine, p-				104-94-9
5.0E+03	mg/m3	1hour	Critical	TEEL3	5.0E+01	mg/m3	1hour	Critical	TEEL3
5.0E+02	mg/m3	1hour	Marginal	TEEL2	2.5E+00	mg/m3	1hour	Marginal	TEEL2
5.0E+02	mg/m3	1hour	Negligible	TEEL1	1.5E+00	mg/m3	1hour	Negligible	TEEL1
2.7E+02	mg/m3	8hour	Negligible	TLV_TWA_irr	5.0E-01	mg/m3	8hour	Negligible	TLV_TWA
9.1E+01	mg/m3	14day	Negligible	TLV_TWA_irr	1.2E-01	mg/m3	14day	Negligible	TLV_TWA
9.1E+01	mg/m3	1year	Negligible	TLVirr	1.2E-01	mg/m3	1year	Negligible	TLVadj
Amyl acetate, sec-				626-38-0	Anisole				100-66-3
2.7E+02	mg/m3	8hour	Negligible	TLV_TWA_irr	4.0E+02	mg/m3	1hour	Critical	TEEL3
9.1E+01	mg/m3	14day	Negligible	TLV_TWA_irr	7.5E+01	mg/m3	1hour	Marginal	TEEL2
9.1E+01	mg/m3	1year	Negligible	TLVirr	1.3E+01	mg/m3	1hour	Negligible	TEEL1
Amyl alcohol				71-41-0	Anthracene				120-12-7
1.3E+02	mg/m3	1hour	Critical	TEEL3	1.5E+02	mg/m3	1hour	Critical	TEEL3
7.5E+01	mg/m3	1hour	Marginal	TEEL2	3.0E+01	mg/m3	1hour	Marginal	TEEL2
7.5E+01	mg/m3	1hour	Negligible	TEEL1	4.0E+00	mg/m3	1hour	Negligible	TEEL1
Amylamine				110-58-7	Anthracenedisulfonic acid, 2,6-				2861-02-1
3.0E+01	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
6.0E+00	mg/m3	1hour	Marginal	TEEL2	2.5E+02	mg/m3	1hour	Marginal	TEEL2
7.5E-01	mg/m3	1hour	Negligible	TEEL1	3.5E+01	mg/m3	1hour	Negligible	TEEL1
Amyltrichlorosilane				107-72-2	Anthraquinone				84-65-1
2.8E+02	mg/m3	1hour	Critical	AEGL3_1hr	5.0E+02	mg/m3	1hour	Critical	TEEL3
6.1E+01	mg/m3	1hour	Marginal	AEGL2_1hr	1.0E+02	mg/m3	1hour	Marginal	TEEL2
5.0E+00	mg/m3	1hour	Negligible	AEGL1_1hr	1.5E+01	mg/m3	1hour	Negligible	TEEL1
5.0E+00	mg/m3	8hour	Negligible	AEGL1_8hr	Antimony pentachloride				7647-18-9
					1.2E+02	mg/m3	1hour	Critical	TEEL3
					6.1E+00	mg/m3	1hour	Marginal	TEEL2
					3.7E+00	mg/m3	1hour	Negligible	TEEL1

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Antimony pentafluoride				7783-70-2	Aramite				140-57-8
8.9E+01 mg/m3		1hour	Critical	TEEL3	6.8E-01 mg/m3	1year	Negligible	IRIS	
2.7E+00 mg/m3		1hour	Marginal	TEEL2	Arginine, L-				74-79-3
8.9E-01 mg/m3		1hour	Negligible	TEEL1	2.5E+02 mg/m3	1hour	Critical	TEEL3	
Antimony pentasulfide				1315-04-4	5.0E+01 mg/m3	1hour	Marginal	TEEL2	
8.3E+01 mg/m3		1hour	Critical	TEEL3	3.0E+01 mg/m3	1hour	Negligible	TEEL1	
4.2E+00 mg/m3		1hour	Marginal	TEEL2	Argon				7440-37-1
2.5E+00 mg/m3		1hour	Negligible	TEEL1	6.0E+05 mg/m3	1hour	Critical	TEEL3	
Antimony potassium tartrate				28300-74-5	3.5E+05 mg/m3	1hour	Marginal	TEEL2	
1.3E+02 mg/m3		1hour	Critical	TEEL3	1.0E+05 mg/m3	1hour	Negligible	TEEL1	
6.5E+00 mg/m3		1hour	Marginal	TEEL2	Aroclor 1016				12674-11-2
3.9E+00 mg/m3		1hour	Negligible	TEEL1	5.0E+00 mg/m3	1hour	Critical	TEEL3	
Antimony trichloride				10025-91-9	1.0E+00 mg/m3	1hour	Marginal	TEEL2	
9.4E+01 mg/m3		1hour	Critical	TEEL3	6.0E-01 mg/m3	1hour	Negligible	TEEL1	
9.4E-01 mg/m3		1hour	Marginal	TEEL2	Aroclor 1016/1242 mixture				0-312*
9.4E-01 mg/m3		1hour	Negligible	TEEL1	5.0E+00 mg/m3	1hour	Critical	TEEL3	
Antimony trifluoride				7783-56-4	1.0E+00 mg/m3	1hour	Marginal	TEEL2	
7.3E+01 mg/m3		1hour	Critical	TEEL3	6.0E-01 mg/m3	1hour	Negligible	TEEL1	
4.0E+00 mg/m3		1hour	Marginal	TEEL2	Aroclor 1221				11104-28-2
7.3E-01 mg/m3		1hour	Negligible	TEEL1	5.0E+00 mg/m3	1hour	Critical	TEEL3	
Antimony trioxide				1309-64-4	1.0E+00 mg/m3	1hour	Marginal	TEEL2	
6.0E+01 mg/m3		1hour	Critical	TEEL3	6.0E-01 mg/m3	1hour	Negligible	TEEL1	
4.0E+00 mg/m3		1hour	Marginal	TEEL2	Aroclor 1232				11141-16-5
1.8E+00 mg/m3		1hour	Negligible	TEEL1	5.0E+00 mg/m3	1hour	Critical	TEEL3	
1.4E-04 mg/m3		1year	Negligible	PPRTV_sub	1.0E+00 mg/m3	1hour	Marginal	TEEL2	
Antimony, elemental				7440-36-0	6.0E-01 mg/m3	1hour	Negligible	TEEL1	
5.0E+01 mg/m3		1hour	Critical	TEEL3	Aroclor 1242				53469-21-9
2.0E+01 mg/m3		1hour	Marginal	TEEL2	5.0E+00 mg/m3	1hour	Critical	TEEL3	
1.5E+00 mg/m3		1hour	Negligible	TEEL1	5.0E+00 mg/m3	1hour	Marginal	TEEL2	
5.0E-01 mg/m3		8hour	Negligible	TLV_TWA_irr	3.0E+00 mg/m3	1hour	Negligible	TEEL1	
1.7E-01 mg/m3		14day	Negligible	TLV_TWA_irr	1.0E+00 mg/m3	8hour	Negligible	TLV_TWA_irr	
1.7E-01 mg/m3		1year	Negligible	TLVirr	3.4E-01 mg/m3	14day	Negligible	TLV_TWA_irr	
Antimycin A				1397-94-0	3.4E-01 mg/m3	1year	Negligible	TLVirr	
1.3E+01 mg/m3		1hour	Critical	TEEL3	Aroclor 1248				12672-29-6
1.8E+00 mg/m3		1hour	Marginal	TEEL2	5.0E+00 mg/m3	1hour	Critical	TEEL3	
1.0E+00 mg/m3		1hour	Negligible	TEEL1	1.0E+00 mg/m3	1hour	Marginal	TEEL2	
ANTU				86-88-4	6.0E-01 mg/m3	1hour	Negligible	TEEL1	
1.0E+02 mg/m3		1hour	Critical	TEEL3	Aroclor 1254				11097-69-1
1.0E+01 mg/m3		1hour	Marginal	TEEL2	5.0E+00 mg/m3	1hour	Critical	TEEL3	
9.0E-01 mg/m3		1hour	Negligible	TEEL1	2.5E+00 mg/m3	1hour	Marginal	TEEL2	
3.0E-01 mg/m3		8hour	Negligible	TLV_TWA_irr	1.5E+00 mg/m3	1hour	Negligible	TEEL1	
1.0E-01 mg/m3		14day	Negligible	TLV_TWA_irr	5.0E-01 mg/m3	8hour	Negligible	TLV_TWA_irr	
1.0E-01 mg/m3		1year	Negligible	TLVirr	1.7E-01 mg/m3	14day	Negligible	TLV_TWA_irr	
Aqua regia				8007-56-5	1.7E-01 mg/m3	1year	Negligible	TLVirr	
4.0E+02 mg/m3		1hour	Critical	TEEL3					
7.5E+01 mg/m3		1hour	Marginal	TEEL2					
4.0E+00 mg/m3		1hour	Negligible	TEEL1					

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Aroclor 1260				11096-82-5	Arsenous trichloride				7784-34-1
5.0E+00	mg/m3	1hour	Critical	TEEL3	7.5E+01	mg/m3	1hour	Critical	TEEL3
1.5E+00	mg/m3	1hour	Marginal	TEEL2	1.0E+01	mg/m3	1hour	Marginal	TEEL2
6.0E-01	mg/m3	1hour	Negligible	TEEL1	1.5E+00	mg/m3	1hour	Negligible	TEEL1
Aroclor 1260/1262 mixture				0-313*	Arsine				7784-42-1
5.0E+00	mg/m3	1hour	Critical	TEEL3	1.6E+00	mg/m3	1hour	Critical	AEGL3_1hr*
1.5E+00	mg/m3	1hour	Marginal	TEEL2	5.0E-01	mg/m3	1hour	Marginal	AEGL2_1hr*
6.0E-01	mg/m3	1hour	Negligible	TEEL1	1.5E-01	mg/m3	1hour	Negligible	TEEL1*
Aroclor 1262				37324-23-5	Asbestos				1332-21-4
5.0E+00	mg/m3	1hour	Critical	TEEL3	1.6E-02	mg/m3	8hour	Negligible	TLV_TWA*
5.0E+00	mg/m3	1hour	Marginal	TEEL2	3.9E-03	mg/m3	14day	Negligible	TLV_TWA
3.0E+00	mg/m3	1hour	Negligible	TEEL1	3.4E-05	mg/m3	1year	Negligible	IRIS_chr
Aroclor 1268				11100-14-4	Ascaridole				512-85-6
5.0E+00	mg/m3	1hour	Critical	TEEL3	7.5E+01	mg/m3	1hour	Critical	TEEL3
1.0E+00	mg/m3	1hour	Marginal	TEEL2	2.0E+01	mg/m3	1hour	Marginal	TEEL2
6.0E-01	mg/m3	1hour	Negligible	TEEL1	2.5E+00	mg/m3	1hour	Negligible	TEEL1
Aromatic hydrocarbon solvents				64742-95-6	Ascarite (II) ®				81133-20-2
3.5E+03	mg/m3	1hour	Critical	TEEL3	2.5E+00	mg/m3	1hour	Critical	TEEL3
3.5E+03	mg/m3	1hour	Marginal	TEEL2	5.0E-01	mg/m3	1hour	Marginal	TEEL2
3.5E+03	mg/m3	1hour	Negligible	TEEL1	3.0E-01	mg/m3	1hour	Negligible	TEEL1
6.8E-01	mg/m3	1year	Negligible	PPRTV_sub	Ascorbic acid				50-81-7
Aromatic isocyanate mixture				X-210*	Asphalt				8052-42-4
1.3E+02	mg/m3	1hour	Critical	TEEL3	2.5E+01	mg/m3	1hour	Critical	TEEL3
2.0E+01	mg/m3	1hour	Marginal	TEEL2	5.0E+00	mg/m3	1hour	Marginal	TEEL2
4.0E+00	mg/m3	1hour	Negligible	TEEL1	7.5E-01	mg/m3	1hour	Negligible	TEEL1
Arsenic acid				1327-52-2	Atrazine				1912-24-9
9.5E+00	mg/m3	1hour	Critical	TEEL3	5.0E+00	mg/m3	8hour	Negligible	TLV_TWA_irr
3.0E+00	mg/m3	1hour	Marginal	TEEL2	1.7E+00	mg/m3	14day	Negligible	TLV_TWA_irr
4.0E-01	mg/m3	1hour	Negligible	TEEL1	1.7E+00	mg/m3	1year	Negligible	TLVirr
Arsenic compounds				As cmpds	Auramine				2465-27-2
5.0E+00	mg/m3	1hour	Critical	TEEL3	6.0E+01	mg/m3	1hour	Critical	TEEL3
2.0E+00	mg/m3	1hour	Marginal	TEEL2	6.0E+01	mg/m3	1hour	Marginal	TEEL2
3.5E-01	mg/m3	1hour	Negligible	TEEL1	7.5E+00	mg/m3	1hour	Negligible	TEEL1
1.0E-02	mg/m3	8hour	Negligible	TLV_TWA					
2.4E-03	mg/m3	14day	Negligible	TLV_TWA					
2.4E-03	mg/m3	1year	Negligible	TLVadj					
Arsenic pentoxide				1303-28-2					
7.7E+00	mg/m3	1hour	Critical	TEEL3					
7.7E+00	mg/m3	1hour	Marginal	TEEL2					
1.0E+00	mg/m3	1hour	Negligible	TEEL1					
Arsenic trioxide				1327-53-3					
9.1E+00	mg/m3	1hour	Critical	AEGL3_1hr					
3.0E+00	mg/m3	1hour	Marginal	AEGL2_1hr					
4.0E-01	mg/m3	1hour	Negligible	TEEL1					
Arsenic, elemental				7440-38-2					
1.1E-03	mg/m3	1year	Negligible	IRIS					

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN		
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis		
Azaserine					115-02-6	Barium chromate					10294-40-3
7.5E+01	mg/m3	1hour	Critical	TEEL3	7.4E+01	mg/m3	1hour	Critical	TEEL3		
2.5E-01	mg/m3	1hour	Marginal	TEEL2	1.3E+00	mg/m3	1hour	Marginal	TEEL2		
4.0E-02	mg/m3	1hour	Negligible	TEEL1	7.4E-01	mg/m3	1hour	Negligible	TEEL1		
Azinphos ethyl					2642-71-9	Barium cyanide					542-62-1
1.5E+02	mg/m3	1hour	Critical	TEEL3	6.9E+01	mg/m3	1hour	Critical	TEEL3		
3.9E+00	mg/m3	1hour	Marginal	TEEL2	3.5E+00	mg/m3	1hour	Marginal	TEEL2		
2.0E+00	mg/m3	1hour	Negligible	TEEL1	2.1E+00	mg/m3	1hour	Negligible	TEEL1		
Azinphos methyl					86-50-0	Barium diphenylamine sulfonate					6211-24-1
1.0E+01	mg/m3	1hour	Critical	TEEL3	2.3E+02	mg/m3	1hour	Critical	TEEL3		
7.0E-01	mg/m3	1hour	Marginal	TEEL2	1.2E+01	mg/m3	1hour	Marginal	TEEL2		
6.0E-01	mg/m3	1hour	Negligible	TEEL1	6.9E+00	mg/m3	1hour	Negligible	TEEL1		
2.0E-01	mg/m3	8hour	Negligible	TLV_TWA	Barium fluoride					7787-32-8	
1.4E-02	mg/m3	14day	Negligible	MRLi_acute	6.4E+01	mg/m3	1hour	Critical	TEEL3		
6.8E-03	mg/m3	1year	Negligible	MRL_inter	6.4E+01	mg/m3	1hour	Marginal	TEEL2		
Azobenzene					103-33-3	Barium hydroxide					17194-00-2
1.5E-01	mg/m3	1year	Negligible	IRIS	1.9E+00	mg/m3	1hour	Negligible	TEEL1		
Azobis(2-methylpropionitrile), 2,2'-					78-67-1	Barium hydroxide octahydrate					12230-71-6
3.0E+02	mg/m3	1hour	Critical	TEEL3	6.2E+01	mg/m3	1hour	Critical	TEEL3		
1.5E+02	mg/m3	1hour	Marginal	TEEL2	3.1E+00	mg/m3	1hour	Marginal	TEEL2		
2.5E+01	mg/m3	1hour	Negligible	TEEL1	1.9E+00	mg/m3	1hour	Negligible	TEEL1		
Azodicarbamide					123-77-3	Barium metaborate					13701-59-2
2.0E+02	mg/m3	1hour	Critical	TEEL3	1.2E+02	mg/m3	1hour	Critical	TEEL3		
2.0E+02	mg/m3	1hour	Marginal	TEEL2	2.0E+01	mg/m3	1hour	Marginal	TEEL2		
1.3E+02	mg/m3	1hour	Negligible	TEEL1	3.0E+00	mg/m3	1hour	Negligible	TEEL1		
Barbituric acid					67-52-7	Barium nitrate					10022-31-8
2.0E+02	mg/m3	1hour	Critical	TEEL3	9.5E+01	mg/m3	1hour	Critical	TEEL3		
4.0E+01	mg/m3	1hour	Marginal	TEEL2	2.0E+01	mg/m3	1hour	Marginal	TEEL2		
6.0E+00	mg/m3	1hour	Negligible	TEEL1	2.5E+00	mg/m3	1hour	Negligible	TEEL1		
Barium acetate					543-80-6	Barium oxide					1304-28-5
9.3E+01	mg/m3	1hour	Critical	TEEL3	5.6E+01	mg/m3	1hour	Critical	TEEL3		
4.7E+00	mg/m3	1hour	Marginal	TEEL2	2.8E+00	mg/m3	1hour	Marginal	TEEL2		
2.8E+00	mg/m3	1hour	Negligible	TEEL1	1.7E+00	mg/m3	1hour	Negligible	TEEL1		
Barium carbonate					513-77-9	Barium permanganate					7787-36-2
5.0E+01	mg/m3	1hour	Critical	TEEL3	3.4E+01	mg/m3	1hour	Critical	TEEL3		
6.0E+00	mg/m3	1hour	Marginal	TEEL2	3.4E+01	mg/m3	1hour	Marginal	TEEL2		
1.5E+00	mg/m3	1hour	Negligible	TEEL1	2.1E+01	mg/m3	1hour	Negligible	TEEL1		
Barium chloride					10361-37-2	Barium peroxide					1304-29-6
5.0E+01	mg/m3	1hour	Critical	TEEL3	6.2E+01	mg/m3	1hour	Critical	TEEL3		
1.5E+01	mg/m3	1hour	Marginal	TEEL2	1.3E+01	mg/m3	1hour	Marginal	TEEL2		
1.5E+00	mg/m3	1hour	Negligible	TEEL1	1.5E+00	mg/m3	1hour	Negligible	TEEL1		
Barium chloride dihydrate					10326-27-9						
8.9E+01	mg/m3	1hour	Critical	TEEL3							
4.5E+00	mg/m3	1hour	Marginal	TEEL2							
2.7E+00	mg/m3	1hour	Negligible	TEEL1							

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Barium stearate				6865-35-6	Benzamide				55-21-0
5.0E+02 mg/m3		1hour	Critical	TEEL3	3.5E+02 mg/m3	1hour	1hour	Critical	TEEL3
2.0E+02 mg/m3		1hour	Marginal	TEEL2	6.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
3.0E+01 mg/m3		1hour	Negligible	TEEL1	1.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
Barium sulfate				7727-43-7	Benzenamine, sulfate (2:1)				542-16-5
5.0E+02 mg/m3		1hour	Critical	TEEL3	2.5E+02 mg/m3	1hour	1hour	Critical	TEEL3
3.5E+02 mg/m3		1hour	Marginal	TEEL2	5.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
3.0E+01 mg/m3		1hour	Negligible	TEEL1	3.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
1.0E+01 mg/m3		8hour	Negligible	TLV_TWA	Benzene				71-43-2
2.4E+00 mg/m3		14day	Negligible	TLV_TWA	1.3E+04 mg/m3	1hour	1hour	Critical	AEGL3_1hr
2.4E+00 mg/m3		1year	Negligible	TLVadj	2.6E+03 mg/m3	1hour	1hour	Marginal	AEGL2_1hr
Barium, elemental				7440-39-3	1.7E+02 mg/m3	1hour	1hour	Negligible	AEGL1_1hr
5.0E+01 mg/m3		1hour	Critical	TEEL3	2.9E+01 mg/m3	8hour	8hour	Negligible	AEGL1_8hr
5.0E+01 mg/m3		1hour	Marginal	TEEL2	6.4E-01 mg/m3	14day	14day	Negligible	CEGL
1.5E+00 mg/m3		1hour	Negligible	TEEL1	5.5E-02 mg/m3	1year	1year	Negligible	PPRTV_sub
5.0E-01 mg/m3		8hour	Negligible	TLV_TWA_irr	Benzene D6				1076-43-3
1.7E-01 mg/m3		14day	Negligible	TLV_TWA_irr	1.3E+04 mg/m3	1hour	1hour	Critical	TEEL3
3.4E-03 mg/m3		1year	Negligible	HEAST_sub	2.5E+03 mg/m3	1hour	1hour	Marginal	TEEL2
Bathophenanthroline				1662-01-7	1.5E+02 mg/m3	1hour	1hour	Negligible	TEEL1
5.0E+02 mg/m3		1hour	Critical	TEEL3	Benzeneearsonic acid				98-05-5
5.0E+02 mg/m3		1hour	Marginal	TEEL2	2.7E-01 mg/m3	1hour	1hour	Critical	TEEL3
2.5E+02 mg/m3		1hour	Negligible	TEEL1	2.7E-01 mg/m3	1hour	1hour	Marginal	TEEL2
Baygon				114-26-1	2.7E-01 mg/m3	1hour	1hour	Negligible	TEEL1
2.0E+01 mg/m3		1hour	Critical	TEEL3	Benzenesulfonic acid chloride				98-09-9
2.0E+01 mg/m3		1hour	Marginal	TEEL2	2.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
1.5E+00 mg/m3		1hour	Negligible	TEEL1	2.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
5.0E-01 mg/m3		8hour	Negligible	TLV_TWA	1.3E+02 mg/m3	1hour	1hour	Negligible	TEEL1
1.2E-01 mg/m3		14day	Negligible	TLV_TWA	Benzenetetracarboxylic dianhydride, 1,2,4,5-				89-32-7
1.2E-01 mg/m3		1year	Negligible	TLVadj	1.5E+01 mg/m3	1hour	1hour	Critical	TEEL3
Benomyl				17804-35-2	1.5E+01 mg/m3	1hour	1hour	Marginal	TEEL2
1.0E+00 mg/m3		8hour	Negligible	TLV_TWA_irr	5.0E+00 mg/m3	1hour	1hour	Negligible	TEEL1
3.4E-01 mg/m3		14day	Negligible	TLV_TWA_irr	Benzenethiol				108-98-5
3.4E-01 mg/m3		1year	Negligible	TLVirr	7.2E+00 mg/m3	1hour	1hour	Critical	AEGL3_1hr
Bentonite				1302-78-9	2.4E+00 mg/m3	1hour	1hour	Marginal	AEGL2_1hr
3.0E+01 mg/m3		1hour	Critical	TEEL3	4.5E-01 mg/m3	1hour	1hour	Negligible	TLV_TWA_irr*
3.0E+01 mg/m3		1hour	Marginal	TEEL2	4.5E-01 mg/m3	8hour	8hour	Negligible	TLV_TWA_irr
3.0E+01 mg/m3		1hour	Negligible	TEEL1	1.5E-01 mg/m3	14day	14day	Negligible	TLV_TWA_irr
Benzal chloride				98-87-3	1.5E-01 mg/m3	1year	1year	Negligible	TLVirr
7.5E+01 mg/m3		1hour	Critical	TEEL3	Benzidine				92-87-5
2.3E+00 mg/m3		1hour	Marginal	TEEL2	1.3E+02 mg/m3	1hour	1hour	Critical	TEEL3
1.3E+00 mg/m3		1hour	Negligible	TEEL1	3.5E+00 mg/m3	1hour	1hour	Marginal	TEEL2
Benzaldehyde				100-52-7	5.0E-01 mg/m3	1hour	1hour	Negligible	TEEL1
6.0E+02 mg/m3		1hour	Critical	TEEL3	7.2E-05 mg/m3	1year	1year	Negligible	IRIS
1.5E+01 mg/m3		1hour	Marginal	TEEL2	Benzo(a)anthracene				56-55-3
1.5E+01 mg/m3		1hour	Negligible	TEEL1	1.5E+01 mg/m3	1hour	1hour	Critical	TEEL3
					4.0E+00 mg/m3	1hour	1hour	Marginal	TEEL2
					6.0E-01 mg/m3	1hour	1hour	Negligible	TEEL1

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Benzo(a)pyrene				50-32-8	Benzotriazole				95-14-7
8.0E+01	mg/m3	1hour	Critical	TEEL3	2.5E+02	mg/m3	1hour	Critical	TEEL3
1.5E+01	mg/m3	1hour	Marginal	TEEL2	5.0E-01	mg/m3	1hour	Marginal	TEEL2
6.0E-01	mg/m3	1hour	Negligible	TEEL1	7.5E-02	mg/m3	1hour	Negligible	TEEL1
Benzo(b)fluoranthene				205-99-2	Benzotrichloride				98-07-7
2.0E+01	mg/m3	1hour	Critical	TEEL3	1.0E+01	mg/m3	1hour	Critical	TEEL3
4.0E+00	mg/m3	1hour	Marginal	TEEL2	7.0E+00	mg/m3	1hour	Marginal	TEEL2
6.0E-01	mg/m3	1hour	Negligible	TEEL1	1.0E+00	mg/m3	1hour	Negligible	TEEL1
Benzo(g,h,i)perylene				191-24-2	Benzotrifluoride				98-08-8
2.5E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
5.0E+01	mg/m3	1hour	Marginal	TEEL2	1.3E+02	mg/m3	1hour	Marginal	TEEL2
3.0E+01	mg/m3	1hour	Negligible	TEEL1	1.5E+01	mg/m3	1hour	Negligible	TEEL1
Benzo(k)fluoranthene				207-08-9	Benzoyl chloride				98-88-4
2.0E+01	mg/m3	1hour	Critical	TEEL3	1.1E+02	mg/m3	1hour	Critical	ERPG3
4.0E+00	mg/m3	1hour	Marginal	TEEL2	2.9E+01	mg/m3	1hour	Marginal	ERPG2
6.0E-01	mg/m3	1hour	Negligible	TEEL1	1.7E+00	mg/m3	1hour	Negligible	ERPG1
Benzo-4,7,13,16,21,24-hexaoxa-1,10-diazabicyclo(8.8.8)hexacosane, 5,6-				31250-18-7	Benzoyl peroxide				94-36-0
1.5E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
3.5E+01	mg/m3	1hour	Marginal	TEEL2	5.0E+00	mg/m3	1hour	Marginal	TEEL2
5.0E+00	mg/m3	1hour	Negligible	TEEL1	5.0E+00	mg/m3	1hour	Negligible	TEEL1
Benzoic acid				65-85-0	Benzoyl peroxide				94-36-0
4.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+00	mg/m3	8hour	Negligible	TLV_TWA_irr
7.5E+01	mg/m3	1hour	Marginal	TEEL2	1.7E+00	mg/m3	14day	Negligible	TLV_TWA_irr
1.3E+01	mg/m3	1hour	Negligible	TEEL1	1.7E+00	mg/m3	1year	Negligible	TLVirr
1.4E-03	mg/m3	1year	Negligible	PPRTV_sub	Benzyl acetate				140-11-4
Benzoic acid, sodium salt				532-32-1	Benzyl acetate				140-11-4
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.5E+02	mg/m3	1hour	Critical	TEEL3
5.0E+02	mg/m3	1hour	Marginal	TEEL2	6.1E+01	mg/m3	1hour	Marginal	TLV_TWA_irr*
3.5E+02	mg/m3	1hour	Negligible	TEEL1	6.1E+01	mg/m3	1hour	Negligible	TLV_TWA_irr*
Benzoin oxime				441-38-3	Benzyl alcohol				100-51-6
6.0E+01	mg/m3	1hour	Critical	TEEL3	6.0E+02	mg/m3	1hour	Critical	TEEL3
1.3E+01	mg/m3	1hour	Marginal	TEEL2	6.0E+02	mg/m3	1hour	Marginal	TEEL2
1.5E+00	mg/m3	1hour	Negligible	TEEL1	2.5E+02	mg/m3	1hour	Negligible	TEEL1
Benzonitrile				100-47-0	Benzyl benzoate				120-51-4
2.4E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
9.3E+01	mg/m3	1hour	Marginal	TEEL2	2.5E+02	mg/m3	1hour	Marginal	TEEL2
1.3E+01	mg/m3	1hour	Negligible	TEEL1	3.5E+01	mg/m3	1hour	Negligible	TEEL1
Benzophenone				119-61-9	Benzyl bromide				100-39-0
5.0E+02	mg/m3	1hour	Critical	TEEL3	6.0E+01	mg/m3	1hour	Critical	TEEL3
3.5E+02	mg/m3	1hour	Marginal	TEEL2	1.3E+01	mg/m3	1hour	Marginal	TEEL2
1.5E+00	mg/m3	1hour	Negligible	TEEL1	1.5E+00	mg/m3	1hour	Negligible	TEEL1
Benzothiazole				95-16-9	Benzothiazole				95-16-9
1.5E+02	mg/m3	1hour	Critical	TEEL3	1.5E+02	mg/m3	1hour	Critical	TEEL3
1.0E+02	mg/m3	1hour	Marginal	TEEL2	1.0E+02	mg/m3	1hour	Marginal	TEEL2
1.5E+01	mg/m3	1hour	Negligible	TEEL1	1.5E+01	mg/m3	1hour	Negligible	TEEL1

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Benzyl chloride				100-44-7	Beryllium nitrate				13597-99-4
2.6E+02	mg/m3	1hour	Critical	TEEL3	5.9E+01	mg/m3	1hour	Critical	TEEL3
5.3E+01	mg/m3	1hour	Marginal	TEEL2	7.4E+00	mg/m3	1hour	Marginal	TEEL2
5.2E+00	mg/m3	1hour	Negligible	TEEL1	1.0E+00	mg/m3	1hour	Negligible	TEEL1
5.2E+00	mg/m3	8hour	Negligible	TLV_TWA_irr	Beryllium oxide				1304-56-9
1.8E+00	mg/m3	14day	Negligible	TLV_TWA_irr	1.1E+01	mg/m3	1hour	Critical	TEEL3
1.8E+00	mg/m3	1year	Negligible	TLVirr	1.4E+00	mg/m3	1hour	Marginal	TEEL2
Benzyl chloroformate				501-53-1	2.0E-01	mg/m3	1hour	Negligible	TEEL1
2.0E+01	mg/m3	1hour	Critical	AEGL3_1hr	Beryllium, elemental				7440-41-7
6.8E+00	mg/m3	1hour	Marginal	AEGL2_1hr	1.0E-01	mg/m3	1hour	Critical	ERPG3
1.0E+00	mg/m3	1hour	Negligible	TEEL1	2.5E-02	mg/m3	1hour	Marginal	ERPG2
Benzyl cyanide				140-29-4	3.5E-03	mg/m3	1hour	Negligible	TEEL1
3.0E+01	mg/m3	1hour	Critical	TEEL3	5.0E-05	mg/m3	8hour	Negligible	TLV_TWA
4.3E+00	mg/m3	1hour	Marginal	TEEL2	1.4E-05	mg/m3	14day	Negligible	IRIS_sub*
6.0E-01	mg/m3	1hour	Negligible	TEEL1	1.4E-05	mg/m3	1year	Negligible	IRIS_sub
Benzylamine				100-46-9	Betaine				107-43-7
2.5E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
5.0E+01	mg/m3	1hour	Marginal	TEEL2	5.0E+02	mg/m3	1hour	Marginal	TEEL2
7.5E+00	mg/m3	1hour	Negligible	TEEL1	1.3E+02	mg/m3	1hour	Negligible	TEEL1
Benzyl dimethylamine				103-83-3	beta-Pinene				127-91-3
2.0E+02	mg/m3	1hour	Critical	TEEL3	1.1E+02	mg/m3	8hour	Negligible	TLV_TWA
2.0E+01	mg/m3	1hour	Marginal	TEEL2	2.7E+01	mg/m3	14day	Negligible	TLV_TWA
3.0E+00	mg/m3	1hour	Negligible	TEEL1	2.7E+01	mg/m3	1year	Negligible	TLVadj
Benzyl dimethylstearyl ammonium chloride				122-19-0	Bibenzyl				103-29-7
5.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
1.0E+02	mg/m3	1hour	Marginal	TEEL2	4.0E+02	mg/m3	1hour	Marginal	TEEL2
1.5E+01	mg/m3	1hour	Negligible	TEEL1	5.0E+01	mg/m3	1hour	Negligible	TEEL1
Benzyl magnesium chloride				6921-34-2	Bidrin				141-66-2
1.5E+02	mg/m3	1hour	Critical	TEEL3	8.8E-01	mg/m3	1hour	Critical	AEGL3_1hr
3.5E+01	mg/m3	1hour	Marginal	TEEL2	2.9E-01	mg/m3	1hour	Marginal	AEGL2_1hr
5.0E+00	mg/m3	1hour	Negligible	TEEL1	1.5E-01	mg/m3	1hour	Negligible	TEEL1
Benzyl trimethyl ammonium hydroxide				100-85-6	5.0E-02	mg/m3	8hour	Negligible	TLV_TWA
1.3E+01	mg/m3	1hour	Critical	TEEL3	1.2E-02	mg/m3	14day	Negligible	TLV_TWA
2.5E+00	mg/m3	1hour	Marginal	TEEL2	1.2E-02	mg/m3	1year	Negligible	TLVadj
3.5E-01	mg/m3	1hour	Negligible	TEEL1	Bioxiran				1464-53-5
Beryllium chloride				7787-47-5	3.5E+01	mg/m3	1hour	Critical	TEEL3
3.6E+01	mg/m3	1hour	Critical	TEEL3	3.5E+00	mg/m3	1hour	Marginal	TEEL2
4.4E-02	mg/m3	1hour	Marginal	TEEL2	5.0E-01	mg/m3	1hour	Negligible	TEEL1
1.8E-02	mg/m3	1hour	Negligible	TEEL1	Biphenyl, 1,1-				92-52-4
Beryllium fluoride				7787-49-7	1.0E+02	mg/m3	1hour	Critical	TEEL3
2.1E+01	mg/m3	1hour	Critical	TEEL3	6.1E+01	mg/m3	1hour	Marginal	AEGL2_1hr
2.6E-02	mg/m3	1hour	Marginal	TEEL2	7.5E+00	mg/m3	1hour	Negligible	TEEL1
1.0E-02	mg/m3	1hour	Negligible	TEEL1	1.3E+00	mg/m3	8hour	Negligible	TLV_TWA
Beryllium hydroxide				13327-32-7	3.1E-01	mg/m3	14day	Negligible	TLV_TWA
1.9E+01	mg/m3	1hour	Critical	TEEL3	3.1E-01	mg/m3	1year	Negligible	TLVadj
2.4E-01	mg/m3	1hour	Marginal	TEEL2					
3.5E-02	mg/m3	1hour	Negligible	TEEL1					

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN		
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis		
Biphenylol, 4-				92-69-3	Bis(2-chloroethylthiomethyl)ether				63918-90-1		
6.0E+01 mg/m3		1hour	Critical	TEEL3	6.0E+00 mg/m3	1hour	1hour	Critical	TEEL3		
6.0E+01 mg/m3		1hour	Marginal	TEEL2	1.3E+00 mg/m3	1hour	1hour	Marginal	TEEL2		
3.5E+01 mg/m3		1hour	Negligible	TEEL1	1.5E-01 mg/m3	1hour	1hour	Negligible	TEEL1		
Bis(2,3-epoxypropoxy) butane, 1,4-				2425-79-8	Bis(2-dimethylaminoethyl)ether				3033-62-3		
5.0E+02 mg/m3		1hour	Critical	TEEL3	1.0E+02 mg/m3	1hour	1hour	Critical	TEEL3		
5.0E+02 mg/m3		1hour	Marginal	TEEL2	1.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2		
1.0E+02 mg/m3		1hour	Negligible	TEEL1	1.0E+00 mg/m3	1hour	1hour	Negligible	TEEL1		
Bis(2-chloro-1-methylethyl) ether				108-60-1	Bis(2-ethylhexyl) hydrogen phosphate				298-07-7		
6.0E+02 mg/m3		1hour	Critical	TEEL3	3.3E-01 mg/m3	8hour	1hour	Negligible	TLV_TWA_irr		
4.0E+01 mg/m3		1hour	Marginal	TEEL2	1.1E-01 mg/m3	14day	1hour	Negligible	TLV_TWA_irr		
6.0E+00 mg/m3		1hour	Negligible	TEEL1	1.1E-01 mg/m3	1year	1hour	Negligible	TLVirr		
4.8E-01 mg/m3		1year	Negligible	HEAST	Bis(2-ethylhexyl) phenyl phosphate				16368-97-1		
Bis(2-chloroethoxy)methane				111-91-1	Bis(2-ethylhexyl) phtalate				117-81-7		
4.0E+01 mg/m3		1hour	Critical	TEEL3	2.0E+00 mg/m3	1hour	1hour	Critical	TEEL3		
4.0E+01 mg/m3		1hour	Marginal	TEEL2	4.0E-01 mg/m3	1hour	1hour	Marginal	TEEL2		
1.5E+01 mg/m3		1hour	Negligible	TEEL1	6.0E-02 mg/m3	1hour	1hour	Negligible	TEEL1		
Bis(2-chloroethyl) ether				111-44-4	Bis(2-methylstyryl)benzene, 4-				13280-61-0		
6.0E+02 mg/m3		1hour	Critical	TEEL3	7.5E+00 mg/m3	1hour	1hour	Critical	TEEL3		
1.5E+02 mg/m3		1hour	Marginal	TEEL2	1.5E+00 mg/m3	1hour	1hour	Marginal	TEEL2		
6.0E+01 mg/m3		1hour	Negligible	TEEL1	2.0E-01 mg/m3	1hour	1hour	Negligible	TEEL1		
2.9E+01 mg/m3		8hour	Negligible	TLV_TWA_irr	Bis(2-ethylhexyl) phtalate				117-81-7		
1.0E+01 mg/m3		14day	Negligible	TLV_TWA_irr	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3		
1.5E-02 mg/m3		1year	Negligible	IRIS	7.5E+01 mg/m3	1hour	1hour	Marginal	TEEL2		
Bis(2-chloroethylthio)methane				63869-13-6	Bis(2-ethylhexyl) phtalate				117-81-7		
5.0E+00 mg/m3		1hour	Critical	TEEL3	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3		
1.0E+00 mg/m3		1hour	Marginal	TEEL2	7.5E+01 mg/m3	1hour	1hour	Marginal	TEEL2		
1.5E-01 mg/m3		1hour	Negligible	TEEL1	1.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1		
Bis(2-chloroethylthio)-n-butane, 1,4-				142868-93-7	Bis(2-ethylhexyl) phtalate				117-81-7		
6.0E+00 mg/m3		1hour	Critical	TEEL3	5.0E+00 mg/m3	8hour	1hour	Negligible	TLV_TWA_irr		
1.3E+00 mg/m3		1hour	Marginal	TEEL2	1.7E+00 mg/m3	14day	1hour	Negligible	TLV_TWA_irr		
2.0E-01 mg/m3		1hour	Negligible	TEEL1	1.7E+00 mg/m3	1year	1hour	Negligible	TLVirr		
Bis(2-chloroethylthio)-n-pentane, 1,5-				142868-94-8	Bis(2-methylstyryl)benzene, 4-				13280-61-0		
7.5E+00 mg/m3		1hour	Critical	TEEL3	2.5E+02 mg/m3	1hour	1hour	Critical	TEEL3		
1.5E+00 mg/m3		1hour	Marginal	TEEL2	5.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2		
2.0E-01 mg/m3		1hour	Negligible	TEEL1	3.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1		
Bis(2-chloroethylthio)-n-propane, 1,3-				63905-10-2	Bis(3-tert-butyl-4-hydroxy-6-methyl-phenyl)sulfide				96-69-5		
6.0E+00 mg/m3		1hour	Critical	TEEL3	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3		
1.3E+00 mg/m3		1hour	Marginal	TEEL2	3.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2		
1.5E-01 mg/m3		1hour	Negligible	TEEL1	3.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1		
Bis(2-chloroethylthioethyl)ether				63918-89-8	Bis(chloromethyl) ether				542-88-1		
3.0E+01 mg/m3		1hour	Critical	TEEL3	8.5E-01 mg/m3	1hour	1hour	Critical	AEGL3_1hr		
6.0E+00 mg/m3		1hour	Marginal	TEEL2	2.1E-01 mg/m3	1hour	1hour	Marginal	AEGL2_1hr		
7.5E-01 mg/m3		1hour	Negligible	TEEL1	3.0E-02 mg/m3	1hour	1hour	Negligible	TEEL1		
					Bis(chloromethyl)oxetane, 3,3-				78-71-7		
					7.5E+01 mg/m3				1hour	Critical	TEEL3
					2.0E+00 mg/m3				1hour	Marginal	TEEL2
					1.3E+00 mg/m3				1hour	Negligible	TEEL1

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Bis(trifluoromethyl)benzene, 1,3-				402-31-3	Bismuth subnitrate				1304-85-4
4.7E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
2.4E+01	mg/m3	1hour	Marginal	TEEL2	1.5E+02	mg/m3	1hour	Marginal	TEEL2
1.4E+01	mg/m3	1hour	Negligible	TEEL1	2.0E+01	mg/m3	1hour	Negligible	TEEL1
Bis[(benzo-15-crown-5)-4-methyl]pimelate				69271-98-3	Bismuth telluride				1304-82-1
2.5E+02	mg/m3	1hour	Critical	TEEL3	1.0E+01	mg/m3	8hour	Negligible	TLV_TWA_irr
5.0E+01	mg/m3	1hour	Marginal	TEEL2	3.4E+00	mg/m3	14day	Negligible	TLV_TWA_irr
3.0E+01	mg/m3	1hour	Negligible	TEEL1	3.4E+00	mg/m3	1year	Negligible	TLVirr
Bisbutenylenetetrahydrofural				126-15-8	Bismuth(III) nitrate, pentahydrate				10035-06-0
5.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
2.0E+02	mg/m3	1hour	Marginal	TEEL2	4.0E+01	mg/m3	1hour	Marginal	TEEL2
3.0E+01	mg/m3	1hour	Negligible	TEEL1	6.0E+00	mg/m3	1hour	Negligible	TEEL1
Bischloromethyl ketone				534-07-6	Bismuth, elemental				7440-69-9
2.0E+00	mg/m3	1hour	Critical	TEEL3	2.0E+02	mg/m3	1hour	Critical	TEEL3
2.0E+00	mg/m3	1hour	Marginal	TEEL2	4.0E+01	mg/m3	1hour	Marginal	TEEL2
4.0E-01	mg/m3	1hour	Negligible	TEEL1	5.0E+00	mg/m3	1hour	Negligible	TEEL1
Bismuth acetate				22306-37-2	Bisphenol A				80-05-7
2.5E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
5.0E+01	mg/m3	1hour	Marginal	TEEL2	1.0E+02	mg/m3	1hour	Marginal	TEEL2
3.0E+01	mg/m3	1hour	Negligible	TEEL1	1.5E+01	mg/m3	1hour	Negligible	TEEL1
Bismuth germanate				12233-56-6	Bisphenol A diglycidyl ether				1675-54-3
2.0E+02	mg/m3	1hour	Critical	TEEL3	6.0E+00	mg/m3	1hour	Critical	TEEL3
4.0E+01	mg/m3	1hour	Marginal	TEEL2	6.0E+00	mg/m3	1hour	Marginal	TEEL2
5.0E+00	mg/m3	1hour	Negligible	TEEL1	3.5E+00	mg/m3	1hour	Negligible	TEEL1
Bismuth hydroxide				10361-43-0	Bisphenol A epon 829 polymer				25036-25-3
1.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
3.0E+00	mg/m3	1hour	Marginal	TEEL2	1.5E+02	mg/m3	1hour	Marginal	TEEL2
1.0E+00	mg/m3	1hour	Negligible	TEEL1	2.5E+01	mg/m3	1hour	Negligible	TEEL1
Bismuth iodide				7787-64-6	Bis-tris propane				64431-96-5
1.5E+02	mg/m3	1hour	Critical	TEEL3	2.5E+02	mg/m3	1hour	Critical	TEEL3
3.5E+01	mg/m3	1hour	Marginal	TEEL2	5.0E+01	mg/m3	1hour	Marginal	TEEL2
5.0E+00	mg/m3	1hour	Negligible	TEEL1	3.0E+01	mg/m3	1hour	Negligible	TEEL1
Bismuth nitrate				10361-44-1	Bitoscanate				4044-65-9
5.0E+02	mg/m3	1hour	Critical	TEEL3	2.0E+01	mg/m3	1hour	Critical	TEEL3
2.5E+01	mg/m3	1hour	Marginal	TEEL2	2.0E+01	mg/m3	1hour	Marginal	TEEL2
4.0E+00	mg/m3	1hour	Negligible	TEEL1	1.3E+01	mg/m3	1hour	Negligible	TEEL1
Bismuth oxide				1304-76-3	BoBCalix				X-213*
5.0E+02	mg/m3	1hour	Critical	TEEL3	2.5E+02	mg/m3	1hour	Critical	TEEL3
4.0E+02	mg/m3	1hour	Marginal	TEEL2	5.0E+01	mg/m3	1hour	Marginal	TEEL2
6.0E+01	mg/m3	1hour	Negligible	TEEL1	3.0E+01	mg/m3	1hour	Negligible	TEEL1
Bismuth oxychloride				7787-59-9	Borane methyl sulfide complex				13292-87-0
5.0E+02	mg/m3	1hour	Critical	TEEL3	3.5E+01	mg/m3	1hour	Critical	TEEL3
5.0E+02	mg/m3	1hour	Marginal	TEEL2	6.0E+00	mg/m3	1hour	Marginal	TEEL2
2.5E+02	mg/m3	1hour	Negligible	TEEL1	1.0E+00	mg/m3	1hour	Negligible	TEEL1

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Borane-tetrahydrofuran				14044-65-6	Boron oxide				1303-86-2
1.3E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
2.5E+01	mg/m3	1hour	Marginal	TEEL2	3.0E+02	mg/m3	1hour	Marginal	TEEL2
1.5E+01	mg/m3	1hour	Negligible	TEEL1	3.0E+01	mg/m3	1hour	Negligible	TEEL1
Borate				14213-97-9	Boron tribromide				10294-33-4
5.0E+01	mg/m3	1hour	Critical	TEEL3	1.0E+01	mg/m3	8hour	Negligible	TLV_TWA_irr
1.0E+01	mg/m3	1hour	Marginal	TEEL2	3.4E+00	mg/m3	14day	Negligible	TLV_TWA_irr
6.0E+00	mg/m3	1hour	Negligible	TEEL1	3.4E+00	mg/m3	1year	Negligible	TLVirr
Borates, pentahydrate				12179-04-3	Boron trichloride				10294-34-5
2.0E+00	mg/m3	8hour	Negligible	TLV_TWA_irr	4.1E+02	mg/m3	1hour	Critical	AEGL3_1hr
6.8E-01	mg/m3	14day	Negligible	TLV_TWA_irr	7.5E+01	mg/m3	1hour	Marginal	AEGL2_1hr
6.8E-01	mg/m3	1year	Negligible	TLVirr	3.4E+00	mg/m3	1hour	Negligible	AEGL1_1hr
Borax				1303-96-4	Boron trifluoride				7637-07-2
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.1E+02	mg/m3	1hour	Critical	AEGL3_1hr*
2.0E+02	mg/m3	1hour	Marginal	TEEL2	3.7E+01	mg/m3	1hour	Marginal	AEGL2_1hr*
5.3E+01	mg/m3	1hour	Negligible	TEEL1	2.5E+00	mg/m3	1hour	Negligible	AEGL1_1hr*
2.0E+00	mg/m3	8hour	Negligible	TLV_TWA_irr	2.5E+00	mg/m3	8hour	Negligible	AEGL1_8hr*
6.8E-01	mg/m3	14day	Negligible	TLV_TWA_irr	4.8E-03	mg/m3	1year	Negligible	HEAST_sub
6.8E-01	mg/m3	1year	Negligible	TLVirr	Boron trifluoride				7637-07-2
Boric acid				10043-35-3	Boron trifluoride diethyl etherate				109-63-7
1.3E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
1.0E+02	mg/m3	1hour	Marginal	TEEL2	1.5E+02	mg/m3	1hour	Marginal	TEEL2
6.0E+00	mg/m3	1hour	Negligible	TEEL1	2.5E+01	mg/m3	1hour	Negligible	TEEL1
2.0E+00	mg/m3	8hour	Negligible	TLV_TWA_irr	Boron trifluoride-dimethyl ether				353-42-4
6.8E-01	mg/m3	14day	Negligible	TLV_TWA_irr	1.1E+02	mg/m3	1hour	Critical	TEEL3
6.8E-01	mg/m3	1year	Negligible	TLVirr	3.7E+01	mg/m3	1hour	Marginal	TEEL2
Boric acid, tributyl ester				688-74-4	Botulinum toxin-A				93384-43-1
7.5E+02	mg/m3	1hour	Critical	TEEL3	3.0E-05	mg/m3	1hour	Critical	TEEL3
1.5E+02	mg/m3	1hour	Marginal	TEEL2	3.0E-08	mg/m3	1hour	Marginal	TEEL2
2.5E+01	mg/m3	1hour	Negligible	TEEL1	4.0E-09	mg/m3	1hour	Negligible	TEEL1
Boron				7440-42-8	Botulinum toxin-B				93384-44-2
2.5E+02	mg/m3	1hour	Critical	TEEL3	1.5E-05	mg/m3	1hour	Critical	TEEL3
5.0E+01	mg/m3	1hour	Marginal	TEEL2	1.5E-05	mg/m3	1hour	Marginal	TEEL2
7.5E+00	mg/m3	1hour	Negligible	TEEL1	1.3E-05	mg/m3	1hour	Negligible	TEEL1
6.8E-03	mg/m3	14day	Negligible	MRLi_acute					
6.8E-03	mg/m3	1year	Negligible	MRLi_acute*					
Boron carbide				12069-32-8					
5.0E+02	mg/m3	1hour	Critical	TEEL3					
5.0E+02	mg/m3	1hour	Marginal	TEEL2					
1.3E+02	mg/m3	1hour	Negligible	TEEL1					
Boron nitride				10043-11-5					
5.0E+02	mg/m3	1hour	Critical	TEEL3					
5.0E+02	mg/m3	1hour	Marginal	TEEL2					
5.0E+02	mg/m3	1hour	Negligible	TEEL1					

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME					CASRN	CHEMICAL NAME					CASRN
MEG	Units	Timeframe	Severity	Basis		MEG	Units	Timeframe	Severity	Basis	
Botulinum toxin-F					0-307*	Bromine trifluoride					7787-71-5
1.0E-05	mg/m3	1hour	Critical	TEEL3		1.2E+02	mg/m3	1hour	Critical	AEGL3_1hr	
1.5E-06	mg/m3	1hour	Marginal	TEEL2		1.1E+01	mg/m3	1hour	Marginal	AEGL2_1hr	
2.0E-07	mg/m3	1hour	Negligible	TEEL1		6.7E-01	mg/m3	1hour	Negligible	AEGL1_1hr	
Botulinum, clostridium					0-308*	Bromo-1-chloro-5,5-dimethylhydantoin, 3-					126-06-7
6.0E-07	mg/m3	1hour	Critical	TEEL3		2.5E+02	mg/m3	1hour	Critical	TEEL3	
1.2E-07	mg/m3	1hour	Marginal	TEEL2		5.0E+01	mg/m3	1hour	Marginal	TEEL2	
1.5E-08	mg/m3	1hour	Negligible	TEEL1		7.5E+00	mg/m3	1hour	Negligible	TEEL1	
Bovine albumin					9048-46-8	Bromo-2-chloro-1,1,2-trifluoroethane, 1-					354-06-3
5.0E+02	mg/m3	1hour	Critical	TEEL3		4.0E+04	mg/m3	1hour	Critical	TEEL3	
5.0E+02	mg/m3	1hour	Marginal	TEEL2		7.5E+03	mg/m3	1hour	Marginal	TEEL2	
5.0E+02	mg/m3	1hour	Negligible	TEEL1		1.3E+03	mg/m3	1hour	Negligible	TEEL1	
Brilliant blue					2650-18-2	Bromo-3-chloro-5,5-dimethylhydantoin, 1-					16079-88-2
6.0E-02	mg/m3	1hour	Critical	TEEL3		5.0E+02	mg/m3	1hour	Critical	TEEL3	
6.0E-02	mg/m3	1hour	Marginal	TEEL2		1.3E+02	mg/m3	1hour	Marginal	TEEL2	
6.0E-02	mg/m3	1hour	Negligible	TEEL1		1.5E+01	mg/m3	1hour	Negligible	TEEL1	
Bromacil					314-40-9	Bromoacetaldehyde diethyl acetul					2032-35-1
1.0E+01	mg/m3	8hour	Negligible	TLV_TWA_irr		5.0E+02	mg/m3	1hour	Critical	TEEL3	
3.4E+00	mg/m3	14day	Negligible	TLV_TWA_irr		1.5E+02	mg/m3	1hour	Marginal	TEEL2	
3.4E+00	mg/m3	1year	Negligible	TLVirr		2.5E+01	mg/m3	1hour	Negligible	TEEL1	
Bromadiolone					28772-56-7	Bromoacetic acid					79-08-3
1.0E+00	mg/m3	1hour	Critical	TEEL3		4.0E+00	mg/m3	1hour	Critical	TEEL3	
1.0E+00	mg/m3	1hour	Marginal	TEEL2		7.5E-01	mg/m3	1hour	Marginal	TEEL2	
6.0E-01	mg/m3	1hour	Negligible	TEEL1		1.3E-01	mg/m3	1hour	Negligible	TEEL1	
Bromine					7726-95-6	Bromoacetone					598-31-2
5.6E+01	mg/m3	1hour	Critical	AEGL3_1hr		5.5E+00	mg/m3	1hour	Critical	AEGL3_1hr	
1.6E+00	mg/m3	1hour	Marginal	AEGL2_1hr		1.8E+00	mg/m3	1hour	Marginal	AEGL2_1hr	
2.2E-01	mg/m3	1hour	Negligible	AEGL1_1hr		6.2E-02	mg/m3	1hour	Negligible	AEGL1_1hr	
2.2E-01	mg/m3	8hour	Negligible	AEGL1_8hr		6.2E-02	mg/m3	8hour	Negligible	AEGL1_8hr	
2.2E-01	mg/m3	14day	Negligible	TLVirr*		Bromobenzene					108-86-1
2.2E-01	mg/m3	1year	Negligible	TLVirr*		2.0E+03	mg/m3	1hour	Critical	TEEL3	
Bromine chloride					13863-41-7	Bromochlorobenzene, 3-					108-37-2
3.6E+01	mg/m3	1hour	Critical	AEGL3_1hr		2.5E+02	mg/m3	1hour	Critical	TEEL3	
1.2E+01	mg/m3	1hour	Marginal	AEGL2_1hr		5.0E+01	mg/m3	1hour	Marginal	TEEL2	
2.4E+00	mg/m3	1hour	Negligible	AEGL1_1hr		3.0E+01	mg/m3	1hour	Negligible	TEEL1	
2.4E+00	mg/m3	8hour	Negligible	AEGL1_8hr		Bromochlorobenzene, 4-					106-39-8
Bromine pentafluoride					7789-30-2	Bromochlorodifluoromethane					353-59-3
2.4E+02	mg/m3	1hour	Critical	AEGL3_1hr		3.5E+04	mg/m3	1hour	Critical	TEEL3	
7.2E+00	mg/m3	1hour	Marginal	AEGL2_1hr		1.5E+03	mg/m3	1hour	Marginal	TEEL2	
1.0E+00	mg/m3	1hour	Negligible	TEEL1		2.5E+02	mg/m3	1hour	Negligible	TEEL1	
7.2E-01	mg/m3	8hour	Negligible	TLV_TWA_irr							
2.5E-01	mg/m3	14day	Negligible	TLV_TWA_irr							
2.5E-01	mg/m3	1year	Negligible	TLVirr							

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME					CASRN	CHEMICAL NAME					CASRN
MEG	Units	Timeframe	Severity	Basis		MEG	Units	Timeframe	Severity	Basis	
Bromochloromethane					74-97-5	Bromohexane					111-25-1
1.0E+04	mg/m3	1hour	Critical	TEEL3		3.0E+04	mg/m3	1hour	Critical	TEEL3	
1.0E+04	mg/m3	1hour	Marginal	TEEL2		6.0E+03	mg/m3	1hour	Marginal	TEEL2	
3.0E+03	mg/m3	1hour	Negligible	TEEL1		7.5E+02	mg/m3	1hour	Negligible	TEEL1	
1.1E+03	mg/m3	8hour	Negligible	TLV_TWA		Bromomethane					74-83-9
2.6E+02	mg/m3	14day	Negligible	TLV_TWA		2.9E+03	mg/m3	1hour	Critical	AEGL3_1hr*	
6.8E-02	mg/m3	1year	Negligible	PPRTV_sub		8.2E+02	mg/m3	1hour	Marginal	AEGL2_1hr*	
Bromocresol green					76-60-8	8.0E+01	mg/m3	1hour	Negligible	PEL-C*	
5.0E+02	mg/m3	1hour	Critical	TEEL3		4.0E+00	mg/m3	8hour	Negligible	TLV_TWA_irr*	
2.5E+01	mg/m3	1hour	Marginal	TEEL2		1.3E-01	mg/m3	14day	Negligible	MRLi_acute	
3.5E+00	mg/m3	1hour	Negligible	TEEL1		6.8E-02	mg/m3	1year	Negligible	PPRTV_sub	
Bromocresol purple					115-40-2	Bromonaphthalene					90-11-9
5.0E+02	mg/m3	1hour	Critical	TEEL3		3.5E+02	mg/m3	1hour	Critical	TEEL3	
2.0E+01	mg/m3	1hour	Marginal	TEEL2		6.0E+01	mg/m3	1hour	Marginal	TEEL2	
3.0E+00	mg/m3	1hour	Negligible	TEEL1		1.0E+01	mg/m3	1hour	Negligible	TEEL1	
Bromocyclohexanol, cis-2-					16536-57-5	Bromonitromethane					563-70-2
3.0E+02	mg/m3	1hour	Critical	TEEL3		7.5E+01	mg/m3	1hour	Critical	TEEL3	
5.0E+00	mg/m3	1hour	Marginal	TEEL2		1.5E+01	mg/m3	1hour	Marginal	TEEL2	
7.5E-01	mg/m3	1hour	Negligible	TEEL1		2.5E+00	mg/m3	1hour	Negligible	TEEL1	
Bromodichloromethane					75-27-4	Bromophenol blue					115-39-9
1.5E+02	mg/m3	1hour	Critical	TEEL3		2.5E+02	mg/m3	1hour	Critical	TEEL3	
3.0E+01	mg/m3	1hour	Marginal	TEEL2		5.0E+01	mg/m3	1hour	Marginal	TEEL2	
4.0E+00	mg/m3	1hour	Negligible	TEEL1		3.0E+01	mg/m3	1hour	Negligible	TEEL1	
1.4E-02	mg/m3	1year	Negligible	PPRTV_sub		Bromophenyl phenyl ether, 4-					101-55-3
Bromoethene					593-60-2	2.0E+02	mg/m3	1hour	Critical	TEEL3	
2.0E+02	mg/m3	1hour	Critical	TEEL3		4.0E+01	mg/m3	1hour	Marginal	TEEL2	
1.5E+02	mg/m3	1hour	Marginal	TEEL2		6.0E+00	mg/m3	1hour	Negligible	TEEL1	
6.0E+00	mg/m3	1hour	Negligible	TEEL1		Bromopropane, 1-					106-94-5
2.2E+00	mg/m3	8hour	Negligible	TLV_TWA		1.3E+04	mg/m3	1hour	Critical	TEEL3	
5.4E-01	mg/m3	14day	Negligible	TLV_TWA		1.3E+04	mg/m3	1hour	Marginal	TEEL2	
2.1E-03	mg/m3	1year	Negligible	HEAST_sub		1.5E+02	mg/m3	1hour	Negligible	TEEL1	
Bromoethylmagnesium					925-90-6	5.0E+01	mg/m3	8hour	Negligible	TLV_TWA	
1.5E+02	mg/m3	1hour	Critical	TEEL3		1.2E+01	mg/m3	14day	Negligible	TLV_TWA	
3.5E+01	mg/m3	1hour	Marginal	TEEL2		1.2E+01	mg/m3	1year	Negligible	TLVadj	
5.0E+00	mg/m3	1hour	Negligible	TEEL1		Bromopropane, 2-					75-26-3
Bromofluorobenzene, p-					460-00-4	1.3E+05	mg/m3	1hour	Critical	TEEL3	
5.0E+02	mg/m3	1hour	Critical	TEEL3		6.0E+04	mg/m3	1hour	Marginal	TEEL2	
5.0E+02	mg/m3	1hour	Marginal	TEEL2		7.5E+03	mg/m3	1hour	Negligible	TEEL1	
2.0E+02	mg/m3	1hour	Negligible	TEEL1		Bromopyrene, 3-					1714-29-0
Bromoform					75-25-2	2.5E+02	mg/m3	1hour	Critical	TEEL3	
7.5E+03	mg/m3	1hour	Critical	TEEL3		5.0E+01	mg/m3	1hour	Marginal	TEEL2	
3.5E+02	mg/m3	1hour	Marginal	TEEL2		3.0E+01	mg/m3	1hour	Negligible	TEEL1	
5.0E+01	mg/m3	1hour	Negligible	TEEL1		Bromosuccinimide, N-					128-08-5
5.2E+00	mg/m3	8hour	Negligible	TLV_TWA_irr		2.0E+02	mg/m3	1hour	Critical	TEEL3	
2.0E+00	mg/m3	14day	Negligible	TLV_TWA_irr*		4.0E+01	mg/m3	1hour	Marginal	TEEL2	
2.0E+00	mg/m3	1year	Negligible	TLV_TWA*		6.0E+00	mg/m3	1hour	Negligible	TEEL1	

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Bromothymol blue				76-59-5	Butanediol dinitrate, 1,4-				3457-91-8
2.5E+02 mg/m3		1hour	Critical	TEEL3	2.0E+01 mg/m3	1hour	1hour	Critical	TEEL3
5.0E+01 mg/m3		1hour	Marginal	TEEL2	3.0E+00 mg/m3	1hour	1hour	Marginal	TEEL2
3.0E+01 mg/m3		1hour	Negligible	TEEL1	7.5E-01 mg/m3	1hour	1hour	Negligible	TEEL1
Bromotrichloromethane				75-62-7	Butanediol, 1,3-				107-88-0
5.0E+01 mg/m3		1hour	Critical	TEEL3	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
1.0E+01 mg/m3		1hour	Marginal	TEEL2	5.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
1.5E+00 mg/m3		1hour	Negligible	TEEL1	7.5E+01 mg/m3	1hour	1hour	Negligible	TEEL1
Bromotrifluoroethylene				598-73-2	Butanediol, 1,4-				110-63-4
6.0E+02 mg/m3		1hour	Critical	TEEL3	2.5E+02 mg/m3	1hour	1hour	Critical	TEEL3
3.5E+02 mg/m3		1hour	Marginal	TEEL2	2.5E+01 mg/m3	1hour	1hour	Marginal	TEEL2
2.0E+01 mg/m3		1hour	Negligible	TEEL1	3.5E+00 mg/m3	1hour	1hour	Negligible	TEEL1
Bromotrimethylsilane				2857-97-8	Butanenitrile				109-74-0
1.5E+02 mg/m3		1hour	Critical	TEEL3	1.3E+02 mg/m3	1hour	1hour	Critical	TEEL3
3.5E+01 mg/m3		1hour	Marginal	TEEL2	1.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
5.0E+00 mg/m3		1hour	Negligible	TEEL1	6.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
Brown menhaden fish oil				68440-42-6	Butanethiol				109-79-5
2.5E+02 mg/m3		1hour	Critical	TEEL3	1.5E+03 mg/m3	1hour	1hour	Critical	TEEL3
5.0E+01 mg/m3		1hour	Marginal	TEEL2	1.5E+02 mg/m3	1hour	1hour	Marginal	TEEL2
3.0E+01 mg/m3		1hour	Negligible	TEEL1	2.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
Brucine				357-57-3	Butanol, 1-				71-36-3
4.0E+01 mg/m3		1hour	Critical	TEEL3	4.0E+03 mg/m3	1hour	1hour	Critical	TEEL3
1.3E+01 mg/m3		1hour	Marginal	TEEL2	1.5E+02 mg/m3	1hour	1hour	Marginal	TEEL2
1.5E+00 mg/m3		1hour	Negligible	TEEL1	6.1E+01 mg/m3	1hour	1hour	Negligible	TLV_TWA_irr*
Buffer solution, aqueous				7732-18-5	Butanol, aluminum salt, 2-				2269-22-9
5.0E+02 mg/m3		1hour	Critical	TEEL3	4.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
5.0E+02 mg/m3		1hour	Marginal	TEEL2	9.1E+01 mg/m3	1hour	1hour	Marginal	TEEL2
5.0E+02 mg/m3		1hour	Negligible	TEEL1	5.5E+01 mg/m3	1hour	1hour	Negligible	TEEL1
Butadiene monoxide				930-22-3	Butanone oxamine				96-29-7
7.5E+01 mg/m3		1hour	Critical	TEEL3	4.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
7.5E+01 mg/m3		1hour	Marginal	TEEL2	4.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
3.0E+01 mg/m3		1hour	Negligible	TEEL1	1.5E+02 mg/m3	1hour	1hour	Negligible	TEEL1
Butadiene, 1,3-				106-99-0	Butene				25167-67-3
4.9E+04 mg/m3		1hour	Critical	AEGL3_1hr	5.7E+02 mg/m3	8hour	8hour	Negligible	TLV_TWA
1.2E+04 mg/m3		1hour	Marginal	AEGL2_1hr	1.4E+02 mg/m3	14day	14day	Negligible	TLV_TWA
1.5E+03 mg/m3		1hour	Negligible	AEGL1_1hr	1.4E+02 mg/m3	1year	1year	Negligible	TLVadj
1.5E+03 mg/m3		8hour	Negligible	AEGL1_8hr					
1.5E-01 mg/m3		14day	Negligible	MRLi_acute					
1.4E-03 mg/m3		1year	Negligible	IRIS_chr					
Butane				106-97-8					
1.3E+05 mg/m3		1hour	Critical	AEGL3_1hr					
4.0E+04 mg/m3		1hour	Marginal	AEGL2_1hr					
1.3E+04 mg/m3		1hour	Negligible	AEGL1_1hr					
1.3E+04 mg/m3		8hour	Negligible	AEGL1_8hr					
5.8E+02 mg/m3		14day	Negligible	TLV_TWA					
5.8E+02 mg/m3		1year	Negligible	TLVadj					

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Butene, 1-				106-98-9	Butyl acetate, sec-				105-46-4
1.5E+05 mg/m3		1hour	Critical	TEEL3	7.5E+03 mg/m3	1hour	1hour	Critical	TEEL3
3.0E+04 mg/m3		1hour	Marginal	TEEL2	1.5E+03 mg/m3	1hour	1hour	Marginal	TEEL2
1.5E+03 mg/m3		1hour	Negligible	TEEL1	9.5E+02 mg/m3	1hour	1hour	Negligible	TLV_TWA_irr*
5.7E+02 mg/m3		8hour	Negligible	TLV_TWA	9.5E+02 mg/m3	8hour	8hour	Negligible	TLV_TWA_irr
1.4E+02 mg/m3		14day	Negligible	TLV_TWA	3.3E+02 mg/m3	14day	14day	Negligible	TLV_TWA_irr
1.4E+02 mg/m3		1year	Negligible	TLVadj	3.3E+02 mg/m3	1year	1year	Negligible	TLVirr
Butene, 2-				107-01-7	Butyl acetate, tert-				540-88-5
1.5E+05 mg/m3		1hour	Critical	TEEL3	6.0E+03 mg/m3	1hour	1hour	Critical	TEEL3
3.0E+03 mg/m3		1hour	Marginal	TEEL2	4.0E+03 mg/m3	1hour	1hour	Marginal	TEEL2
1.5E+03 mg/m3		1hour	Negligible	TEEL1	2.5E+03 mg/m3	1hour	1hour	Negligible	TEEL1
5.7E+02 mg/m3		8hour	Negligible	TLV_TWA	9.5E+02 mg/m3	8hour	8hour	Negligible	TLV_TWA_irr
1.4E+02 mg/m3		14day	Negligible	TLV_TWA	3.3E+02 mg/m3	14day	14day	Negligible	TLV_TWA_irr
1.4E+02 mg/m3		1year	Negligible	TLVadj	3.3E+02 mg/m3	1year	1year	Negligible	TLVirr
Butene, cis-2-				590-18-1	Butyl acetoacetate, tert-				1694-31-1
7.5E+05 mg/m3		1hour	Critical	TEEL3	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
5.0E+05 mg/m3		1hour	Marginal	TEEL2	4.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
1.5E+05 mg/m3		1hour	Negligible	TEEL1	6.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
5.7E+02 mg/m3		8hour	Negligible	TLV_TWA	Butyl acrylate resin, n-				9003-49-0
1.4E+02 mg/m3		14day	Negligible	TLV_TWA	2.5E+02 mg/m3	1hour	1hour	Critical	TEEL3
1.4E+02 mg/m3		1year	Negligible	TLVadj	5.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
Butene, trans-2-				624-64-6	Butyl acrylate, n-				141-32-2
1.5E+05 mg/m3		1hour	Critical	TEEL3	2.5E+03 mg/m3	1hour	1hour	Critical	AEGL3_1hr
3.0E+04 mg/m3		1hour	Marginal	TEEL2	6.8E+02 mg/m3	1hour	1hour	Marginal	AEGL2_1hr
1.5E+03 mg/m3		1hour	Negligible	TEEL1	4.4E+01 mg/m3	1hour	1hour	Negligible	AEGL1_1hr
5.7E+02 mg/m3		8hour	Negligible	TLV_TWA	4.4E+01 mg/m3	8hour	8hour	Negligible	AEGL1_8hr
1.4E+02 mg/m3		14day	Negligible	TLV_TWA	3.6E+00 mg/m3	14day	14day	Negligible	TLV_TWA_irr
1.4E+02 mg/m3		1year	Negligible	TLVadj	3.6E+00 mg/m3	1year	1year	Negligible	TLVirr
Butoxyethanol acetate, 2-				112-07-2	Butyl alcohol, sec-				78-92-2
1.0E+03 mg/m3		1hour	Critical	TEEL3	6.0E+03 mg/m3	1hour	1hour	Critical	TEEL3
6.0E+02 mg/m3		1hour	Marginal	TEEL2	1.3E+03 mg/m3	1hour	1hour	Marginal	TEEL2
4.0E+02 mg/m3		1hour	Negligible	TEEL1	4.0E+02 mg/m3	1hour	1hour	Negligible	TEEL1
1.3E+02 mg/m3		8hour	Negligible	TLV_TWA_irr	3.0E+02 mg/m3	8hour	8hour	Negligible	TLV_TWA_irr
4.5E+01 mg/m3		14day	Negligible	TLV_TWA_irr	1.0E+02 mg/m3	14day	14day	Negligible	TLV_TWA_irr
4.5E+01 mg/m3		1year	Negligible	TLVirr	2.1E+01 mg/m3	1year	1year	Negligible	PPRTV_sub
Butoxypolypropylene glycol				9003-13-8	Butyl benzyl phthalate				85-68-7
5.0E+02 mg/m3		1hour	Critical	TEEL3	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
5.0E+02 mg/m3		1hour	Marginal	TEEL2	5.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
1.0E+02 mg/m3		1hour	Negligible	TEEL1	1.5E+01 mg/m3	1hour	1hour	Negligible	TEEL1
Butyl acetate, n-				123-86-4	Butyl butyrate				109-21-7
1.4E+04 mg/m3		1hour	Critical	ERPG3	1.0E+03 mg/m3	1hour	1hour	Critical	TEEL3
9.5E+02 mg/m3		1hour	Marginal	ERPG2	2.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
2.4E+01 mg/m3		1hour	Negligible	ERPG1	3.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
2.4E+01 mg/m3		8hour	Negligible	ERPG1*					
2.4E+01 mg/m3		14day	Negligible	ERPG1*					
2.4E+01 mg/m3		1year	Negligible	ERPG1*					

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Butyl chloroformate, n-				592-34-7	Butyl titanate				5593-70-4
3.7E+01	mg/m3	1hour	Critical	AEGL3_1hr	1.3E+03	mg/m3	1hour	Critical	TEEL3
1.2E+01	mg/m3	1hour	Marginal	AEGL2_1hr	2.5E+02	mg/m3	1hour	Marginal	TEEL2
1.5E+00	mg/m3	1hour	Negligible	TEEL1	4.0E+01	mg/m3	1hour	Negligible	TEEL1
Butyl glycidyl ether, n-				2426-08-6	Butyl-2-methylcyclopropane, T-1-				38851-70-6
1.3E+03	mg/m3	1hour	Critical	TEEL3	2.5E+02	mg/m3	1hour	Critical	TEEL3
3.0E+01	mg/m3	1hour	Marginal	TEEL2	5.0E+01	mg/m3	1hour	Marginal	TEEL2
1.6E+01	mg/m3	1hour	Negligible	TLV_TWA_irr [†]	3.0E+01	mg/m3	1hour	Negligible	TEEL1
1.6E+01	mg/m3	8hour	Negligible	TLV_TWA	Butylamine, (S)-2-				513-49-5
3.9E+00	mg/m3	14day	Negligible	TLV_TWA	1.5E+02	mg/m3	1hour	Critical	TEEL3
3.9E+00	mg/m3	1year	Negligible	TLVadj	3.0E+01	mg/m3	1hour	Marginal	TEEL2
Butyl isocyanate, n-				111-36-4	Butylamine, 4-(diethoxymethylsilyl)-				3037-72-7
1.0E+00	mg/m3	1hour	Critical	AEGL3_1hr	4.5E+01	mg/m3	1hour	Critical	TEEL3
9.3E-02	mg/m3	1hour	Marginal	AEGL2_1hr	4.5E+01	mg/m3	1hour	Marginal	TEEL2
5.3E-02	mg/m3	1hour	Negligible	AEGL1_1hr	6.0E+00	mg/m3	1hour	Negligible	TEEL1
5.3E-02	mg/m3	8hour	Negligible	AEGL1_8hr	Butylamine, n-				109-73-9
Butyl lactate, N-				138-22-7	Butylamine, sec				13952-84-6
3.0E+01	mg/m3	8hour	Negligible	TLV_TWA_irr	6.0E+01	mg/m3	1hour	Critical	TEEL3
1.0E+01	mg/m3	14day	Negligible	TLV_TWA_irr	3.0E+01	mg/m3	1hour	Marginal	TEEL2
1.0E+01	mg/m3	1year	Negligible	TLVirr	6.0E+00	mg/m3	1hour	Negligible	TEEL1
Butyl levulinate				2052-15-5	Butylamine, tert-				75-64-9
5.0E+02	mg/m3	1hour	Critical	TEEL3	4.0E+02	mg/m3	1hour	Critical	TEEL3
4.0E+02	mg/m3	1hour	Marginal	TEEL2	2.0E+01	mg/m3	1hour	Marginal	TEEL2
6.0E+01	mg/m3	1hour	Negligible	TEEL1	3.0E+00	mg/m3	1hour	Negligible	TEEL1
Butyl lithium				109-72-8	Butylated hydroxytoluene				128-37-0
5.0E+02	mg/m3	1hour	Critical	TEEL3	4.0E+02	mg/m3	1hour	Critical	TEEL3
5.0E+02	mg/m3	1hour	Marginal	TEEL2	4.0E+01	mg/m3	1hour	Marginal	TEEL2
1.2E+02	mg/m3	1hour	Negligible	TEEL1	6.0E+00	mg/m3	1hour	Negligible	TEEL1
Butyl methacrylate				97-88-1	Butylamine, sec				135-98-8
5.0E+02	mg/m3	1hour	Critical	TEEL3	7.5E+02	mg/m3	1hour	Critical	TEEL3
5.0E+01	mg/m3	1hour	Marginal	TEEL2	1.5E+03	mg/m3	1hour	Marginal	TEEL2
7.5E+00	mg/m3	1hour	Negligible	TEEL1	2.0E+02	mg/m3	1hour	Negligible	TEEL1
Butyl myristate				110-36-1	Butylbenzene, n-				104-51-8
3.5E+03	mg/m3	1hour	Critical	TEEL3	7.5E+03	mg/m3	1hour	Critical	TEEL3
6.0E+02	mg/m3	1hour	Marginal	TEEL2	1.5E+03	mg/m3	1hour	Marginal	TEEL2
1.0E+02	mg/m3	1hour	Negligible	TEEL1	2.0E+02	mg/m3	1hour	Negligible	TEEL1
Butyl perbenzoate, tert-				614-45-9	Butylbenzene, sec-				135-98-8
4.0E+02	mg/m3	1hour	Critical	TEEL3	7.5E+02	mg/m3	1hour	Critical	TEEL3
1.5E+02	mg/m3	1hour	Marginal	TEEL2	4.0E+00	mg/m3	1hour	Marginal	TEEL2
2.5E+01	mg/m3	1hour	Negligible	TEEL1	5.0E-01	mg/m3	1hour	Negligible	TEEL1
Butyl propanoate				590-01-2	Butylbenzene, tert-				98-06-6
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.3E+03	mg/m3	1hour	Critical	TEEL3
5.0E+02	mg/m3	1hour	Marginal	TEEL2	4.0E+00	mg/m3	1hour	Marginal	TEEL2
3.0E+02	mg/m3	1hour	Negligible	TEEL1	6.0E-01	mg/m3	1hour	Negligible	TEEL1

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Butylchloride, t-				507-20-0	Butyric acid				107-92-6
7.5E+03	mg/m3	1hour	Critical	TEEL3	7.5E+02	mg/m3	1hour	Critical	TEEL3
3.0E+01	mg/m3	1hour	Marginal	TEEL2	7.5E+02	mg/m3	1hour	Marginal	TEEL2
4.0E+00	mg/m3	1hour	Negligible	TEEL1	1.5E+02	mg/m3	1hour	Negligible	TEEL1
Butylcyclohexane				1678-93-9	Butyric acid, sodium salt				156-54-7
1.0E+03	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
2.0E+02	mg/m3	1hour	Marginal	TEEL2	5.0E+02	mg/m3	1hour	Marginal	TEEL2
3.0E+01	mg/m3	1hour	Negligible	TEEL1	1.5E+02	mg/m3	1hour	Negligible	TEEL1
Butylcyclohexanone, p-tert-				98-53-3	Butyrolactone, gamma-				96-48-0
5.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
4.0E+02	mg/m3	1hour	Marginal	TEEL2	4.0E+01	mg/m3	1hour	Marginal	TEEL2
6.0E+01	mg/m3	1hour	Negligible	TEEL1	6.0E+00	mg/m3	1hour	Negligible	TEEL1
Butylene carbonate				4437-85-8	BZ				53800-72-9
5.0E+02	mg/m3	1hour	Critical	TEEL3	6.9E-01	mg/m3	1hour	Critical	AEGL3_1hr
4.0E+02	mg/m3	1hour	Marginal	TEEL2	3.7E-02	mg/m3	1hour	Marginal	AEGL2_1hr
6.0E+01	mg/m3	1hour	Negligible	TEEL1	2.0E-02	mg/m3	1hour	Negligible	TEEL1
Butylphenol, 2-sec-				89-72-5	Cacodylic acid				75-60-5
3.1E+01	mg/m3	8hour	Negligible	TLV_TWA_irr	2.5E+02	mg/m3	1hour	Critical	TEEL3
1.1E+01	mg/m3	14day	Negligible	TLV_TWA_irr	4.0E+00	mg/m3	1hour	Marginal	TEEL2
1.1E+01	mg/m3	1year	Negligible	TLVirr	1.5E+00	mg/m3	1hour	Negligible	TEEL1
Butylphosphonic acid				3321-64-0	Cadmium acetate				543-90-8
2.0E+00	mg/m3	1hour	Critical	TEEL3	1.9E+01	mg/m3	1hour	Critical	TEEL3
4.0E-01	mg/m3	1hour	Marginal	TEEL2	1.5E-01	mg/m3	1hour	Marginal	TEEL2
6.0E-02	mg/m3	1hour	Negligible	TEEL1	6.2E-02	mg/m3	1hour	Negligible	TEEL1
Butylpyrocatechol, 4-tert				98-29-3	Cadmium bromide				7789-42-6
5.0E+02	mg/m3	1hour	Critical	TEEL3	2.2E+01	mg/m3	1hour	Critical	TEEL3
2.0E+00	mg/m3	1hour	Marginal	TEEL2	7.5E+00	mg/m3	1hour	Marginal	TEEL2
3.0E-01	mg/m3	1hour	Negligible	TEEL1	7.3E-02	mg/m3	1hour	Negligible	TEEL1
Butyltin compounds				z-136	Cadmium carbonate				513-78-0
2.7E-04	mg/m3	1year	Negligible	PPRTV_sub	1.4E+01	mg/m3	1hour	Critical	TEEL3
Butyltoluene, p-tert-				98-51-1	Cadmium chloride				10108-64-2
6.1E+00	mg/m3	8hour	Negligible	TLV_TWA_irr	7.7E-02	mg/m3	1hour	Marginal	TEEL2
2.1E+00	mg/m3	14day	Negligible	TLV_TWA_irr	4.6E-02	mg/m3	1hour	Negligible	TEEL1
2.1E+00	mg/m3	1year	Negligible	TLVirr	Cadmium chloride hemipentahydrate				7790-78-5
Butyltrichlorosilane				7521-80-4	1.8E+01	mg/m3	1hour	Critical	TEEL3
2.6E+02	mg/m3	1hour	Critical	AEGL3_1hr	5.0E+00	mg/m3	1hour	Marginal	TEEL2
5.7E+01	mg/m3	1hour	Marginal	AEGL2_1hr	6.1E-02	mg/m3	1hour	Negligible	TEEL1
4.7E+00	mg/m3	1hour	Negligible	AEGL1_1hr	Cadmium dinitrite				7790-83-2
4.7E+00	mg/m3	8hour	Negligible	AEGL1_8hr	1.6E+01	mg/m3	1hour	Critical	TEEL3
Butynediol, 1,4-				110-65-6	9.1E-02	mg/m3	1hour	Marginal	TEEL2
3.0E+01	mg/m3	1hour	Critical	TEEL3	5.5E-02	mg/m3	1hour	Negligible	TEEL1
2.0E+01	mg/m3	1hour	Marginal	TEEL2	Butyraldehyde				123-72-8
6.0E-01	mg/m3	1hour	Negligible	TEEL1	4.0E+01	mg/m3	1hour	Critical	TEEL3
Butyraldehyde				123-72-8	1.3E+00	mg/m3	1hour	Marginal	TEEL2
4.0E+01	mg/m3	1hour	Critical	TEEL3	1.5E-01	mg/m3	1hour	Negligible	TEEL1
1.3E+00	mg/m3	1hour	Marginal	TEEL2					
1.5E-01	mg/m3	1hour	Negligible	TEEL1					

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Cadmium fluoride				7790-79-6	Calcium arsenate				7778-44-1
1.2E+01 mg/m3		1hour	Critical	TEEL3	1.3E+01 mg/m3	1hour	1hour	Critical	TEEL3
6.7E-02 mg/m3		1hour	Marginal	TEEL2	1.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
4.0E-02 mg/m3		1hour	Negligible	TEEL1	1.5E+00 mg/m3	1hour	1hour	Negligible	TEEL1
Cadmium hydroxide				21041-95-2	Calcium carbide				75-20-7
1.2E+01 mg/m3		1hour	Critical	TEEL3	2.5E+02 mg/m3	1hour	1hour	Critical	TEEL3
6.5E-02 mg/m3		1hour	Marginal	TEEL2	5.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
3.9E-02 mg/m3		1hour	Negligible	TEEL1	3.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
Cadmium nitrate				10325-94-7	Calcium carbonate				1317-65-3
1.9E+01 mg/m3		1hour	Critical	TEEL3	3.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
1.1E-01 mg/m3		1hour	Marginal	TEEL2	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
6.3E-02 mg/m3		1hour	Negligible	TEEL1	6.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
Cadmium nitrate tetrahydrate				10022-68-1	Calcium carbonate				471-34-1
2.5E+01 mg/m3		1hour	Critical	TEEL3	5.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
5.0E+00 mg/m3		1hour	Marginal	TEEL2	1.5E+01 mg/m3	1hour	1hour	Negligible	TEEL1
6.0E-01 mg/m3		1hour	Negligible	TEEL1	7.5E+01 mg/m3	1hour	1hour	Negligible	TEEL1
Cadmium oxide				1306-19-0	Calcium carbonate				471-34-1
1.0E+01 mg/m3		1hour	Critical	TEEL3	3.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
4.0E+00 mg/m3		1hour	Marginal	TEEL2	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
3.4E-02 mg/m3		1hour	Negligible	TEEL1	6.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
Cadmium stearate				2223-93-0	Calcium chloride				10043-52-4
5.5E+01 mg/m3		1hour	Critical	TEEL3	5.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
1.3E+01 mg/m3		1hour	Marginal	TEEL2	1.5E+01 mg/m3	1hour	1hour	Negligible	TEEL1
1.8E-01 mg/m3		1hour	Negligible	TEEL1	7.5E+01 mg/m3	1hour	1hour	Negligible	TEEL1
Cadmium sulfate				10124-36-4	Calcium chloride dihydrate				10035-04-8
1.7E+01 mg/m3		1hour	Critical	TEEL3	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
9.3E-02 mg/m3		1hour	Marginal	TEEL2	5.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
5.6E-02 mg/m3		1hour	Negligible	TEEL1	1.3E+02 mg/m3	1hour	1hour	Negligible	TEEL1
Cadmium sulfate, hydrate				7790-84-3	Calcium chloride hexahydrate				7774-34-7
2.8E+01 mg/m3		1hour	Critical	TEEL3	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
3.0E-01 mg/m3		1hour	Marginal	TEEL2	1.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
9.4E-02 mg/m3		1hour	Negligible	TEEL1	1.5E+01 mg/m3	1hour	1hour	Negligible	TEEL1
Cadmium sulfide				1306-23-6	Calcium chloride hydrate				22691-02-7
1.2E+01 mg/m3		1hour	Critical	TEEL3	4.5E+02 mg/m3	1hour	1hour	Critical	TEEL3
1.2E+01 mg/m3		1hour	Marginal	TEEL2	4.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
3.9E-02 mg/m3		1hour	Negligible	TEEL1	6.0E+00 mg/m3	1hour	1hour	Negligible	TEEL1
Cadmium, elemental				7440-43-9	Calcium chromate				13765-19-0
4.7E+00 mg/m3		1hour	Critical	AEGL3_1hr	4.5E+01 mg/m3	1hour	1hour	Critical	TEEL3
7.6E-01 mg/m3		1hour	Marginal	AEGL2_1hr	1.3E+00 mg/m3	1hour	1hour	Marginal	TEEL2
1.0E-01 mg/m3		1hour	Negligible	AEGL1_1hr	9.0E-02 mg/m3	1hour	1hour	Negligible	TEEL1
4.1E-02 mg/m3		8hour	Negligible	AEGL1_8hr	1.0E-03 mg/m3	8hour	8hour	Negligible	TLV_TWA
2.1E-05 mg/m3		14day	Negligible	MRLi_acute	2.4E-04 mg/m3	14day	14day	Negligible	TLV_TWA
6.8E-06 mg/m3		1year	Negligible	MRL_chr	2.4E-04 mg/m3	1year	1year	Negligible	TLVadj
Calcium acetate				62-54-4					
3.0E+01 mg/m3		1hour	Critical	TEEL3					
4.0E-01 mg/m3		1hour	Marginal	TEEL2					
6.0E-02 mg/m3		1hour	Negligible	TEEL1					

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Calcium cyanamide				156-62-7	Calcium nitrate tetrahydrate				13477-34-4
5.0E+02 mg/m3		1hour	Critical	TEEL3	5.0E+02 mg/m3		1hour	Critical	TEEL3
1.3E+02 mg/m3		1hour	Marginal	TEEL2	3.5E+02 mg/m3		1hour	Marginal	TEEL2
1.5E+00 mg/m3		1hour	Negligible	TEEL1	5.0E+01 mg/m3		1hour	Negligible	TEEL1
5.0E-01 mg/m3		8hour	Negligible	TLV_TWA_irr	Calcium nitrite				13780-06-8
1.7E-01 mg/m3		14day	Negligible	TLV_TWA_irr	5.0E+01 mg/m3		1hour	Critical	TEEL3
1.7E-01 mg/m3		1year	Negligible	TLVirr	6.0E-01 mg/m3		1hour	Marginal	TEEL2
Calcium cyanide				592-01-8	Calcium oxalate				563-72-4
2.8E+01 mg/m3		1hour	Critical	AEGL3_1hr	5.0E+01 mg/m3		1hour	Critical	TEEL3
1.3E+01 mg/m3		1hour	Marginal	AEGL2_1hr	5.0E+01 mg/m3		1hour	Marginal	TEEL2
3.8E+00 mg/m3		1hour	Negligible	AEGL1_1hr	1.5E+01 mg/m3		1hour	Negligible	TEEL1
1.9E+00 mg/m3		8hour	Negligible	AEGL1_8hr	Calcium oxalate, hydrate				5794-28-5
Calcium fluoride				7789-75-5	6.0E+01 mg/m3		1hour	Critical	TEEL3
5.0E+02 mg/m3		1hour	Critical	TEEL3	6.0E+01 mg/m3		1hour	Marginal	TEEL2
2.0E+02 mg/m3		1hour	Marginal	TEEL2	1.5E+01 mg/m3		1hour	Negligible	TEEL1
1.5E+01 mg/m3		1hour	Negligible	TEEL1	Calcium oxide				1305-78-8
Calcium formate				544-17-2	2.5E+01 mg/m3		1hour	Critical	TEEL3
5.0E+02 mg/m3		1hour	Critical	TEEL3	5.0E+00 mg/m3		1hour	Marginal	TEEL2
2.0E+02 mg/m3		1hour	Marginal	TEEL2	5.0E+00 mg/m3		1hour	Negligible	TEEL1
3.0E+01 mg/m3		1hour	Negligible	TEEL1	2.0E+00 mg/m3		8hour	Negligible	TLV_TWA_irr
Calcium hydride				7789-78-8	6.8E-01 mg/m3		14day	Negligible	TLV_TWA_irr
1.5E+02 mg/m3		1hour	Critical	TEEL3	6.8E-01 mg/m3		1year	Negligible	TLVirr
3.5E+01 mg/m3		1hour	Marginal	TEEL2	Calcium phosphate				10103-46-5
5.0E+00 mg/m3		1hour	Negligible	TEEL1	3.5E+02 mg/m3		1hour	Critical	TEEL3
Calcium hydroxide				1305-62-0	3.5E+01 mg/m3		1hour	Marginal	TEEL2
5.0E+02 mg/m3		1hour	Critical	TEEL3	2.0E+01 mg/m3		1hour	Negligible	TEEL1
5.0E+02 mg/m3		1hour	Marginal	TEEL2	Calcium phosphate tribasic				12167-74-7
7.5E+01 mg/m3		1hour	Negligible	TEEL1	2.5E+02 mg/m3		1hour	Critical	TEEL3
5.0E+00 mg/m3		8hour	Negligible	TLV_TWA_irr	5.0E+01 mg/m3		1hour	Marginal	TEEL2
1.7E+00 mg/m3		14day	Negligible	TLV_TWA_irr	3.0E+01 mg/m3		1hour	Negligible	TEEL1
1.7E+00 mg/m3		1year	Negligible	TLVirr	Calcium phosphide				1305-99-3
Calcium hypochlorite				7778-54-3	1.3E+01 mg/m3		1hour	Critical	AEGL3_1hr
3.5E+02 mg/m3		1hour	Critical	TEEL3	7.5E+00 mg/m3		1hour	Marginal	AEGL2_1hr
7.5E+01 mg/m3		1hour	Marginal	TEEL2	1.0E+00 mg/m3		1hour	Negligible	TEEL1
1.0E+01 mg/m3		1hour	Negligible	TEEL1	Calcium sulfate				7778-18-9
Calcium metasilicate				10101-39-0	2.5E+02 mg/m3		1hour	Critical	TEEL3
2.5E+02 mg/m3		1hour	Critical	TEEL3	5.0E+01 mg/m3		1hour	Marginal	TEEL2
5.0E+01 mg/m3		1hour	Marginal	TEEL2	3.0E+01 mg/m3		1hour	Negligible	TEEL1
3.0E+01 mg/m3		1hour	Negligible	TEEL1	1.0E+01 mg/m3		8hour	Negligible	TLV_TWA
Calcium monohydrogen phosphate dihydrate				7789-77-7	2.4E+00 mg/m3		14day	Negligible	TLV_TWA
2.5E+02 mg/m3		1hour	Critical	TEEL3	2.4E+00 mg/m3		1year	Negligible	TLVadj
5.0E+01 mg/m3		1hour	Marginal	TEEL2	Calcium nitrate				10124-37-5
3.0E+01 mg/m3		1hour	Negligible	TEEL1	1.3E+02 mg/m3		1hour	Critical	TEEL3
Calcium nitrate				10124-37-5	2.5E+01 mg/m3		1hour	Marginal	TEEL2
1.3E+02 mg/m3		1hour	Critical	TEEL3	3.5E+00 mg/m3		1hour	Negligible	TEEL1
2.5E+01 mg/m3		1hour	Marginal	TEEL2					
3.5E+00 mg/m3		1hour	Negligible	TEEL1					

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Calcium sulfate dihydrate				10101-41-4	CAPSO				73463-39-5
7.5E+01 mg/m ³		1hour	Critical	TEEL3	2.5E+02 mg/m ³	1hour	1hour	Critical	TEEL3
5.0E+01 mg/m ³		1hour	Marginal	TEEL2	5.0E+01 mg/m ³	1hour	1hour	Marginal	TEEL2
3.0E+01 mg/m ³		1hour	Negligible	TEEL1	3.0E+01 mg/m ³	1hour	1hour	Negligible	TEEL1
1.0E+01 mg/m ³		8hour	Negligible	TLV_TWA	Captafol				2425-06-1
2.4E+00 mg/m ³		14day	Negligible	TLV_TWA	1.0E-01 mg/m ³	8hour	8hour	Negligible	TLV_TWA
2.4E+00 mg/m ³		1year	Negligible	TLVadj	2.4E-02 mg/m ³	14day	14day	Negligible	TLV_TWA
Calcium sulfate hemihydrate				10034-76-1	2.4E-02 mg/m ³	1year	1year	Negligible	TLVadj
1.0E+01 mg/m ³		8hour	Negligible	TLV_TWA	Captan				133-06-2
2.4E+00 mg/m ³		14day	Negligible	TLV_TWA	5.0E+02 mg/m ³	1hour	1hour	Critical	TEEL3
2.4E+00 mg/m ³		1year	Negligible	TLVadj	3.0E+01 mg/m ³	1hour	1hour	Marginal	TEEL2
Calcium trifluoromethyl sulfonate				55120-75-7	1.5E+01 mg/m ³	1hour	1hour	Negligible	TEEL1
5.0E+02 mg/m ³		1hour	Critical	TEEL3	5.0E+00 mg/m ³	8hour	8hour	Negligible	TLV_TWA_irr
1.5E+02 mg/m ³		1hour	Marginal	TEEL2	1.7E+00 mg/m ³	14day	14day	Negligible	TLV_TWA_irr
2.0E+01 mg/m ³		1hour	Negligible	TEEL1	1.7E+00 mg/m ³	1year	1year	Negligible	TLVirr
Calcium, elemental				7440-70-2	Carbachol chloride				51-83-2
2.5E+02 mg/m ³		1hour	Critical	TEEL3	1.5E+01 mg/m ³	1hour	1hour	Critical	TEEL3
5.0E+01 mg/m ³		1hour	Marginal	TEEL2	1.5E+01 mg/m ³	1hour	1hour	Marginal	TEEL2
3.0E+01 mg/m ³		1hour	Negligible	TEEL1	7.5E+00 mg/m ³	1hour	1hour	Negligible	TEEL1
Camphor				76-22-2	Carbaryl				63-25-2
2.0E+02 mg/m ³		1hour	Critical	TEEL3	1.0E+02 mg/m ³	1hour	1hour	Critical	TEEL3
3.0E+01 mg/m ³		1hour	Marginal	TEEL2	1.5E+01 mg/m ³	1hour	1hour	Marginal	TEEL2
1.9E+01 mg/m ³		1hour	Negligible	TEEL1	5.0E+00 mg/m ³	1hour	1hour	Negligible	TEEL1
1.2E+01 mg/m ³		8hour	Negligible	TLV_TWA_irr	5.0E-01 mg/m ³	8hour	8hour	Negligible	TLV_TWA
4.3E+00 mg/m ³		14day	Negligible	TLV_TWA_irr	1.2E-01 mg/m ³	14day	14day	Negligible	TLV_TWA
4.3E+00 mg/m ³		1year	Negligible	TLVirr	1.2E-01 mg/m ³	1year	1year	Negligible	TLVadj
Cantharidin				56-25-7	Carbazole				86-74-8
4.3E+00 mg/m ³		1hour	Critical	TEEL3	7.5E+01 mg/m ³	1hour	1hour	Critical	TEEL3
4.3E+00 mg/m ³		1hour	Marginal	TEEL2	1.5E+01 mg/m ³	1hour	1hour	Marginal	TEEL2
2.5E+00 mg/m ³		1hour	Negligible	TEEL1	2.5E+00 mg/m ³	1hour	1hour	Negligible	TEEL1
Caprolactam				105-60-2	Carbazole violet				6358-30-1
2.0E+01 mg/m ³		1hour	Critical	TEEL3	5.0E+02 mg/m ³	1hour	1hour	Critical	TEEL3
5.0E+00 mg/m ³		1hour	Marginal	TLV_TWA_irr [†]	5.0E+02 mg/m ³	1hour	1hour	Marginal	TEEL2
5.0E+00 mg/m ³		1hour	Negligible	TLV_TWA_irr [†]	2.5E+02 mg/m ³	1hour	1hour	Negligible	TEEL1
5.0E+00 mg/m ³		8hour	Negligible	TLV_TWA_irr	Carbethoxyethylidine				5717-37-3
1.7E+00 mg/m ³		14day	Negligible	TLV_TWA_irr	2.5E+02 mg/m ³	1hour	1hour	Critical	TEEL3
1.7E+00 mg/m ³		1year	Negligible	TLVirr	5.0E+01 mg/m ³	1hour	1hour	Marginal	TEEL2
Caprolactone				502-44-3	3.0E+01 mg/m ³	1hour	1hour	Negligible	TEEL1
5.0E+02 mg/m ³		1hour	Critical	TEEL3	Carbitol acetate				112-15-2
3.5E+02 mg/m ³		1hour	Marginal	TEEL2	5.0E+02 mg/m ³	1hour	1hour	Critical	TEEL3
5.0E+01 mg/m ³		1hour	Negligible	TEEL1	4.0E+02 mg/m ³	1hour	1hour	Marginal	TEEL2
Caprylyl chloride				111-64-8	6.0E+01 mg/m ³	1hour	1hour	Negligible	TEEL1
2.5E+02 mg/m ³		1hour	Critical	TEEL3					
5.0E+01 mg/m ³		1hour	Marginal	TEEL2					
3.0E+01 mg/m ³		1hour	Negligible	TEEL1					

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Carbofuran				1563-66-2	Carbon tetrachloride				56-23-5
5.0E-01	mg/m3	1hour	Critical	TEEL3	3.3E+03	mg/m3	1hour	Critical	AEGL3_1hr
4.3E-01	mg/m3	1hour	Marginal	TEEL2	1.2E+03	mg/m3	1hour	Marginal	AEGL2_1hr
3.0E-01	mg/m3	1hour	Negligible	TEEL1	2.8E+02	mg/m3	1hour	Negligible	AEGL1_1hr
1.0E-01	mg/m3	8hour	Negligible	TLV_TWA	1.2E+02	mg/m3	8hour	Negligible	AEGL1_8hr
2.4E-02	mg/m3	14day	Negligible	TLV_TWA	7.7E+00	mg/m3	14day	Negligible	TLV_TWA
2.4E-02	mg/m3	1year	Negligible	TLVadj	1.3E-01	mg/m3	1year	Negligible	MRL_inter
Carbon				7440-44-0	Carbon tetrafluoride				75-73-0
5.0E+02	mg/m3	1hour	Critical	TEEL3	7.5E+04	mg/m3	1hour	Critical	TEEL3
1.0E+01	mg/m3	1hour	Marginal	TEEL2	1.5E+04	mg/m3	1hour	Marginal	TEEL2
6.0E+00	mg/m3	1hour	Negligible	TEEL1	2.5E+03	mg/m3	1hour	Negligible	TEEL1
Carbon black				1333-86-4	Carbon trifluoride				75-46-7
5.0E+02	mg/m3	1hour	Critical	TEEL3	3.0E+05	mg/m3	1hour	Critical	TEEL3
1.8E+01	mg/m3	1hour	Marginal	TEEL2	6.0E+04	mg/m3	1hour	Marginal	TEEL2
1.1E+01	mg/m3	1hour	Negligible	TEEL1	7.5E+03	mg/m3	1hour	Negligible	TEEL1
Carbon dioxide				124-38-9	Carbonyl fluoride				353-50-4
7.5E+04	mg/m3	1hour	Critical	TEEL3	2.2E+00	mg/m3	1hour	Critical	AEGL3_1hr
5.0E+04	mg/m3	1hour	Marginal	TEEL2	7.6E-01	mg/m3	1hour	Marginal	AEGL2_1hr
5.0E+04	mg/m3	1hour	Negligible	TEEL1	7.6E-01	mg/m3	1hour	Negligible	TEEL1
1.4E+04	mg/m3	8hour	Negligible	CEGL*	7.6E-01	mg/m3	8hour	Negligible	TEEL*
1.4E+04	mg/m3	14day	Negligible	CEGL	Carbonyl sulfide				463-58-1
2.2E+03	mg/m3	1year	Negligible	TLVadj	3.7E+02	mg/m3	1hour	Critical	AEGL3_1hr
Carbon disulfide				75-15-0	Carbonyldiphthalic anhydride, 4,4'-				2421-28-5
1.5E+03	mg/m3	1hour	Critical	AEGL3_1hr	1.4E+02	mg/m3	1hour	Marginal	AEGL2_1hr
5.0E+02	mg/m3	1hour	Marginal	AEGL2_1hr	7.5E+01	mg/m3	1hour	Negligible	TEEL1
4.0E+01	mg/m3	1hour	Negligible	AEGL1_1hr	Carbophenothion				786-19-6
2.1E+01	mg/m3	8hour	Negligible	AEGL1_8hr	6.8E+00	mg/m3	1hour	Critical	TEEL3
7.6E-01	mg/m3	14day	Negligible	TLV_TWA	6.8E+00	mg/m3	1hour	Marginal	TEEL2
4.8E-01	mg/m3	1year	Negligible	HEAST_sub	4.0E+00	mg/m3	1hour	Negligible	TEEL1
Carbon Monoxide				630-08-0	Carboxymethyl cellulose				9000-11-7
3.8E+02	mg/m3	1hour	Critical	AEGL3_1hr*	5.0E+02	mg/m3	1hour	Critical	TEEL3
9.5E+01	mg/m3	1hour	Marginal	AEGL2_1hr*	5.0E+02	mg/m3	1hour	Marginal	TEEL2
9.5E+01	mg/m3	1hour	Negligible	TEEL1*	1.3E+02	mg/m3	1hour	Negligible	TEEL1
2.9E+01	mg/m3	8hour	Negligible	TLV_TWA*	Carboxymethyl sepharose				68894-07-5
1.0E+01	mg/m3	14day	Negligible	CEGL	5.0E+02	mg/m3	1hour	Critical	TEEL3
7.0E+00	mg/m3	1year	Negligible	TLVadj	1.5E+02	mg/m3	1hour	Marginal	TEEL2
3.1E+01	mg/m3	8hour	Marginal	AEGL2_8h*	2.5E+01	mg/m3	1hour	Negligible	TEEL1
9.5E+01	mg/m3	10min	Negligible	TEEL1*	Casein				9000-71-9
1.5E+02	mg/m3	8hour	Critical	AEGL3_8h*	2.5E+02	mg/m3	1hour	Critical	TEEL3
4.8E+02	mg/m3	10min	Marginal	AEGL2_10min	5.0E+01	mg/m3	1hour	Marginal	TEEL2
1.9E+03	mg/m3	10min	Critical	AEGL3_10min	3.0E+01	mg/m3	1hour	Negligible	TEEL1
Carbon tetrabromide				558-13-4					
1.4E+00	mg/m3	8hour	Negligible	TLV_TWA_irr					
4.6E-01	mg/m3	14day	Negligible	TLV_TWA_irr					
4.6E-01	mg/m3	1year	Negligible	TLVirr					

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN		
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis		
Castor oil					8001-79-4	Cerium					7440-45-1
5.0E+02	mg/m3	1hour	Critical	TEEL3	2.5E+02	mg/m3	1hour	Critical	TEEL3		
5.0E+02	mg/m3	1hour	Marginal	TEEL2	5.0E+01	mg/m3	1hour	Marginal	TEEL2		
1.3E+02	mg/m3	1hour	Negligible	TEEL1	3.0E+01	mg/m3	1hour	Negligible	TEEL1		
Catechol					120-80-9	Cerium acetate					537-00-8
1.0E+02	mg/m3	1hour	Critical	TEEL3	1.0E+01	mg/m3	1hour	Critical	TEEL3		
4.0E+01	mg/m3	1hour	Marginal	TEEL2	2.0E+00	mg/m3	1hour	Marginal	TEEL2		
2.3E+01	mg/m3	1hour	Negligible	TLV_TWA_irr [†]	3.5E-01	mg/m3	1hour	Negligible	TEEL1		
2.3E+01	mg/m3	8hour	Negligible	TLV_TWA_irr	Cerium chloride					7790-86-5	
7.7E+00	mg/m3	14day	Negligible	TLV_TWA_irr	5.0E+02	mg/m3	1hour	Critical	TEEL3		
7.7E+00	mg/m3	1year	Negligible	TLVirr	1.5E+02	mg/m3	1hour	Marginal	TEEL2		
Cellulase					9012-54-8	2.5E+01	mg/m3	1hour	Negligible	TEEL1	
5.0E+02	mg/m3	1hour	Critical	TEEL3	Cerium fluoride					7758-88-5	
3.0E+02	mg/m3	1hour	Marginal	TEEL2	5.0E+02	mg/m3	1hour	Critical	TEEL3		
4.0E+01	mg/m3	1hour	Negligible	TEEL1	4.3E+01	mg/m3	1hour	Marginal	TEEL2		
Cellulose					9004-34-6	2.6E+01	mg/m3	1hour	Negligible	TEEL1	
5.0E+02	mg/m3	1hour	Critical	TEEL3	Cerium nitrate hexahydrate					10294-41-4	
5.0E+02	mg/m3	1hour	Marginal	TEEL2	5.0E+02	mg/m3	1hour	Critical	TEEL3		
3.0E+01	mg/m3	1hour	Negligible	TEEL1	3.5E+02	mg/m3	1hour	Marginal	TEEL2		
1.0E+01	mg/m3	8hour	Negligible	TLV_TWA_irr	5.0E+01	mg/m3	1hour	Negligible	TEEL1		
3.4E+00	mg/m3	14day	Negligible	TLV_TWA_irr	Cerium oxalate					139-42-4	
3.4E+00	mg/m3	1year	Negligible	TLVirr	2.5E+02	mg/m3	1hour	Critical	TEEL3		
Cellulose acetate butanoate					9004-36-8	5.0E+01	mg/m3	1hour	Marginal	TEEL2	
2.5E+02	mg/m3	1hour	Critical	TEEL3	3.0E+01	mg/m3	1hour	Negligible	TEEL1		
5.0E+01	mg/m3	1hour	Marginal	TEEL2	Cerium sulfate					13590-82-4	
3.0E+01	mg/m3	1hour	Negligible	TEEL1	1.0E+02	mg/m3	1hour	Critical	TEEL3		
Cellulose, 2-(diethylamino)ethyl ether					9013-34-7	2.0E+01	mg/m3	1hour	Marginal	TEEL2	
2.5E+02	mg/m3	1hour	Critical	TEEL3	3.5E+00	mg/m3	1hour	Negligible	TEEL1		
5.0E+01	mg/m3	1hour	Marginal	TEEL2	Cerium(IV) hydroxide					12014-56-1	
3.0E+01	mg/m3	1hour	Negligible	TEEL1	3.5E+02	mg/m3	1hour	Critical	TEEL3		
Ceric ammonium nitrate					16774-21-3	7.5E+01	mg/m3	1hour	Marginal	TEEL2	
2.5E+02	mg/m3	1hour	Critical	TEEL3	4.5E+01	mg/m3	1hour	Negligible	TEEL1		
5.0E+01	mg/m3	1hour	Marginal	TEEL2	Cerous sulfate					13454-94-9	
3.0E+01	mg/m3	1hour	Negligible	TEEL1	5.0E+02	mg/m3	1hour	Critical	TEEL3		
Ceric ammonium sulfate					7637-03-8	1.5E+02	mg/m3	1hour	Marginal	TEEL2	
2.5E+02	mg/m3	1hour	Critical	TEEL3	2.5E+01	mg/m3	1hour	Negligible	TEEL1		
5.0E+01	mg/m3	1hour	Marginal	TEEL2	Cesium carbonate					534-17-8	
3.0E+01	mg/m3	1hour	Negligible	TEEL1	5.0E+02	mg/m3	1hour	Critical	TEEL3		
Ceric ammonium sulfate, dihydrate					10378-47-9	2.0E+02	mg/m3	1hour	Marginal	TEEL2	
2.5E+02	mg/m3	1hour	Critical	TEEL3	3.0E+01	mg/m3	1hour	Negligible	TEEL1		
5.0E+01	mg/m3	1hour	Marginal	TEEL2	Cesium chloride					7647-17-8	
3.0E+01	mg/m3	1hour	Negligible	TEEL1	5.0E+02	mg/m3	1hour	Critical	TEEL3		
Ceric oxide					1306-38-3	1.0E+01	mg/m3	1hour	Marginal	TEEL2	
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.3E+00	mg/m3	1hour	Negligible	TEEL1		
1.5E+02	mg/m3	1hour	Marginal	TEEL2							
2.0E+01	mg/m3	1hour	Negligible	TEEL1							
6.2E-03	mg/m3	1year	Negligible	IRIS_sub							

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Cesium fluoride				13400-13-0	Chlordane				57-74-9
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.0E+02	mg/m3	1hour	Critical	TEEL3
1.0E+02	mg/m3	1hour	Marginal	TEEL2	5.0E+01	mg/m3	1hour	Marginal	TEEL2
6.0E+01	mg/m3	1hour	Negligible	TEEL1	1.5E+00	mg/m3	1hour	Negligible	TEEL1
Cesium hydroxide				21351-79-1	Chlordecone				143-50-0
2.5E+02	mg/m3	1hour	Critical	TEEL3	5.0E-01	mg/m3	8hour	Negligible	TLV_TWA
7.5E+00	mg/m3	1hour	Marginal	TEEL2	1.2E-01	mg/m3	14day	Negligible	TLV_TWA
2.0E+00	mg/m3	1hour	Negligible	TEEL1	1.4E-04	mg/m3	1year	Negligible	MRL_inter
2.0E+00	mg/m3	8hour	Negligible	TLV_TWA_irr	Chlorfenvinphos				470-90-6
6.8E-01	mg/m3	14day	Negligible	TLV_TWA_irr	4.0E+01	mg/m3	1hour	Critical	TEEL3
6.8E-01	mg/m3	1year	Negligible	TLVirr	6.0E-01	mg/m3	1hour	Marginal	TEEL2
Cesium iodide				7789-17-5	Chlorflurazole				3615-21-2
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.3E+01	mg/m3	1hour	Critical	TEEL3
2.0E+02	mg/m3	1hour	Marginal	TEEL2	1.3E+01	mg/m3	1hour	Marginal	TEEL2
3.0E+01	mg/m3	1hour	Negligible	TEEL1	7.5E+00	mg/m3	1hour	Negligible	TEEL1
Cesium nitrate				7789-18-6	Chloride				16887-00-6
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.5E+01	mg/m3	1hour	Critical	TEEL3
2.0E+02	mg/m3	1hour	Marginal	TEEL2	3.6E+00	mg/m3	1hour	Marginal	TEEL2
3.0E+01	mg/m3	1hour	Negligible	TEEL1	1.5E+00	mg/m3	1hour	Negligible	TEEL1
Cesium oxide				20281-00-9	Chlorinated diphenyl oxide				31242-93-0
5.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E-01	mg/m3	8hour	Negligible	TLV_TWA
1.1E+01	mg/m3	1hour	Marginal	TEEL2	1.2E-01	mg/m3	14day	Negligible	TLV_TWA
6.7E+00	mg/m3	1hour	Negligible	TEEL1	1.2E-01	mg/m3	1year	Negligible	TLVadj
Cesium, elemental				7440-46-2	Chlorine				7782-50-5
5.0E+02	mg/m3	1hour	Critical	TEEL3	5.8E+01	mg/m3	1hour	Critical	AEGL3_1hr*
1.5E+02	mg/m3	1hour	Marginal	TEEL2	5.8E+00	mg/m3	1hour	Marginal	AEGL2_1hr*
2.0E+01	mg/m3	1hour	Negligible	TEEL1	1.5E+00	mg/m3	1hour	Negligible	AEGL1_1hr*
Charcoal, activated				64365-11-3	Chlorine dioxide				10049-04-4
2.5E+02	mg/m3	1hour	Critical	TEEL3	1.5E+00	mg/m3	8hour	Negligible	AEGL1_8hr*
5.0E+01	mg/m3	1hour	Marginal	TEEL2	2.9E-01	mg/m3	14day	Negligible	CEGL
3.0E+01	mg/m3	1hour	Negligible	TEEL1	4.0E-03	mg/m3	1year	Negligible	MRL_inter
Chloral				75-87-6	Chlorine				7782-50-5
2.5E+02	mg/m3	1hour	Critical	TEEL3	1.5E+00	mg/m3	10min	Negligible	AEGL1_10min
5.0E+01	mg/m3	1hour	Marginal	TEEL2	2.1E+00	mg/m3	8hour	Marginal	AEGL2_8h*
7.5E+00	mg/m3	1hour	Negligible	TEEL1	8.1E+00	mg/m3	10min	Marginal	AEGL2_10min
Chloral hydrate				302-17-0	Chlorine				7782-50-5
1.3E+02	mg/m3	1hour	Critical	TEEL3	2.1E+01	mg/m3	8hour	Critical	AEGL3_8h*
1.3E+02	mg/m3	1hour	Marginal	TEEL2	1.5E+02	mg/m3	10min	Critical	AEGL3_10min
2.5E+01	mg/m3	1hour	Negligible	TEEL1	Chlorine dioxide				10049-04-4
Chloramben				133-90-4	Chlorine dioxide				10049-04-4
5.0E+02	mg/m3	1hour	Critical	TEEL3	6.6E+00	mg/m3	1hour	Critical	TEEL3
5.0E+02	mg/m3	1hour	Marginal	TEEL2	3.0E+00	mg/m3	1hour	Marginal	TEEL2
1.0E+02	mg/m3	1hour	Negligible	TEEL1	4.1E-01	mg/m3	1hour	Negligible	TEEL1
Chloramine-T				127-65-1	Chlorine dioxide				10049-04-4
2.5E+02	mg/m3	1hour	Critical	TEEL3	2.8E-01	mg/m3	8hour	Negligible	TLV_TWA_irr
2.0E+00	mg/m3	1hour	Marginal	TEEL2	9.4E-02	mg/m3	14day	Negligible	TLV_TWA_irr
2.5E-01	mg/m3	1hour	Negligible	TEEL1	9.4E-02	mg/m3	1year	Negligible	TLVirr

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN		
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis		
Chloroacetyl chloride					79-04-9	Chlorobutane, 2-					78-86-4
2.4E+02 mg/m3		1hour	Critical	AEGL3_1hr	1.3E+04 mg/m3	1hour	1hour	Critical	TEEL3		
7.4E+00 mg/m3		1hour	Marginal	AEGL2_1hr	3.5E+01 mg/m3	1hour	1hour	Marginal	TEEL2		
1.8E-01 mg/m3		1hour	Negligible	AEGL1_1hr	5.0E+00 mg/m3	1hour	1hour	Negligible	TEEL1		
1.8E-01 mg/m3		8hour	Negligible	AEGL1_8hr	Chlorocyclohexanol, trans-2-					6628-80-4	
7.9E-02 mg/m3		14day	Negligible	TLV_TWA_irr	4.0E+02 mg/m3	1hour	1hour	Critical	TEEL3		
7.9E-02 mg/m3		1year	Negligible	TLVirr	7.5E+01 mg/m3	1hour	1hour	Marginal	TEEL2		
Chloroamphenicol					56-75-7	1.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1	
3.5E+02 mg/m3		1hour	Critical	TEEL3	Chlorodecane, 1-					1002-69-3	
7.5E+00 mg/m3		1hour	Marginal	TEEL2	7.5E+03 mg/m3	1hour	1hour	Critical	TEEL3		
1.5E+00 mg/m3		1hour	Negligible	TEEL1	1.5E+03 mg/m3	1hour	1hour	Marginal	TEEL2		
Chloroaniline, 4-					106-47-8	1.0E+03 mg/m3	1hour	1hour	Negligible	TEEL1	
3.0E+02 mg/m3		1hour	Critical	TEEL3	Chlorodiethylaluminum					96-10-6	
1.0E+01 mg/m3		1hour	Marginal	TEEL2	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3		
1.5E+00 mg/m3		1hour	Negligible	TEEL1	2.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2		
Chlorobenzene					108-90-7	3.5E+01 mg/m3	1hour	1hour	Negligible	TEEL1	
1.8E+03 mg/m3		1hour	Critical	AEGL3_1hr	Chlorodifluoromethane					75-45-6	
6.9E+02 mg/m3		1hour	Marginal	AEGL2_1hr	3.0E+04 mg/m3	1hour	1hour	Critical	TEEL3		
4.6E+01 mg/m3		1hour	Negligible	AEGL1_1hr	3.0E+04 mg/m3	1hour	1hour	Marginal	TEEL2		
4.6E+01 mg/m3		8hour	Negligible	AEGL1_8hr	4.0E+03 mg/m3	1hour	1hour	Negligible	TEEL1		
1.1E+01 mg/m3		14day	Negligible	TLV_TWA	3.5E+03 mg/m3	8hour	8hour	Negligible	TLV_TWA		
3.4E-01 mg/m3		1year	Negligible	PPRTV_sub	8.7E+02 mg/m3	14day	14day	Negligible	TLV_TWA		
Chlorobenzene sulfonic acid, p-					98-66-8	3.4E+01 mg/m3	1year	1year	Negligible	IRIS_chr	
2.0E+02 mg/m3		1hour	Critical	TEEL3	Chloroethanesulfonyl chloride, 2-					1622-32-8	
4.0E+01 mg/m3		1hour	Marginal	TEEL2	1.5E+02 mg/m3	1hour	1hour	Critical	TEEL3		
6.0E+00 mg/m3		1hour	Negligible	TEEL1	2.5E+01 mg/m3	1hour	1hour	Marginal	TEEL2		
Chlorobenzilate					510-15-6	3.5E+00 mg/m3	1hour	1hour	Negligible	TEEL1	
3.0E+02 mg/m3		1hour	Critical	TEEL3	Chloroethyl chloroformate					627-11-2	
3.0E+01 mg/m3		1hour	Marginal	TEEL2	2.0E+01 mg/m3	1hour	1hour	Critical	TEEL3		
4.0E+00 mg/m3		1hour	Negligible	TEEL1	2.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2		
6.1E-02 mg/m3		1year	Negligible	HEAST	1.3E+01 mg/m3	1hour	1hour	Negligible	TEEL1		
Chlorobenzotrifluoride, 2-					88-16-4	Chloroethyl vinyl ether, 2-					110-75-8
5.0E+02 mg/m3		1hour	Critical	TEEL3	1.0E+02 mg/m3	1hour	1hour	Critical	TEEL3		
1.3E+02 mg/m3		1hour	Marginal	TEEL2	2.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2		
2.0E+01 mg/m3		1hour	Negligible	TEEL1	3.5E+00 mg/m3	1hour	1hour	Negligible	TEEL1		
Chlorobenzotrifluoride, 4-					98-56-6	Chloroethylchloromethylsulfide, 2-					2625-76-5
2.1E+00 mg/m3		1year	Negligible	PPRTV_sub	1.5E+00 mg/m3	1hour	1hour	Critical	TEEL3		
Chlorobenzylidene malononitrile, o-					2698-41-1	1.0E-01 mg/m3	1hour	1hour	Marginal	TEEL2	
1.1E+01 mg/m3		1hour	Critical	AEGL3_1hr	6.0E-02 mg/m3	1hour	1hour	Negligible	TEEL1		
5.0E-01 mg/m3		1hour	Marginal	AEGL2_1hr	Chloroform					67-66-3	
5.0E-02 mg/m3		1hour	Negligible	AEGL1_1hr	1.6E+04 mg/m3	1hour	1hour	Critical	AEGL3_1hr		
5.0E-02 mg/m3		8hour	Negligible	AEGL1_8hr	3.1E+02 mg/m3	1hour	1hour	Marginal	AEGL2_1hr		
Chlorobutane, 1-					109-69-3	4.9E+01 mg/m3	1hour	1hour	Negligible	TLV_TWA*	
3.0E+03 mg/m3		1hour	Critical	TEEL3	4.9E+01 mg/m3	8hour	8hour	Negligible	TLV_TWA		
6.0E+02 mg/m3		1hour	Marginal	TEEL2	4.9E+00 mg/m3	14day	14day	Negligible	CEGL		
7.5E+01 mg/m3		1hour	Negligible	TEEL1	1.7E-01 mg/m3	1year	1year	Negligible	MRL_inter		

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Chloroform-d				865-49-6	Chloropentafluoroethane				76-15-3
1.5E+04	mg/m3	1hour	Critical	TEEL3	2.0E+06	mg/m3	1hour	Critical	TEEL3
3.0E+02	mg/m3	1hour	Marginal	TEEL2	3.0E+04	mg/m3	1hour	Marginal	TEEL2
1.0E+01	mg/m3	1hour	Negligible	TEEL1	1.5E+04	mg/m3	1hour	Negligible	TEEL1
Chlorohydrin				96-24-2	Chloroperoxybenzoic acid, 3-				937-14-4
6.0E+01	mg/m3	1hour	Critical	TEEL3	6.3E+03	mg/m3	8hour	Negligible	TLV_TWA
2.0E+00	mg/m3	1hour	Marginal	TEEL2	1.5E+03	mg/m3	14day	Negligible	TLV_TWA
3.0E-01	mg/m3	1hour	Negligible	TEEL1	1.5E+03	mg/m3	1year	Negligible	TLVadj
Chloro-m-cresol, p-				59-50-7	Chlorophacinone				3691-35-8
5.0E+02	mg/m3	1hour	Critical	TEEL3	3.5E+01	mg/m3	1hour	Critical	TEEL3
1.5E+02	mg/m3	1hour	Marginal	TEEL2	6.0E+00	mg/m3	1hour	Marginal	TEEL2
2.0E+01	mg/m3	1hour	Negligible	TEEL1	1.0E+00	mg/m3	1hour	Negligible	TEEL1
Chloromethyl methyl ether				107-30-2	Chlorophenol, 2-				95-57-8
6.6E+00	mg/m3	1hour	Critical	AEGL3_1hr	2.0E+03	mg/m3	1hour	Critical	TEEL3
1.5E+00	mg/m3	1hour	Marginal	AEGL2_1hr	1.5E+02	mg/m3	1hour	Marginal	TEEL2
7.5E-01	mg/m3	1hour	Negligible	TEEL1	2.5E+01	mg/m3	1hour	Negligible	TEEL1
Chloromethyl(trichloro)silane				1558-25-4	Chlorophenol, 3-				108-43-0
2.5E+02	mg/m3	1hour	Critical	AEGL3_1hr	2.5E+02	mg/m3	1hour	Critical	TEEL3
5.5E+01	mg/m3	1hour	Marginal	AEGL2_1hr	6.0E+00	mg/m3	1hour	Marginal	TEEL2
4.5E+00	mg/m3	1hour	Negligible	AEGL1_1hr	7.5E-01	mg/m3	1hour	Negligible	TEEL1
4.5E+00	mg/m3	8hour	Negligible	AEGL1_8hr	Chlorophenol, 4-				106-48-9
Chloronaphthalene, alpha-				90-13-1	Chlorophenyl phenyl ether, 4-				7005-72-3
5.0E+02	mg/m3	1hour	Critical	TEEL3	2.5E-01	mg/m3	1hour	Critical	TEEL3
1.3E+02	mg/m3	1hour	Marginal	TEEL2	5.0E-02	mg/m3	1hour	Marginal	TEEL2
2.0E+01	mg/m3	1hour	Negligible	TEEL1	7.5E-03	mg/m3	1hour	Negligible	TEEL1
Chloronaphthalene, beta-				91-58-7	Chlorophenyl thiourea, 2-				5344-82-1
5.0E+02	mg/m3	1hour	Critical	TEEL3	4.6E+00	mg/m3	1hour	Critical	TEEL3
1.5E+02	mg/m3	1hour	Marginal	TEEL2	4.6E+00	mg/m3	1hour	Marginal	TEEL2
6.0E-01	mg/m3	1hour	Negligible	TEEL1	2.5E+00	mg/m3	1hour	Negligible	TEEL1
Chloronitrobenzene, m-				121-73-3	Chloropicrin				76-06-2
1.5E+02	mg/m3	1hour	Critical	TEEL3	9.4E+00	mg/m3	1hour	Critical	AEGL3_1hr
1.3E+00	mg/m3	1hour	Marginal	TEEL2	1.0E+00	mg/m3	1hour	Marginal	AEGL2_1hr
2.0E-01	mg/m3	1hour	Negligible	TEEL1	3.4E-01	mg/m3	1hour	Negligible	AEGL1_1hr
Chloronitrobenzene, o-				88-73-3	Chloropicrin/methyl bromide mixture				8004-09-9
6.8E-05	mg/m3	1year	Negligible	PPRTV_sub	3.4E-01	mg/m3	8hour	Negligible	AEGL1_8hr
Chloronitrobenzene, p-				100-00-5	Chloropicrin				76-06-2
1.0E+02	mg/m3	1hour	Critical	TEEL3	2.3E-01	mg/m3	14day	Negligible	TLV_TWA_irr
1.0E+02	mg/m3	1hour	Marginal	TEEL2	2.3E-01	mg/m3	1year	Negligible	TLVirr
1.9E+00	mg/m3	1hour	Negligible	TEEL1	Chloronitropropane				600-25-9
6.4E-01	mg/m3	8hour	Negligible	TLV_TWA	1.0E+01	mg/m3	8hour	Negligible	TLV_TWA_irr
1.6E-01	mg/m3	14day	Negligible	TLV_TWA	3.5E+00	mg/m3	14day	Negligible	TLV_TWA_irr
1.6E-01	mg/m3	1year	Negligible	TLVadj	3.5E+00	mg/m3	1year	Negligible	TLVirr

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Chloroplatanic acid				16941-12-1	Chlorotoluene, o-				95-49-8
8.4E+00	mg/m3	1hour	Critical	TEEL3	2.5E+03	mg/m3	1hour	Critical	TEEL3
1.5E+00	mg/m3	1hour	Marginal	TEEL2	2.5E+03	mg/m3	1hour	Marginal	TEEL2
2.5E-01	mg/m3	1hour	Negligible	TEEL1	4.0E+02	mg/m3	1hour	Negligible	TEEL1
Chloropropane, 2-				75-29-6	Chlorotoluene, p-				106-43-4
5.0E+04	mg/m3	1hour	Critical	TEEL3	2.6E+02	mg/m3	8hour	Negligible	TLV_TWA_irr
5.0E+04	mg/m3	1hour	Marginal	TEEL2	8.9E+01	mg/m3	14day	Negligible	TLV_TWA_irr
5.0E+02	mg/m3	1hour	Negligible	TEEL1	8.9E+01	mg/m3	1year	Negligible	TLVirr
6.8E-01	mg/m3	1year	Negligible	HEAST_sub	Chlorotrifluoroethene, homopolymer				9002-83-9
Chloropropionic acid, 2-				598-78-7	Chlorotrifluoroethylene				79-38-9
4.4E-01	mg/m3	8hour	Negligible	TLV_TWA_irr	2.0E+03	mg/m3	1hour	Critical	AEGL3_1hr
1.5E-01	mg/m3	14day	Negligible	TLV_TWA_irr	4.1E+02	mg/m3	1hour	Marginal	AEGL2_1hr
1.5E-01	mg/m3	1year	Negligible	TLVirr	7.6E+01	mg/m3	1hour	Negligible	AEGL1_1hr
Chloropropionitrile, 3-				542-76-7	Chlorotrifluoromethane				75-72-9
4.0E+01	mg/m3	1hour	Critical	TEEL3	1.0E+05	mg/m3	1hour	Critical	TEEL3
7.5E+00	mg/m3	1hour	Marginal	TEEL2	2.0E+04	mg/m3	1hour	Marginal	TEEL2
4.0E+00	mg/m3	1hour	Negligible	TEEL1	1.3E+04	mg/m3	1hour	Negligible	TEEL1
Chloropropylene, 2-				557-98-2	Chloroxuron				1982-47-4
1.0E+05	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
6.0E+04	mg/m3	1hour	Marginal	TEEL2	1.0E+01	mg/m3	1hour	Marginal	TEEL2
1.0E+04	mg/m3	1hour	Negligible	TEEL1	6.0E+00	mg/m3	1hour	Negligible	TEEL1
Chloropropyl-n-octylsulfoxide, 3-				3569-57-1	Chlorpyrifos				2921-88-2
5.0E+02	mg/m3	1hour	Critical	TEEL3	2.0E+01	mg/m3	1hour	Critical	TEEL3
8.0E+00	mg/m3	1hour	Marginal	TEEL2	1.5E+01	mg/m3	1hour	Marginal	TEEL2
5.0E+00	mg/m3	1hour	Negligible	TEEL1	6.0E-01	mg/m3	1hour	Negligible	TEEL1
Chlorosarin				1445-76-7	Chlorostyrene, o-				2039-87-4
1.3E-01	mg/m3	1hour	Critical	TEEL3	2.8E+02	mg/m3	8hour	Negligible	TLV_TWA
4.0E-02	mg/m3	1hour	Marginal	TEEL2	6.9E+01	mg/m3	14day	Negligible	TLV_TWA
3.0E-03	mg/m3	1hour	Negligible	TEEL1	6.9E+01	mg/m3	1year	Negligible	TLVadj
Chlorosoman				7040-57-5	Chlorsulfuron				64902-72-3
2.5E+01	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
5.0E+00	mg/m3	1hour	Marginal	TEEL2	2.5E+00	mg/m3	1hour	Marginal	TEEL2
7.5E-01	mg/m3	1hour	Negligible	TEEL1	3.5E-01	mg/m3	1hour	Negligible	TEEL1
Chlorosulfonic acid				7790-94-5	Chlorthiophos				21923-23-9
2.5E+01	mg/m3	1hour	Critical	AEGL3_1hr	7.8E+00	mg/m3	1hour	Critical	TEEL3
4.4E+00	mg/m3	1hour	Marginal	AEGL2_1hr	7.8E+00	mg/m3	1hour	Marginal	TEEL2
4.8E-01	mg/m3	1hour	Negligible	AEGL1_1hr	1.0E+00	mg/m3	1hour	Negligible	TEEL1
1.0E-01	mg/m3	8hour	Negligible	AEGL1_8hr	Chlorothalonil				1897-45-6
Chlorothalonil				1897-45-6	Chlorothalonil				1897-45-6
3.0E+01	mg/m3	1hour	Critical	TEEL3	3.0E+01	mg/m3	1hour	Critical	TEEL3
3.0E+01	mg/m3	1hour	Marginal	TEEL2	3.0E+01	mg/m3	1hour	Marginal	TEEL2
7.5E+00	mg/m3	1hour	Negligible	TEEL1	7.5E+00	mg/m3	1hour	Negligible	TEEL1

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Chromate				11104-59-9	Chromium (III) nitrate				13548-38-4
1.7E+01 mg/m3		1hour	Critical	TEEL3	1.1E+02 mg/m3	1hour	1hour	Critical	TEEL3
3.5E+00 mg/m3		1hour	Marginal	TEEL2	1.1E+01 mg/m3	1hour	1hour	Marginal	TEEL2
5.0E-01 mg/m3		1hour	Negligible	TEEL1	6.9E+00 mg/m3	1hour	1hour	Negligible	TEEL1
5.0E-02 mg/m3		8hour	Negligible	TLV_TWA_irr	Chromium (VI)				18540-29-9
1.7E-02 mg/m3		14day	Negligible	TLV_TWA_irr	4.0E-04 mg/m3	1year	1year	Negligible	IRIS
1.7E-02 mg/m3		1year	Negligible	TLVirr	Chromium carbonyl				13007-92-6
Chromic acetate				1066-30-4	6.4E+01 mg/m3	1hour	1hour	Critical	TEEL3
1.1E+02 mg/m3		1hour	Critical	TEEL3	4.2E+01 mg/m3	1hour	1hour	Marginal	TEEL2
1.1E+01 mg/m3		1hour	Marginal	TEEL2	6.0E+00 mg/m3	1hour	1hour	Negligible	TEEL1
6.6E+00 mg/m3		1hour	Negligible	TEEL1	Chromium hydroxide				12626-43-6
Chromic acid				7738-94-5	4.4E+01 mg/m3	1hour	1hour	Critical	TEEL3
3.4E+01 mg/m3		1hour	Critical	TEEL3	3.0E-01 mg/m3	1hour	1hour	Marginal	TEEL2
2.3E-01 mg/m3		1hour	Marginal	TEEL2	4.0E-02 mg/m3	1hour	1hour	Negligible	TEEL1
1.1E-01 mg/m3		1hour	Negligible	TEEL1	Chromium nitrate				10103-47-6
Chromic acid ester				11115-74-5	2.4E+02 mg/m3	1hour	1hour	Critical	TEEL3
1.8E+01 mg/m3		1hour	Critical	TEEL3	2.4E+01 mg/m3	1hour	1hour	Marginal	TEEL2
1.2E-01 mg/m3		1hour	Marginal	TEEL2	1.4E+01 mg/m3	1hour	1hour	Negligible	TEEL1
5.9E-02 mg/m3		1hour	Negligible	TEEL1	Chromium nitrate nonahydrate				7789-02-8
Chromic chloride				10025-73-7	1.9E+02 mg/m3	1hour	1hour	Critical	TEEL3
7.6E+01 mg/m3		1hour	Critical	TEEL3	2.5E+01 mg/m3	1hour	1hour	Marginal	TEEL2
1.0E+01 mg/m3		1hour	Marginal	TEEL2	1.2E+01 mg/m3	1hour	1hour	Negligible	TEEL1
4.6E+00 mg/m3		1hour	Negligible	TEEL1	Chromium oxide				1308-38-9
Chromic hydroxide				1308-14-1	3.7E+01 mg/m3	1hour	1hour	Critical	TEEL3
5.0E+01 mg/m3		1hour	Critical	TEEL3	3.7E+01 mg/m3	1hour	1hour	Marginal	TEEL2
5.0E+01 mg/m3		1hour	Marginal	TEEL2	1.5E+01 mg/m3	1hour	1hour	Negligible	TEEL1
7.5E+00 mg/m3		1hour	Negligible	TEEL1	Chromium perchlorate, hydrated				13537-21-8
Chromic sulfate				10101-53-8	1.7E+02 mg/m3	1hour	1hour	Critical	TEEL3
9.4E+01 mg/m3		1hour	Critical	TEEL3	1.7E+01 mg/m3	1hour	1hour	Marginal	TEEL2
1.5E+01 mg/m3		1hour	Marginal	TEEL2	1.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
2.5E+00 mg/m3		1hour	Negligible	TEEL1	Chromium potassium sulfate dodecahydrate				7788-99-0
Chromic trioxide				1333-82-0	2.4E+02 mg/m3	1hour	1hour	Critical	TEEL3
2.9E+01 mg/m3		1hour	Critical	TEEL3	4.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
1.0E-02 mg/m3		1hour	Marginal	TEEL2	1.4E+01 mg/m3	1hour	1hour	Negligible	TEEL1
9.6E-03 mg/m3		1hour	Negligible	TEEL1	Chromium trichloride hexahydrate				10060-12-5
Chromite				1308-31-2	1.3E+02 mg/m3	1hour	1hour	Critical	TEEL3
5.0E+02 mg/m3		1hour	Critical	TEEL3	1.3E+02 mg/m3	1hour	1hour	Marginal	TEEL2
5.4E+00 mg/m3		1hour	Marginal	TEEL2	1.0E+02 mg/m3	1hour	1hour	Negligible	TEEL1
3.2E+00 mg/m3		1hour	Negligible	TEEL1	Chromium(III) fluoride				7788-97-8
Chromium (III)				16065-83-1	5.2E+01 mg/m3	1hour	1hour	Critical	TEEL3
3.4E-03 mg/m3		1year	Negligible	MRL_inter	5.2E+00 mg/m3	1hour	1hour	Marginal	TEEL2
Chromium (III) acetate hydroxide				39430-51-8	3.1E+00 mg/m3	1hour	1hour	Negligible	TEEL1
1.2E+02 mg/m3		1hour	Critical	TEEL3	Chromium(III) oxide hydroxide				20770-05-2
1.3E+01 mg/m3		1hour	Marginal	TEEL2	4.1E+01 mg/m3	1hour	1hour	Critical	TEEL3
7.2E+00 mg/m3		1hour	Negligible	TEEL1	7.5E+00 mg/m3	1hour	1hour	Marginal	TEEL2
					1.0E+00 mg/m3	1hour	1hour	Negligible	TEEL1

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Chromium, elemental				7440-47-3	Clopidol				2971-90-6
2.5E+02 mg/m3		1hour	Critical	TEEL3	1.0E+01 mg/m3	8hour		Negligible	TLV_TWA_irr
2.5E+00 mg/m3		1hour	Marginal	TEEL2	3.4E+00 mg/m3	14day		Negligible	TLV_TWA_irr
1.5E+00 mg/m3		1hour	Negligible	TEEL1	3.4E+00 mg/m3	1year		Negligible	TLVirr
1.0E-02 mg/m3		8hour	Negligible	TLV_TWA_irr	Coal dust, anthracite				Coal dust a
3.4E-03 mg/m3		14day	Negligible	TLV_TWA_irr	4.0E-01 mg/m3	8hour		Negligible	TLV_TWA
3.4E-03 mg/m3		1year	Negligible	TLVirr	9.8E-02 mg/m3	14day		Negligible	TLV_TWA
Chromous chloride				10049-05-5	9.8E-02 mg/m3	1year		Negligible	TLVadj
5.0E+02 mg/m3		1hour	Critical	TEEL3	Coal dust, bituminous				Coal dust b
7.5E+00 mg/m3		1hour	Marginal	TEEL2	9.0E-01 mg/m3	8hour		Negligible	TLV_TWA
3.5E+00 mg/m3		1hour	Negligible	TEEL1	2.2E-01 mg/m3	14day		Negligible	TLV_TWA
Chromyl chloride				14977-61-8	2.2E-01 mg/m3	1year		Negligible	TLVadj
1.6E-01 mg/m3		8hour	Negligible	TLV_TWA	Coal tar pitch volatiles (high temperature)				65996-93-2
3.9E-02 mg/m3		14day	Negligible	TLV_TWA	8.0E+01 mg/m3	1hour		Critical	TEEL3
3.9E-02 mg/m3		1year	Negligible	TLVadj	3.0E+01 mg/m3	1hour		Marginal	TEEL2
Chrysazin				117-10-2	6.0E-01 mg/m3	1hour		Negligible	TEEL1
2.0E+02 mg/m3		1hour	Critical	TEEL3	2.0E-01 mg/m3	8hour		Negligible	TLV_TWA
2.0E+02 mg/m3		1hour	Marginal	TEEL2	4.9E-02 mg/m3	14day		Negligible	TLV_TWA
7.5E+01 mg/m3		1hour	Negligible	TEEL1	4.9E-02 mg/m3	1year		Negligible	TLVadj
Chrysene				218-01-9	Coal tar, aerosol				0-311*
8.0E+01 mg/m3		1hour	Critical	TEEL3	5.0E+02 mg/m3	1hour		Critical	TEEL3
4.0E+00 mg/m3		1hour	Marginal	TEEL2	7.5E+00 mg/m3	1hour		Marginal	TEEL2
6.0E-01 mg/m3		1hour	Negligible	TEEL1	1.3E+00 mg/m3	1hour		Negligible	TEEL1
Chrysotile asbestos				12001-29-5	Cobalt				7440-48-4
2.5E+02 f/cc		1hour	Critical	TEEL3	2.0E+01 mg/m3	1hour		Critical	TEEL3
2.5E+02 f/cc		1hour	Marginal	TEEL2	2.0E+00 mg/m3	1hour		Marginal	TEEL2
5.0E-02 f/cc		1hour	Negligible	TEEL1	3.0E-01 mg/m3	1hour		Negligible	TEEL1
Cinnamaldehyde				104-55-2	2.0E-02 mg/m3	8hour		Negligible	TLV_TWA
5.0E+02 mg/m3		1hour	Critical	TEEL3	4.9E-03 mg/m3	14day		Negligible	TLV_TWA
3.0E+01 mg/m3		1hour	Marginal	TEEL2	5.3E-10 mg/m3	1year		Negligible	PPRTV
4.0E+00 mg/m3		1hour	Negligible	TEEL1	Cobalt (II) bromide				7789-43-7
Cinnamic aldehyde, trans-				14371-10-9	1.5E+02 mg/m3	1hour		Critical	TEEL3
1.5E+03 mg/m3		1hour	Critical	TEEL3	3.7E-01 mg/m3	1hour		Marginal	TEEL2
1.0E+01 mg/m3		1hour	Marginal	TEEL2	2.2E-01 mg/m3	1hour		Negligible	TEEL1
1.5E+00 mg/m3		1hour	Negligible	TEEL1	Cobalt (II) chloride-hexahydrate				7791-13-1
Citric acid				77-92-9	3.5E+02 mg/m3	1hour		Critical	TEEL3
5.0E+02 mg/m3		1hour	Critical	TEEL3	2.0E+01 mg/m3	1hour		Marginal	TEEL2
1.3E+02 mg/m3		1hour	Marginal	TEEL2	2.4E-01 mg/m3	1hour		Negligible	TEEL1
1.5E+01 mg/m3		1hour	Negligible	TEEL1	Cobalt (II) oxide				1307-96-6
Citric acid monohydrate				5949-29-1	2.5E+01 mg/m3	1hour		Critical	TEEL3
1.5E+02 mg/m3		1hour	Critical	TEEL3	2.0E+01 mg/m3	1hour		Marginal	TEEL2
3.0E+01 mg/m3		1hour	Marginal	TEEL2	1.3E-01 mg/m3	1hour		Negligible	TEEL1
4.0E+00 mg/m3		1hour	Negligible	TEEL1	Cobalt acetate tetrahydrate				6147-53-1
Citric acid, trisodium salt, dihydrate				6132-04-3	3.0E+02 mg/m3	1hour		Critical	TEEL3
5.0E+02 mg/m3		1hour	Critical	TEEL3	6.0E+01 mg/m3	1hour		Marginal	TEEL2
1.3E+02 mg/m3		1hour	Marginal	TEEL2	7.5E+00 mg/m3	1hour		Negligible	TEEL1
2.0E+01 mg/m3		1hour	Negligible	TEEL1					

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Cobalt carbonyl				10210-68-1	Cobalt(ii) perchlorate, hexahydrate				13478-33-6
6.0E+01 mg/m3		1hour	Critical	TEEL3	6.0E+01 mg/m3	1hour	1hour	Critical	TEEL3
2.7E+01 mg/m3		1hour	Marginal	TEEL2	6.2E-01 mg/m3	1hour	1hour	Marginal	TEEL2
2.7E-01 mg/m3		1hour	Negligible	TEEL1	3.7E-01 mg/m3	1hour	1hour	Negligible	TEEL1
1.0E-01 mg/m3		8hour	Negligible	TLV_TWA	Cobalt(II) sulfate hydrate				60459-08-7
2.4E-02 mg/m3		14day	Negligible	TLV_TWA	1.5E+00 mg/m3	1hour	1hour	Critical	TEEL3
2.4E-02 mg/m3		1year	Negligible	TLVadj	3.0E-01 mg/m3	1hour	1hour	Marginal	TEEL2
Cobalt chloride				7646-79-9	1.8E-01 mg/m3	1hour	1hour	Negligible	TEEL1
5.0E+02 mg/m3		1hour	Critical	TEEL3	Cobalt,bis(3-fluorosallycylaldehyde)ethlenediimine-				62207-76-5
2.5E+01 mg/m3		1hour	Marginal	TEEL2	1.5E+01 mg/m3	1hour	1hour	Critical	TEEL3
1.3E-01 mg/m3		1hour	Negligible	TEEL1	3.0E+00 mg/m3	1hour	1hour	Marginal	TEEL2
Cobalt hydrocarbonyl				16842-03-8	4.0E-01 mg/m3	1hour	1hour	Negligible	TEEL1
3.0E+00 mg/m3		1hour	Critical	ERPG3	Cobaltous carbonate hydrate				513-79-1
9.1E-01 mg/m3		1hour	Marginal	ERPG2	2.5E+02 mg/m3	1hour	1hour	Critical	TEEL3
3.0E-01 mg/m3		1hour	Negligible	TEEL1	2.0E-01 mg/m3	1hour	1hour	Marginal	TEEL2
1.0E-01 mg/m3		8hour	Negligible	TLV_TWA	1.2E-01 mg/m3	1hour	1hour	Negligible	TEEL1
2.4E-02 mg/m3		14day	Negligible	TLV_TWA	Coke oven emissions				8007-45-2
2.4E-02 mg/m3		1year	Negligible	TLVadj	7.7E-03 mg/m3	1year	1year	Negligible	IRIS
Cobalt hydroxide				21041-93-0	Colchicine				64-86-8
7.5E-01 mg/m3		1hour	Critical	TEEL3	9.0E-01 mg/m3	1hour	1hour	Critical	TEEL3
1.6E-01 mg/m3		1hour	Marginal	TEEL2	9.0E-01 mg/m3	1hour	1hour	Marginal	TEEL2
9.5E-02 mg/m3		1hour	Negligible	TEEL1	1.3E-01 mg/m3	1hour	1hour	Negligible	TEEL1
Cobalt nitrate				10141-05-6	Colep				2665-30-7
1.5E+02 mg/m3		1hour	Critical	TEEL3	8.0E+00 mg/m3	1hour	1hour	Critical	TEEL3
1.5E+00 mg/m3		1hour	Marginal	TEEL2	8.0E+00 mg/m3	1hour	1hour	Marginal	TEEL2
1.9E-01 mg/m3		1hour	Negligible	TEEL1	5.0E+00 mg/m3	1hour	1hour	Negligible	TEEL1
Cobalt nitrate hexahydrate				10026-22-9	Colophony				8050-09-7
3.0E+02 mg/m3		1hour	Critical	TEEL3	4.0E+01 mg/m3	1hour	1hour	Critical	TEEL3
5.0E-01 mg/m3		1hour	Marginal	TEEL2	4.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
3.0E-01 mg/m3		1hour	Negligible	TEEL1	3.0E-01 mg/m3	1hour	1hour	Negligible	TEEL1
Cobalt oxide				1308-06-1	Commercial Hexane				Com Hexane
2.7E+01 mg/m3		1hour	Critical	TEEL3	1.8E+01 mg/m3	1year	1year	Negligible	PPRTV_sub
1.4E-01 mg/m3		1hour	Marginal	TEEL2	Coper hydroxide				20427-59-2
1.4E-01 mg/m3		1hour	Negligible	TEEL1	1.5E+02 mg/m3	1hour	1hour	Critical	TEEL3
Cobalt sulfate				10124-43-3	7.7E+00 mg/m3	1hour	1hour	Marginal	TEEL2
1.5E+02 mg/m3		1hour	Critical	TEEL3	4.6E+00 mg/m3	1hour	1hour	Negligible	TEEL1
6.0E+00 mg/m3		1hour	Marginal	TEEL2	Copper (I) chloride				7758-89-6
1.6E-01 mg/m3		1hour	Negligible	TEEL1	1.6E+02 mg/m3	1hour	1hour	Critical	TEEL3
Cobalt sulfate heptahydrate				10026-24-1	7.8E+00 mg/m3	1hour	1hour	Marginal	TEEL2
2.5E+02 mg/m3		1hour	Critical	TEEL3	4.7E+00 mg/m3	1hour	1hour	Negligible	TEEL1
2.5E+02 mg/m3		1hour	Marginal	TEEL2	Copper (II) acatate monoydrate				6046-93-1
2.9E-01 mg/m3		1hour	Negligible	TEEL1	3.1E+02 mg/m3	1hour	1hour	Critical	TEEL3
Cobalt tetraphenylporphine				14172-90-8	6.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
2.5E+02 mg/m3		1hour	Critical	TEEL3	7.5E+00 mg/m3	1hour	1hour	Negligible	TEEL1
5.0E+01 mg/m3		1hour	Marginal	TEEL2					
3.0E+01 mg/m3		1hour	Negligible	TEEL1					

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Copper (II) chloride dihydrate				10125-13-0	Copper(II) perchlorate, dihydrate				17031-32-2
2.7E+02	mg/m3	1hour	Critical	TEEL3	4.7E+02	mg/m3	1hour	Critical	TEEL3
1.3E+01	mg/m3	1hour	Marginal	TEEL2	2.4E+01	mg/m3	1hour	Marginal	TEEL2
8.1E+00	mg/m3	1hour	Negligible	TEEL1	1.4E+01	mg/m3	1hour	Negligible	TEEL1
Copper (II) sulfate pentahydrate				7758-99-8	Copper(II) sulfide				1317-40-4
3.9E+02	mg/m3	1hour	Critical	TEEL3	1.5E+02	mg/m3	1hour	Critical	TEEL3
1.5E+02	mg/m3	1hour	Marginal	TEEL2	7.5E+00	mg/m3	1hour	Marginal	TEEL2
1.2E+01	mg/m3	1hour	Negligible	TEEL1	4.5E+00	mg/m3	1hour	Negligible	TEEL1
Copper carbonate hydroxide				12069-69-1	Corn oil				8001-30-7
1.7E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
8.7E+00	mg/m3	1hour	Marginal	TEEL2	5.0E+02	mg/m3	1hour	Marginal	TEEL2
5.2E+00	mg/m3	1hour	Negligible	TEEL1	1.0E+02	mg/m3	1hour	Negligible	TEEL1
Copper chloride				7447-39-4	Coumaphos				56-72-4
2.1E+02	mg/m3	1hour	Critical	TEEL3	1.3E+02	mg/m3	1hour	Critical	TEEL3
1.1E+01	mg/m3	1hour	Marginal	TEEL2	3.0E+01	mg/m3	1hour	Marginal	TEEL2
6.3E+00	mg/m3	1hour	Negligible	TEEL1	1.5E-01	mg/m3	1hour	Negligible	TEEL1
Copper compounds				Cu cmpds	Coumatetralyl				5836-29-3
1.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E-02	mg/m3	8hour	Negligible	TLV_TWA
5.0E+00	mg/m3	1hour	Marginal	TEEL2	1.2E-02	mg/m3	14day	Negligible	TLV_TWA
3.0E+00	mg/m3	1hour	Negligible	TEEL1	1.2E-02	mg/m3	1year	Negligible	TLVadj
Copper cyanide				544-92-3	Coumarin				91-64-5
2.5E+01	mg/m3	1hour	Critical	TEEL3	1.3E+02	mg/m3	1hour	Critical	TEEL3
7.0E+00	mg/m3	1hour	Marginal	TEEL2	6.0E-01	mg/m3	1hour	Marginal	TEEL2
4.2E+00	mg/m3	1hour	Negligible	TEEL1	7.5E-02	mg/m3	1hour	Negligible	TEEL1
Copper fume				Cu fume	Creosote				8001-58-9
2.0E-01	mg/m3	8hour	Negligible	TLV_TWA_irr	8.0E+01	mg/m3	1hour	Critical	TEEL3
6.8E-02	mg/m3	14day	Negligible	TLV_TWA_irr	8.0E+01	mg/m3	1hour	Marginal	TEEL2
6.8E-02	mg/m3	1year	Negligible	TLVirr	6.0E-01	mg/m3	1hour	Negligible	TEEL1
Copper nitrate				3251-23-8	Cresol, m-				108-39-4
3.0E+02	mg/m3	1hour	Critical	TEEL3	1.0E+03	mg/m3	1hour	Critical	TEEL3
6.0E+01	mg/m3	1hour	Marginal	TEEL2	1.0E+02	mg/m3	1hour	Marginal	TEEL2
7.5E+00	mg/m3	1hour	Negligible	TEEL1	2.0E+01	mg/m3	1hour	Negligible	TEEL1
Copper oxide				1317-39-1	Cresol, o-				95-48-7
1.1E+02	mg/m3	1hour	Critical	TEEL3	1.0E+03	mg/m3	1hour	Critical	TEEL3
1.5E+01	mg/m3	1hour	Marginal	TEEL2	1.0E+02	mg/m3	1hour	Marginal	TEEL2
6.8E-01	mg/m3	1hour	Negligible	TEEL1	2.0E+01	mg/m3	1hour	Negligible	TEEL1
Copper sulfate				7758-98-7	Cresol, m-				108-39-4
2.5E+02	mg/m3	1hour	Critical	TEEL3	2.0E+01	mg/m3	8hour	Negligible	TLV_TWA_irr
6.0E+00	mg/m3	1hour	Marginal	TEEL2	6.8E+00	mg/m3	14day	Negligible	TLV_TWA_irr
2.5E+00	mg/m3	1hour	Negligible	TEEL1	6.8E+00	mg/m3	1year	Negligible	TLVirr
Copper sulfide				22205-45-4	Cresol, o-				95-48-7
1.3E+02	mg/m3	1hour	Critical	TEEL3	1.0E+03	mg/m3	1hour	Critical	TEEL3
6.3E+00	mg/m3	1hour	Marginal	TEEL2	1.0E+02	mg/m3	1hour	Marginal	TEEL2
3.8E+00	mg/m3	1hour	Negligible	TEEL1	2.0E+01	mg/m3	1hour	Negligible	TEEL1
					2.0E+01	mg/m3	8hour	Negligible	TLV_TWA_irr
					6.8E+00	mg/m3	14day	Negligible	TLV_TWA_irr
					6.8E+00	mg/m3	1year	Negligible	TLVirr

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Cresol, p-					106-44-5				
1.0E+03 mg/m3		1hour	Critical	TEEL3	Crystal violet				
1.0E+02 mg/m3		1hour	Marginal	TEEL2	1.5E+02 mg/m3	1hour	Critical	TEEL3	548-62-9
2.0E+01 mg/m3		1hour	Negligible	TEEL1	1.5E+00 mg/m3	1hour	Marginal	TEEL2	
2.0E+01 mg/m3		8hour	Negligible	TLV_TWA_irr	2.5E-01 mg/m3	1hour	Negligible	TEEL1	
6.8E+00 mg/m3		14day	Negligible	TLV_TWA_irr	Cs7SB				
6.8E+00 mg/m3		1year	Negligible	TLVirr	5.0E+02 mg/m3	1hour	Critical	TEEL3	X-209*
Cresyl violet acetate					10510-54-0				
2.5E+02 mg/m3		1hour	Critical	TEEL3	2.0E+02 mg/m3	1hour	Marginal	TEEL2	
5.0E+01 mg/m3		1hour	Marginal	TEEL2	3.0E+01 mg/m3	1hour	Negligible	TEEL1	
3.0E+01 mg/m3		1hour	Negligible	TEEL1	Cube resins (other than Rotenone)				
Crimidine					535-89-7				
1.2E+00 mg/m3		1hour	Critical	TEEL3	1.3E+01 mg/m3	1hour	Critical	TEEL3	0-583*
1.2E+00 mg/m3		1hour	Marginal	TEEL2	2.5E+00 mg/m3	1hour	Marginal	TEEL2	
7.5E-01 mg/m3		1hour	Negligible	TEEL1	3.5E-01 mg/m3	1hour	Negligible	TEEL1	
Cristobalite					14464-46-1				
2.5E+01 mg/m3		1hour	Critical	TEEL3	Cumene				
2.5E+01 mg/m3		1hour	Marginal	TEEL2	3.6E+03 mg/m3	1hour	Critical	AEGL3_1hr	98-82-8
7.5E-02 mg/m3		1hour	Negligible	TEEL1	1.5E+03 mg/m3	1hour	Marginal	AEGL2_1hr	
2.5E-02 mg/m3		8hour	Negligible	TLV_TWA	2.5E+02 mg/m3	1hour	Negligible	AEGL1_1hr	
6.1E-03 mg/m3		14day	Negligible	TLV_TWA	2.5E+02 mg/m3	8hour	Negligible	AEGL1_8hr	
6.1E-03 mg/m3		1year	Negligible	TLVadj	8.4E+01 mg/m3	14day	Negligible	TLV_TWA_irr	
Crocidolite					12001-28-4				
2.5E+02 mg/m3		1hour	Critical	TEEL3	2.7E+00 mg/m3	1year	Negligible	IRIS_sub	
1.0E+01 mg/m3		1hour	Marginal	TEEL2	Cumene hydroperoxide				
5.0E-02 mg/m3		1hour	Negligible	TEEL1	1.5E+02 mg/m3	1hour	Critical	TEEL3	80-15-9
Crotonaldehyde					4170-30-3				
4.0E+01 mg/m3		1hour	Critical	AEGL3_1hr	1.5E+02 mg/m3	1hour	Marginal	TEEL2	
1.3E+01 mg/m3		1hour	Marginal	AEGL2_1hr	3.0E+01 mg/m3	1hour	Negligible	TEEL1	
5.4E-01 mg/m3		1hour	Negligible	AEGL1_1hr	Cumenol methylcarbamate, m-				
5.4E-01 mg/m3		8hour	Negligible	AEGL1_8hr	1.6E+01 mg/m3	1hour	Critical	TEEL3	64-00-6
Crotonaldehyde, trans-					123-73-9				
4.0E+01 mg/m3		1hour	Critical	AEGL3_1hr	1.6E+01 mg/m3	1hour	Marginal	TEEL2	
1.3E+01 mg/m3		1hour	Marginal	AEGL2_1hr	1.0E+01 mg/m3	1hour	Negligible	TEEL1	
5.4E-01 mg/m3		1hour	Negligible	AEGL1_1hr	Cupferron				
5.4E-01 mg/m3		8hour	Negligible	AEGL1_8hr	7.5E+01 mg/m3	1hour	Critical	TEEL3	135-20-6
Crotonic acid					3724-65-0				
4.0E+02 mg/m3		1hour	Critical	TEEL3	7.5E+01 mg/m3	1hour	Marginal	TEEL2	
7.5E+01 mg/m3		1hour	Marginal	TEEL2	2.5E+01 mg/m3	1hour	Negligible	TEEL1	
1.3E+01 mg/m3		1hour	Negligible	TEEL1	Cupric acetate				
Crufomate					299-86-5				
5.0E+00 mg/m3		8hour	Negligible	TLV_TWA	2.0E+02 mg/m3	1hour	Critical	TEEL3	142-71-2
1.2E+00 mg/m3		14day	Negligible	TLV_TWA	1.4E+01 mg/m3	1hour	Marginal	TEEL2	
1.2E+00 mg/m3		1year	Negligible	TLVadj	8.6E+00 mg/m3	1hour	Negligible	TEEL1	
Crotonaldehyde, trans-					19004-19-4				
4.0E+01 mg/m3		1hour	Critical	AEGL3_1hr	Cupric nitrate hemipentahydrate				
1.3E+01 mg/m3		1hour	Marginal	AEGL2_1hr	3.8E+02 mg/m3	1hour	Critical	TEEL3	
5.4E-01 mg/m3		1hour	Negligible	AEGL1_1hr	1.9E+01 mg/m3	1hour	Marginal	TEEL2	
5.4E-01 mg/m3		8hour	Negligible	AEGL1_8hr	1.1E+01 mg/m3	1hour	Negligible	TEEL1	
Crotonic acid					814-91-5				
4.0E+02 mg/m3		1hour	Critical	TEEL3	Cupric oxalate				
7.5E+01 mg/m3		1hour	Marginal	TEEL2	2.4E+02 mg/m3	1hour	Critical	TEEL3	
1.3E+01 mg/m3		1hour	Negligible	TEEL1	1.3E+01 mg/m3	1hour	Marginal	TEEL2	
Crufomate					299-86-5				
5.0E+00 mg/m3		8hour	Negligible	TLV_TWA	7.3E+00 mg/m3	1hour	Negligible	TEEL1	
1.2E+00 mg/m3		14day	Negligible	TLV_TWA	Cupric oxide				
1.2E+00 mg/m3		1year	Negligible	TLVadj	1.3E+02 mg/m3	1hour	Critical	TEEL3	1317-38-0
Crotonaldehyde, trans-					1317-38-0				
4.0E+01 mg/m3		1hour	Critical	AEGL3_1hr	1.3E+00 mg/m3	1hour	Marginal	TEEL2	
1.3E+01 mg/m3		1hour	Marginal	AEGL2_1hr	7.5E-01 mg/m3	1hour	Negligible	TEEL1	
5.4E-01 mg/m3		1hour	Negligible	AEGL1_1hr					
5.4E-01 mg/m3		8hour	Negligible	AEGL1_8hr					

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Cyanamide				420-04-2	Cyanoguanidine				461-58-5
3.5E+01 mg/m3		1hour	Critical	TEEL3	2.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
1.0E+01 mg/m3		1hour	Marginal	TEEL2	1.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
6.0E+00 mg/m3		1hour	Negligible	TEEL1	1.5E+00 mg/m3	1hour	1hour	Negligible	TEEL1
2.0E+00 mg/m3		8hour	Negligible	TLV_TWA_irr	Cyanophos				2636-26-2
6.8E-01 mg/m3		14day	Negligible	TLV_TWA_irr	2.5E+01 mg/m3	1hour	1hour	Critical	TEEL3
6.8E-01 mg/m3		1year	Negligible	TLVirr	2.5E+01 mg/m3	1hour	1hour	Marginal	TEEL2
Cyanic acid				420-05-3	3.5E+00 mg/m3	1hour	1hour	Negligible	TEEL1
3.5E+02 mg/m3		1hour	Critical	TEEL3	Cyanuric acid				108-80-5
7.5E+01 mg/m3		1hour	Marginal	TEEL2	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
4.0E+01 mg/m3		1hour	Negligible	TEEL1	2.5E+01 mg/m3	1hour	1hour	Marginal	TEEL2
Cyanide				57-12-5	1.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
2.5E+01 mg/m3		1hour	Critical	TEEL3	Cyanuric fluoride				675-14-9
5.0E+00 mg/m3		1hour	Marginal	TEEL2	4.3E+01 mg/m3	1hour	1hour	Critical	TEEL3
5.0E+00 mg/m3		1hour	Negligible	TEEL1	1.7E-01 mg/m3	1hour	1hour	Marginal	TEEL2
Cyanoacetamide				107-91-5	1.7E-01 mg/m3	1hour	1hour	Negligible	TEEL1
5.0E+02 mg/m3		1hour	Critical	TEEL3	Cyclohexane				110-82-7
1.5E+02 mg/m3		1hour	Marginal	TEEL2	4.0E+03 mg/m3	1hour	1hour	Critical	TEEL3
2.0E+01 mg/m3		1hour	Negligible	TEEL1	4.0E+03 mg/m3	1hour	1hour	Marginal	TEEL2
Cyanogen				460-19-5	1.0E+03 mg/m3	1hour	1hour	Negligible	TEEL1
5.3E+01 mg/m3		1hour	Critical	AEGL3_1hr	3.4E+02 mg/m3	8hour	8hour	Negligible	TLV_TWA
1.8E+01 mg/m3		1hour	Marginal	AEGL2_1hr	8.4E+01 mg/m3	14day	14day	Negligible	TLV_TWA
4.3E+00 mg/m3		1hour	Negligible	AEGL1_1hr	4.1E+00 mg/m3	1year	1year	Negligible	IRIS_chr
2.1E+00 mg/m3		8hour	Negligible	AEGL1_8hr	Cyclohexane-1,2-dinitrilotetraacetic acid, trans-				13291-61-7
2.1E+00 mg/m3		14day	Negligible	AEGL1_8hr*	2.5E+02 mg/m3	1hour	1hour	Critical	TEEL3
7.3E+00 mg/m3		1year	Negligible	TLVirr	5.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
Cyanogen bromide				506-68-3	3.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
4.4E+01 mg/m3		1hour	Critical	TEEL3	Cyclohexanedimethanol, cis and trans, 1,4-				105-08-8
4.4E+01 mg/m3		1hour	Marginal	TEEL2	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
4.4E+01 mg/m3		1hour	Negligible	TEEL1	2.5E+02 mg/m3	1hour	1hour	Marginal	TEEL2
Cyanogen Chloride				506-77-4	4.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
1.0E+01 mg/m3		1hour	Critical	ERPG3*	Cyclohexanol				108-93-0
1.0E+00 mg/m3		1hour	Marginal	ERPG2*	1.5E+03 mg/m3	1hour	1hour	Critical	TEEL3
7.5E-01 mg/m3		1hour	Negligible	TEEL1(old)*	2.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
7.5E-01 mg/m3		8hour	Negligible	TEEL1*	2.0E+02 mg/m3	1hour	1hour	Negligible	TEEL1
7.5E-01 mg/m3		10min	Negligible	TEEL1*	2.0E+02 mg/m3	8hour	8hour	Negligible	TEEL1*
1.0E+00 mg/m3		10min	Marginal	ERPG2*	7.0E+01 mg/m3	14day	14day	Negligible	TLV_TWA_irr
1.0E+00 mg/m3		8hour	Marginal	ERPG2*	7.0E+01 mg/m3	1year	1year	Negligible	TLVirr
1.0E+01 mg/m3		10min	Critical	ERPG3*	Cyclohexanone				108-94-1
1.0E+01 mg/m3		8hour	Critical	ERPG3*	2.5E+03 mg/m3	1hour	1hour	Critical	TEEL3
Cyanogen iodide				506-78-5	2.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
1.8E+02 mg/m3		1hour	Critical	TEEL3	2.0E+02 mg/m3	1hour	1hour	Negligible	TEEL1
1.8E+02 mg/m3		1hour	Marginal	TEEL2	7.7E+01 mg/m3	8hour	8hour	Negligible	TLV_TWA
8.8E+01 mg/m3		1hour	Negligible	TEEL1	1.9E+01 mg/m3	14day	14day	Negligible	TLV_TWA
					1.9E+01 mg/m3	1year	1year	Negligible	TLVadj

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN		
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis		
Cyclohexene					110-83-8	Cyclopentadiene					542-92-7
6.0E+03	mg/m3	1hour	Critical	TEEL3	2.0E+02	mg/m3	8hour	Negligible	TLV_TWA_irr		
1.5E+03	mg/m3	1hour	Marginal	TEEL2	6.9E+01	mg/m3	14day	Negligible	TLV_TWA_irr		
1.0E+03	mg/m3	1hour	Negligible	TEEL1	2.1E+00	mg/m3	1year	Negligible	HEAST_sub		
1.0E+03	mg/m3	8hour	Negligible	TEEL1*	Cyclopentane					287-92-3	
3.5E+02	mg/m3	14day	Negligible	TLV_TWA_irr	4.0E+04	mg/m3	1hour	Critical	TEEL3		
3.5E+02	mg/m3	1year	Negligible	TLVirr	1.0E+04	mg/m3	1hour	Marginal	TEEL2		
Cycloheximide					66-81-9	5.0E+03	mg/m3	1hour	Negligible	TEEL1	
2.0E+00	mg/m3	1hour	Critical	TEEL3	1.7E+03	mg/m3	8hour	Negligible	TLV_TWA_irr		
2.0E+00	mg/m3	1hour	Marginal	TEEL2	5.9E+02	mg/m3	14day	Negligible	TLV_TWA_irr		
3.0E-01	mg/m3	1hour	Negligible	TEEL1	5.9E+02	mg/m3	1year	Negligible	TLVirr		
Cyclohexyl isocyanate					3173-53-3	Cyclopentanone					120-92-3
5.1E-01	mg/m3	1hour	Critical	AEGL3_1hr	2.0E+03	mg/m3	1hour	Critical	TEEL3		
1.0E-01	mg/m3	1hour	Marginal	TEEL2	1.5E+02	mg/m3	1hour	Marginal	TEEL2		
6.0E-02	mg/m3	1hour	Negligible	TEEL1	7.5E+01	mg/m3	1hour	Negligible	TEEL1		
Cyclohexyl methyl phosphonic acid					1932-60-1	Cyclopropane					75-19-4
2.5E+02	mg/m3	1hour	Critical	TEEL3	1.0E+05	mg/m3	1hour	Critical	TEEL3		
5.0E+01	mg/m3	1hour	Marginal	TEEL2	6.0E+03	mg/m3	1hour	Marginal	TEEL2		
3.0E+01	mg/m3	1hour	Negligible	TEEL1	1.0E+03	mg/m3	1hour	Negligible	TEEL1		
Cyclohexylamine					108-91-8	Cyhexatin					13121-70-5
1.2E+02	mg/m3	1hour	Critical	AEGL3_1hr	5.0E+00	mg/m3	8hour	Negligible	TLV_TWA_irr		
3.5E+01	mg/m3	1hour	Marginal	AEGL2_1hr	1.7E+00	mg/m3	14day	Negligible	TLV_TWA_irr		
7.3E+00	mg/m3	1hour	Negligible	AEGL1_1hr	1.7E+00	mg/m3	1year	Negligible	TLVirr		
7.3E+00	mg/m3	8hour	Negligible	AEGL1_8hr	Cytidylic acid					63-37-6	
7.3E+00	mg/m3	14day	Negligible	AEGL1_8hr*	5.0E+02	mg/m3	1hour	Critical	TEEL3		
7.3E+00	mg/m3	1year	Negligible	AEGL1_8hr*	1.5E+02	mg/m3	1hour	Marginal	TEEL2		
Cyclohexylethanol, 2-					4442-79-9	2.5E+01	mg/m3	1hour	Negligible	TEEL1	
4.0E+02	mg/m3	1hour	Critical	TEEL3	D&C Red No. 19					81-88-9	
7.5E+01	mg/m3	1hour	Marginal	TEEL2	5.0E+01	mg/m3	1hour	Critical	TEEL3		
1.0E+01	mg/m3	1hour	Negligible	TEEL1	7.5E+00	mg/m3	1hour	Marginal	TEEL2		
Cycloocta-1,5-diene					111-78-4	1.3E+00	mg/m3	1hour	Negligible	TEEL1	
4.0E+04	mg/m3	1hour	Critical	TEEL3	D&C red no. 9					5160-02-1	
7.5E+03	mg/m3	1hour	Marginal	TEEL2	5.0E+02	mg/m3	1hour	Critical	TEEL3		
1.3E+03	mg/m3	1hour	Negligible	TEEL1	2.5E+02	mg/m3	1hour	Marginal	TEEL2		
Cyclooctane					292-64-8	3.5E+01	mg/m3	1hour	Negligible	TEEL1	
2.5E+03	mg/m3	1hour	Critical	TEEL3	Dalapon					75-99-0	
5.0E+02	mg/m3	1hour	Marginal	TEEL2	5.0E+00	mg/m3	8hour	Negligible	TLV_TWA_irr		
6.0E+01	mg/m3	1hour	Negligible	TEEL1	1.7E+00	mg/m3	14day	Negligible	TLV_TWA_irr		
Cyclooctatetraene, 1,3,5,7-					629-20-9	1.7E+00	mg/m3	1year	Negligible	TLVirr	
1.5E+06	mg/m3	1hour	Critical	TEEL3	DDD					72-54-8	
1.0E+06	mg/m3	1hour	Marginal	TEEL2	5.0E+02	mg/m3	1hour	Critical	TEEL3		
2.5E+05	mg/m3	1hour	Negligible	TEEL1	2.5E+02	mg/m3	1hour	Marginal	TEEL2		
Cyclooctene, cis-					931-87-3	3.5E+01	mg/m3	1hour	Negligible	TEEL1	
3.5E+02	mg/m3	1hour	Critical	TEEL3	DDE					72-55-9	
6.0E+01	mg/m3	1hour	Marginal	TEEL2	4.0E+02	mg/m3	1hour	Critical	TEEL3		
1.0E+01	mg/m3	1hour	Negligible	TEEL1	7.5E+01	mg/m3	1hour	Marginal	TEEL2		
					1.3E+01	mg/m3	1hour	Negligible	TEEL1		

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME					CASRN	CHEMICAL NAME					CASRN
MEG	Units	Timeframe	Severity	Basis		MEG	Units	Timeframe	Severity	Basis	
DDT					50-29-3	Demeton					8065-48-3
5.0E+02 mg/m3		1hour	Critical	TEEL3		1.0E+01 mg/m3	1hour	1hour	Critical	TEEL3	
2.0E+00 mg/m3		1hour	Marginal	TEEL2		2.0E+00 mg/m3	1hour	1hour	Marginal	TEEL2	
1.0E+00 mg/m3		1hour	Negligible	TEEL1		1.5E-01 mg/m3	1hour	1hour	Negligible	TEEL1	
1.0E+00 mg/m3		8hour	Negligible	TLV_TWA		5.0E-02 mg/m3	8hour	8hour	Negligible	TLV_TWA	
2.4E-01 mg/m3		14day	Negligible	TLV_TWA		1.2E-02 mg/m3	14day	14day	Negligible	TLV_TWA	
4.9E-02 mg/m3		1year	Negligible	IRIS		1.2E-02 mg/m3	1year	1year	Negligible	TLVadj	
Decaborane					17702-41-9	Demeton-S-methyl					919-86-8
1.5E+01 mg/m3		1hour	Critical	TEEL3		2.0E+02 mg/m3	1hour	1hour	Critical	TEEL3	
1.0E+01 mg/m3		1hour	Marginal	TEEL2		5.0E+00 mg/m3	1hour	1hour	Marginal	TEEL2	
7.5E-01 mg/m3		1hour	Negligible	TEEL1		1.5E-01 mg/m3	1hour	1hour	Negligible	TEEL1	
2.5E-01 mg/m3		8hour	Negligible	TLV_TWA		5.0E-02 mg/m3	8hour	8hour	Negligible	TLV_TWA	
6.1E-02 mg/m3		14day	Negligible	TLV_TWA		1.2E-02 mg/m3	14day	14day	Negligible	TLV_TWA	
6.1E-02 mg/m3		1year	Negligible	TLVadj		1.2E-02 mg/m3	1year	1year	Negligible	TLVadj	
Decahydronaphthalene					91-17-8	Deoxyribonucleic acid					9007-49-2
4.0E+02 mg/m3		1hour	Critical	TEEL3		5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3	
5.0E+01 mg/m3		1hour	Marginal	TEEL2		2.5E+02 mg/m3	1hour	1hour	Marginal	TEEL2	
7.5E+00 mg/m3		1hour	Negligible	TEEL1		3.5E+01 mg/m3	1hour	1hour	Negligible	TEEL1	
Decalin, cis-					493-01-6	Deuterium					7782-39-0
4.0E+02 mg/m3		1hour	Critical	TEEL3		6.0E+04 mg/m3	1hour	1hour	Critical	TEEL3	
5.0E+01 mg/m3		1hour	Marginal	TEEL2		3.5E+04 mg/m3	1hour	1hour	Marginal	TEEL2	
7.5E+00 mg/m3		1hour	Negligible	TEEL1		1.0E+04 mg/m3	1hour	1hour	Negligible	TEEL1	
Decalin, trans-					493-02-7	Deuterium oxide					7789-20-0
4.0E+02 mg/m3		1hour	Critical	TEEL3		1.5E+05 mg/m3	1hour	1hour	Critical	TEEL3	
5.0E+01 mg/m3		1hour	Marginal	TEEL2		3.5E+04 mg/m3	1hour	1hour	Marginal	TEEL2	
7.5E+00 mg/m3		1hour	Negligible	TEEL1		5.0E+03 mg/m3	1hour	1hour	Negligible	TEEL1	
Decamethylcyclopentasiloxane					541-02-6	Deuteriochloric acid					7698-05-7
5.0E+02 mg/m3		1hour	Critical	TEEL3		1.5E+02 mg/m3	1hour	1hour	Critical	TEEL3	
3.5E+02 mg/m3		1hour	Marginal	TEEL2		3.5E+01 mg/m3	1hour	1hour	Marginal	TEEL2	
5.0E+01 mg/m3		1hour	Negligible	TEEL1		2.5E+00 mg/m3	1hour	1hour	Negligible	TEEL1	
Decanal					112-31-2	Dextran					9004-54-0
1.5E+03 mg/m3		1hour	Critical	TEEL3		5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3	
3.0E+02 mg/m3		1hour	Marginal	TEEL2		6.0E+00 mg/m3	1hour	1hour	Marginal	TEEL2	
4.0E+01 mg/m3		1hour	Negligible	TEEL1		1.0E+00 mg/m3	1hour	1hour	Negligible	TEEL1	
Decane					124-18-5	Dextran sulfate sodium					9011-18-1
2.5E+04 mg/m3		1hour	Critical	TEEL3		5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3	
7.5E+00 mg/m3		1hour	Marginal	TEEL2		3.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2	
1.0E+00 mg/m3		1hour	Negligible	TEEL1		4.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1	
Decanol, 1-					112-30-1	D-Gluconic acid					526-95-4
5.0E+02 mg/m3		1hour	Critical	TEEL3		2.5E+02 mg/m3	1hour	1hour	Critical	TEEL3	
7.5E+01 mg/m3		1hour	Marginal	TEEL2		5.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2	
1.3E+01 mg/m3		1hour	Negligible	TEEL1		3.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1	
Decene, homopolymer, hydrogenated, 1-					68037-01-4	D-Glucose, monohydrate					14431-43-7
2.5E+02 mg/m3		1hour	Critical	TEEL3		2.5E+02 mg/m3	1hour	1hour	Critical	TEEL3	
5.0E+01 mg/m3		1hour	Marginal	TEEL2		5.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2	
3.0E+01 mg/m3		1hour	Negligible	TEEL1		3.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1	

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Di(2-ethylhexyl)adipate				103-23-1	Diaminodiphenylsulfone				80-08-0
5.0E+02	mg/m3	1hour	Critical	TEEL3	4.0E+02	mg/m3	1hour	Critical	TEEL3
5.0E+02	mg/m3	1hour	Marginal	TEEL2	2.0E+01	mg/m3	1hour	Marginal	TEEL2
1.5E+02	mg/m3	1hour	Negligible	TEEL1	3.0E+00	mg/m3	1hour	Negligible	TEEL1
Di(ethylene glycol) diacrylate				4074-88-8	Diaminodipropylamine, 3,3-				56-18-8
1.0E+02	mg/m3	1hour	Critical	TEEL3	3.0E+02	mg/m3	1hour	Critical	TEEL3
2.0E+01	mg/m3	1hour	Marginal	TEEL2	6.0E+01	mg/m3	1hour	Marginal	TEEL2
3.0E+00	mg/m3	1hour	Negligible	TEEL1	7.5E+00	mg/m3	1hour	Negligible	TEEL1
Diacetone alcohol				123-42-2	Diammonium citrate				3012-65-5
7.5E+03	mg/m3	1hour	Critical	TEEL3	2.0E+02	mg/m3	1hour	Critical	TEEL3
2.4E+02	mg/m3	1hour	Marginal	TLV_TWA_irr [†]	4.0E+01	mg/m3	1hour	Marginal	TEEL2
2.4E+02	mg/m3	1hour	Negligible	TLV_TWA_irr [†]	6.0E+00	mg/m3	1hour	Negligible	TEEL1
2.4E+02	mg/m3	8hour	Negligible	TLV_TWA_irr	Diammonium phosphate				7783-28-0
8.1E+01	mg/m3	14day	Negligible	TLV_TWA_irr	2.5E+02	mg/m3	1hour	Critical	TEEL3
8.1E+01	mg/m3	1year	Negligible	TLVirr	5.0E+01	mg/m3	1hour	Marginal	TEEL2
Diacetoxydibutyl stannane				1067-33-0	Diammonium sulfide				12135-76-1
7.4E+01	mg/m3	1hour	Critical	TEEL3	4.0E+01	mg/m3	1hour	Critical	TEEL3
7.5E+00	mg/m3	1hour	Marginal	TEEL2	4.0E+01	mg/m3	1hour	Marginal	TEEL2
5.9E-01	mg/m3	1hour	Negligible	TEEL1	2.5E+01	mg/m3	1hour	Negligible	TEEL1
Diacetyl				431-03-8	Diamond				7782-40-3
4.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
4.0E+02	mg/m3	1hour	Marginal	TEEL2	1.5E+02	mg/m3	1hour	Marginal	TEEL2
6.0E+01	mg/m3	1hour	Negligible	TEEL1	2.0E+01	mg/m3	1hour	Negligible	TEEL1
Diacetyl peroxide				110-22-5	Dianisidine dihydrochloride				20325-40-0
5.0E+02	mg/m3	1hour	Critical	TEEL3	7.5E+00	mg/m3	1hour	Critical	TEEL3
1.5E+02	mg/m3	1hour	Marginal	TEEL2	2.5E+00	mg/m3	1hour	Marginal	TEEL2
2.0E+01	mg/m3	1hour	Negligible	TEEL1	3.5E-01	mg/m3	1hour	Negligible	TEEL1
Dialifor				10311-84-9	Diatomaceous earth				61790-53-2
5.0E+00	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
5.0E+00	mg/m3	1hour	Marginal	TEEL2	3.0E+01	mg/m3	1hour	Marginal	TEEL2
3.0E+00	mg/m3	1hour	Negligible	TEEL1	1.8E+01	mg/m3	1hour	Negligible	TEEL1
Diallyl glycol carbonate				142-22-3	Diatomaceous silica, calcined				91053-39-3
1.3E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
6.0E+01	mg/m3	1hour	Marginal	TEEL2	1.5E+00	mg/m3	1hour	Marginal	TEEL2
1.0E+01	mg/m3	1hour	Negligible	TEEL1	9.0E-01	mg/m3	1hour	Negligible	TEEL1
Diallyl phthalate				131-17-9	Diatomite				68855-54-9
2.5E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
2.5E+02	mg/m3	1hour	Marginal	TEEL2	1.5E+00	mg/m3	1hour	Marginal	TEEL2
5.0E+01	mg/m3	1hour	Negligible	TEEL1	9.0E-01	mg/m3	1hour	Negligible	TEEL1
Diallyldimethylammonium chloride				7398-69-8	Diazabicyclo(2,2,2)octane, 1,4-				280-57-9
5.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
5.0E+02	mg/m3	1hour	Marginal	TEEL2	2.0E+01	mg/m3	1hour	Marginal	TEEL2
7.5E+01	mg/m3	1hour	Negligible	TEEL1	3.0E+00	mg/m3	1hour	Negligible	TEEL1
Diallylmethylammonium chloride polymer				26062-79-3					
5.0E+02	mg/m3	1hour	Critical	TEEL3					
2.5E+02	mg/m3	1hour	Marginal	TEEL2					
3.5E+01	mg/m3	1hour	Negligible	TEEL1					

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME					CASRN	CHEMICAL NAME					CASRN
MEG	Units	Timeframe	Severity	Basis		MEG	Units	Timeframe	Severity	Basis	
Diazinon					333-41-5	Dibromo-3-chloropropane, 1,2-					96-12-8
1.0E-02	mg/m3	8hour	Negligible	TLV_TWA		1.5E+02	mg/m3	1hour	Critical	TEEL3	
2.4E-03	mg/m3	14day	Negligible	TLV_TWA		5.0E+00	mg/m3	1hour	Marginal	TEEL2	
2.4E-03	mg/m3	1year	Negligible	TLV_TWA*		7.5E-01	mg/m3	1hour	Negligible	TEEL1	
Diazoacetic acid					623-73-4	Dibromo-4-nitrophenol, 2,6-					99-28-5
1.5E+02	mg/m3	1hour	Critical	TEEL3		8.0E-10	mg/m3	1year	Negligible	PPRTV	
4.0E+00	mg/m3	1hour	Marginal	TEEL2		Dibromochloromethane					124-48-1
6.0E-01	mg/m3	1hour	Negligible	TEEL1		1.5E+02	mg/m3	1hour	Critical	TEEL3	
Diazomethane					334-88-3	4.0E+01	mg/m3	1hour	Marginal	TEEL2	
3.5E+00	mg/m3	1hour	Critical	TEEL3		1.3E+00	mg/m3	1hour	Negligible	TEEL1	
3.5E+00	mg/m3	1hour	Marginal	TEEL2		Dibromoethane, 1,2-					106-93-4
1.0E+00	mg/m3	1hour	Negligible	TEEL1		3.5E+02	mg/m3	1hour	Critical	AEGL3_1hr	
3.4E-01	mg/m3	8hour	Negligible	TLV_TWA_irr		1.8E+02	mg/m3	1hour	Marginal	AEGL2_1hr	
1.2E-01	mg/m3	14day	Negligible	TLV_TWA_irr		1.3E+02	mg/m3	1hour	Negligible	AEGL1_1hr	
1.2E-01	mg/m3	1year	Negligible	TLVirr		3.5E+01	mg/m3	8hour	Negligible	AEGL1_8hr	
Dibenz(a,h)anthracene					53-70-3	1.4E-03	mg/m3	1year	Negligible	HEAST_sub	
1.5E+01	mg/m3	1hour	Critical	TEEL3		Dibromomethane					74-95-3
1.5E-02	mg/m3	1hour	Marginal	TEEL2		7.5E+03	mg/m3	1hour	Critical	TEEL3	
2.5E-03	mg/m3	1hour	Negligible	TEEL1		1.5E+03	mg/m3	1hour	Marginal	TEEL2	
Dibenzo(a,e)pyrene					192-65-4	2.0E+02	mg/m3	1hour	Negligible	TEEL1	
5.0E-01	mg/m3	1hour	Critical	TEEL3		Dibromo-phenol, 2,6-					608-33-3
1.0E-01	mg/m3	1hour	Marginal	TEEL2		2.5E+00	mg/m3	1hour	Critical	TEEL3	
1.5E-02	mg/m3	1hour	Negligible	TEEL1		2.5E+00	mg/m3	1hour	Marginal	TEEL2	
Dibenzofuran					132-64-9	5.0E-01	mg/m3	1hour	Negligible	TEEL1	
2.5E+02	mg/m3	1hour	Critical	TEEL3		Dibromopropane, 1,3-					109-64-8
5.0E+01	mg/m3	1hour	Marginal	TEEL2		2.0E+02	mg/m3	1hour	Critical	TEEL3	
3.0E+01	mg/m3	1hour	Negligible	TEEL1		4.0E+01	mg/m3	1hour	Marginal	TEEL2	
Dibenzo-p-dioxin					262-12-4	6.0E+00	mg/m3	1hour	Negligible	TEEL1	
5.0E+02	mg/m3	1hour	Critical	TEEL3		Dibromotetrafluoroethane					124-73-2
3.0E+01	mg/m3	1hour	Marginal	TEEL2		1.5E+05	mg/m3	1hour	Critical	TEEL3	
4.0E+00	mg/m3	1hour	Negligible	TEEL1		3.5E+04	mg/m3	1hour	Marginal	TEEL2	
Diborane					19287-45-7	5.0E+03	mg/m3	1hour	Negligible	TEEL1	
4.2E+00	mg/m3	1hour	Critical	AEGL3_1hr*		Dibutyl butylphosphonate					78-46-6
1.1E+00	mg/m3	1hour	Marginal	AEGL2_1hr*		5.0E+01	mg/m3	1hour	Critical	TEEL3	
1.5E-01	mg/m3	1hour	Negligible	TEEL1*		1.0E+01	mg/m3	1hour	Marginal	TEEL2	
1.1E-01	mg/m3	8hour	Negligible	TLV_TWA*		1.3E+00	mg/m3	1hour	Negligible	TEEL1	
2.8E-02	mg/m3	14day	Negligible	TLV_TWA		Dibutyl ether					142-96-1
2.8E-02	mg/m3	1year	Negligible	TLVadj		2.0E+03	mg/m3	1hour	Critical	TEEL3	
1.4E-01	mg/m3	8hour	Marginal	AEGL2_8h*		1.0E+02	mg/m3	1hour	Marginal	TEEL2	
1.5E-01	mg/m3	10min	Negligible	TEEL1*		1.5E+01	mg/m3	1hour	Negligible	TEEL1	
5.1E-01	mg/m3	8hour	Critical	AEGL3_8h*		Dibutyl peroxide, tert-					110-05-4
2.2E+00	mg/m3	10min	Marginal	AEGL2_10min		2.5E+03	mg/m3	1hour	Critical	TEEL3	
8.0E+00	mg/m3	10min	Critical	AEGL3_10min		1.5E+02	mg/m3	1hour	Marginal	TEEL2	
						2.0E+01	mg/m3	1hour	Negligible	TEEL1	

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Dibutyl phenyl phosphate				2528-36-1	Dichloro-2-butene, 1,4-				764-41-0
3.5E+00	mg/m3	8hour	Negligible	TLV_TWA_irr	7.5E+02	mg/m3	1hour	Critical	TEEL3
1.2E+00	mg/m3	14day	Negligible	TLV_TWA_irr	1.3E+01	mg/m3	1hour	Marginal	TEEL2
1.2E+00	mg/m3	1year	Negligible	TLVirr	7.5E-02	mg/m3	1hour	Negligible	TEEL1
Dibutyl phosphate				107-66-4	Dichloro-2-propanol, 1,3-				96-23-1
2.5E+02	mg/m3	1hour	Critical	TEEL3	2.6E-02	mg/m3	8hour	Negligible	TLV_TWA_irr
5.0E+01	mg/m3	1hour	Marginal	TEEL2	8.8E-03	mg/m3	14day	Negligible	TLV_TWA_irr
1.5E+01	mg/m3	1hour	Negligible	TEEL1	1.1E-03	mg/m3	1year	Negligible	PPRTV
5.0E+00	mg/m3	8hour	Negligible	TLV_TWA_irr	Dichloro-2-propanol, 1,3-				96-23-1
1.7E+00	mg/m3	14day	Negligible	TLV_TWA_irr	2.5E+02	mg/m3	1hour	Critical	TEEL3
1.7E+00	mg/m3	1year	Negligible	TLVirr	2.5E+02	mg/m3	1hour	Marginal	TEEL2
Dibutyl phosphite				1809-19-4	Dichloro-5,5-dimethylhydantoin				118-52-5
5.0E+02	mg/m3	1hour	Critical	TEEL3	2.0E-01	mg/m3	8hour	Negligible	TLV_TWA_irr
4.0E+02	mg/m3	1hour	Marginal	TEEL2	6.8E-02	mg/m3	14day	Negligible	TLV_TWA_irr
6.0E+01	mg/m3	1hour	Negligible	TEEL1	6.8E-02	mg/m3	1year	Negligible	TLVirr
Dibutyl phthalate				84-74-2	Dichloroacetic acid				79-43-6
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.3E+03	mg/m3	1hour	Critical	TEEL3
7.5E+01	mg/m3	1hour	Marginal	TEEL2	4.0E+02	mg/m3	1hour	Marginal	TEEL2
1.5E+01	mg/m3	1hour	Negligible	TEEL1	5.0E+01	mg/m3	1hour	Negligible	TEEL1
5.0E+00	mg/m3	8hour	Negligible	TLV_TWA_irr	2.6E+00	mg/m3	8hour	Negligible	TLV_TWA
1.7E+00	mg/m3	14day	Negligible	TLV_TWA_irr	6.5E-01	mg/m3	14day	Negligible	TLV_TWA
1.7E+00	mg/m3	1year	Negligible	TLVirr	6.5E-01	mg/m3	1year	Negligible	TLVadj
Dibutylboron triflate				60669-69-4	Dichloroacetyl chloride				79-36-7
5.0E+02	mg/m3	1hour	Critical	TEEL3	3.1E+02	mg/m3	1hour	Critical	AEGL3_1hr
6.0E+01	mg/m3	1hour	Marginal	TEEL2	9.6E+00	mg/m3	1hour	Marginal	AEGL2_1hr
3.6E+01	mg/m3	1hour	Negligible	TEEL1	2.4E-01	mg/m3	1hour	Negligible	AEGL1_1hr
Dibutylethanolamine				102-81-8	Dichloroacetylene				7572-29-4
3.5E+00	mg/m3	8hour	Negligible	TLV_TWA_irr	2.4E-01	mg/m3	8hour	Negligible	AEGL1_8hr
1.2E+00	mg/m3	14day	Negligible	TLV_TWA_irr	Dichloroacetylene				7572-29-4
1.2E+00	mg/m3	1year	Negligible	TLVirr	1.5E+02	mg/m3	1hour	Critical	TEEL3
Dibutylhexamethylenediamine, N,N'-				4835-11-4	Dichloroamine				3400-09-7
7.5E+01	mg/m3	1hour	Critical	TEEL3	1.0E+02	mg/m3	1hour	Critical	TEEL3
2.2E+01	mg/m3	1hour	Marginal	TEEL2	2.0E+01	mg/m3	1hour	Marginal	TEEL2
3.0E+00	mg/m3	1hour	Negligible	TEEL1	3.0E+00	mg/m3	1hour	Negligible	TEEL1
DIC hydrochloride				4261-68-1	Dichlorobenzene, 1,2-				95-50-1
1.3E+00	mg/m3	1hour	Critical	TEEL3	1.3E+03	mg/m3	1hour	Critical	TEEL3
2.5E-01	mg/m3	1hour	Marginal	TEEL2	3.0E+02	mg/m3	1hour	Marginal	TEEL2
3.5E-02	mg/m3	1hour	Negligible	TEEL1	3.0E+02	mg/m3	1hour	Negligible	TEEL1
Dichloran				99-30-9	Dichlorobenzene, 1,2-				95-50-1
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.5E+02	mg/m3	8hour	Negligible	TLV_TWA_irr
7.5E-02	mg/m3	1hour	Marginal	TEEL2	5.1E+01	mg/m3	14day	Negligible	TLV_TWA_irr
1.3E-02	mg/m3	1hour	Negligible	TEEL1	1.4E+00	mg/m3	1year	Negligible	HEAST_sub
Dichloro-1-nitroethane				594-72-9	Dichlorobenzene, 1,3-				541-73-1
1.2E+01	mg/m3	8hour	Negligible	TLV_TWA_irr	4.0E+02	mg/m3	1hour	Critical	TEEL3
4.0E+00	mg/m3	14day	Negligible	TLV_TWA_irr	7.5E+01	mg/m3	1hour	Marginal	TEEL2
4.0E+00	mg/m3	1year	Negligible	TLVirr	1.3E+01	mg/m3	1hour	Negligible	TEEL1

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Dichlorobenzene, 1,4-				106-46-7	Dichloroethanol acetate, 1,2-				10140-87-1
7.5E+02 mg/m3		1hour	Critical	TEEL3	4.0E+01 mg/m3	1hour	Critical	TEEL3	
1.5E+02 mg/m3		1hour	Marginal	TEEL2	1.0E+01 mg/m3	1hour	Marginal	TEEL2	
6.0E+01 mg/m3		1hour	Negligible	TLV_TWA_irr [†]	6.0E+00 mg/m3	1hour	Negligible	TEEL1	
6.0E+01 mg/m3		8hour	Negligible	TLV_TWA_irr	Dichloroethylaluminum				563-43-9
8.2E+00 mg/m3		14day	Negligible	MRLi_acute	1.0E+01 mg/m3	1hour	Critical	TEEL3	
1.6E+00 mg/m3		1year	Negligible	IRIS_sub	6.0E+00 mg/m3	1hour	Marginal	TEEL2	
Dichlorobenzidine, 3,3'-				91-94-1	6.0E+00 mg/m3	1hour	Negligible	TEEL1	
2.0E+03 mg/m3		1hour	Critical	TEEL3	Dichloroethylbenzene				1331-29-9
4.0E+01 mg/m3		1hour	Marginal	TEEL2	5.0E+02 mg/m3	1hour	Critical	TEEL3	
6.0E+00 mg/m3		1hour	Negligible	TEEL1	5.0E+02 mg/m3	1hour	Marginal	TEEL2	
Dichlorobutene-2, trans-1,4-				110-57-6	6.0E+01 mg/m3	1hour	Negligible	TEEL1	
4.0E+01 mg/m3		1hour	Critical	TEEL3	Dichloroethylene, 1,1-				75-35-4
4.0E+00 mg/m3		1hour	Marginal	TEEL2	4.0E+03 mg/m3	1hour	Critical	ERPG3	
6.0E-01 mg/m3		1hour	Negligible	TEEL1	2.0E+03 mg/m3	1hour	Marginal	ERPG2	
1.1E-03 mg/m3		1year	Negligible	PPRTV	2.5E+02 mg/m3	1hour	Negligible	TEEL1	
Dichlorocyclohexane, 1,1-				2108-92-1	2.0E+01 mg/m3	8hour	Negligible	TLV_TWA	
1.5E+02 mg/m3		1hour	Critical	TEEL3	5.9E-01 mg/m3	14day	Negligible	CEGL	
3.5E+01 mg/m3		1hour	Marginal	TEEL2	1.4E-02 mg/m3	1year	Negligible	HEAST	
4.0E+00 mg/m3		1hour	Negligible	TEEL1	Dichloroethylene, 1,2-				540-59-0
Dichlorocyclohexane, trans-1,2-				822-86-6	4.0E+03 mg/m3	1hour	Critical	TEEL3	
3.0E+01 mg/m3		1hour	Critical	TEEL3	4.0E+03 mg/m3	1hour	Marginal	TEEL2	
6.0E+00 mg/m3		1hour	Marginal	TEEL2	2.5E+03 mg/m3	1hour	Negligible	TEEL1	
7.5E-01 mg/m3		1hour	Negligible	TEEL1	7.9E+02 mg/m3	8hour	Negligible	TLV_TWA	
Dichlorodifluoromethane				75-71-8	1.9E+02 mg/m3	14day	Negligible	TLV_TWA	
7.5E+04 mg/m3		1hour	Critical	TEEL3	1.9E+02 mg/m3	1year	Negligible	TLVadj	
5.0E+04 mg/m3		1hour	Marginal	TEEL2	Dichloroethylene, cis-1,2-				156-59-2
1.5E+04 mg/m3		1hour	Negligible	TEEL1	3.4E+03 mg/m3	1hour	Critical	AEGL3_1hr	
4.9E+03 mg/m3		8hour	Negligible	TLV_TWA	2.0E+03 mg/m3	1hour	Marginal	AEGL2_1hr	
1.5E+03 mg/m3		14day	Negligible	CEGL	5.6E+02 mg/m3	1hour	Negligible	AEGL1_1hr	
1.4E+00 mg/m3		1year	Negligible	HEAST_sub	5.6E+02 mg/m3	8hour	Negligible	AEGL1_8hr	
Dichloroethane, 1,1-				75-34-3	1.9E+02 mg/m3	14day	Negligible	TLV_TWA	
1.3E+04 mg/m3		1hour	Critical	TEEL3	1.9E+02 mg/m3	1year	Negligible	TLVadj	
1.3E+04 mg/m3		1hour	Marginal	TEEL2	Dichloroethylene, trans-				156-60-5
1.3E+03 mg/m3		1hour	Negligible	TEEL1	6.7E+03 mg/m3	1hour	Critical	AEGL3_1hr	
4.0E+02 mg/m3		8hour	Negligible	TLV_TWA_irr	4.0E+03 mg/m3	1hour	Marginal	AEGL2_1hr	
1.4E+02 mg/m3		14day	Negligible	TLV_TWA_irr	1.1E+03 mg/m3	1hour	Negligible	AEGL1_1hr	
1.4E+02 mg/m3		1year	Negligible	TLVirr	1.1E+03 mg/m3	8hour	Negligible	AEGL1_8hr	
Dichloroethane, 1,2-				107-06-2	5.4E-01 mg/m3	14day	Negligible	MRLi_acute	
1.2E+03 mg/m3		1hour	Critical	ERPG3	5.4E-01 mg/m3	1year	Negligible	MRL_inter	
8.1E+02 mg/m3		1hour	Marginal	ERPG2	Dichlorofluoromethane				75-43-4
2.0E+02 mg/m3		1hour	Negligible	ERPG1	2.0E+04 mg/m3	1hour	Critical	TEEL3	
4.0E+01 mg/m3		8hour	Negligible	TLV_TWA	4.0E+02 mg/m3	1hour	Marginal	TEEL2	
9.9E+00 mg/m3		14day	Negligible	TLV_TWA	1.3E+02 mg/m3	1hour	Negligible	TEEL1	
1.8E-01 mg/m3		1year	Negligible	IRIS	4.2E+01 mg/m3	8hour	Negligible	TLV_TWA	
					4.2E+00 mg/m3	14day	Negligible	CEGL	
					4.2E+00 mg/m3	1year	Negligible	CEGL*	

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Dichlorohexane, 1,2-				2162-92-7	Dichloropropane, 1,2-				78-87-5
2.0E+02 mg/m3		1hour	Critical	TEEL3	1.5E+03 mg/m3	1hour	1hour	Critical	TEEL3
4.0E+01 mg/m3		1hour	Marginal	TEEL2	1.5E+03 mg/m3	1hour	1hour	Marginal	TEEL2
5.0E+00 mg/m3		1hour	Negligible	TEEL1	1.3E+03 mg/m3	1hour	1hour	Negligible	TEEL1
Dichlorohexane, 1,6-				2163-00-0	Dichloropropane, 1,3-				142-28-9
5.0E+02 mg/m3		1hour	Critical	TEEL3	4.6E+01 mg/m3	8hour	14day	Negligible	TLV_TWA_irr
3.5E+02 mg/m3		1hour	Marginal	TEEL2	1.6E-01 mg/m3	14day	1year	Negligible	MRLi_acute
5.0E+01 mg/m3		1hour	Negligible	TEEL1	8.2E-03 mg/m3	1year		Negligible	IRIS_sub
Dichloromethane-D2				1665-00-5	Dichloropropane, 2,2-				594-20-7
2.5E+04 mg/m3		1hour	Critical	TEEL3	2.0E+03 mg/m3	1hour	1hour	Critical	TEEL3
2.0E+03 mg/m3		1hour	Marginal	TEEL2	4.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
6.0E+02 mg/m3		1hour	Negligible	TEEL1	6.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
Dichloromethylphenylsilane				149-74-6	Dichloropropene, 1,1-				563-58-6
2.0E+01 mg/m3		1hour	Critical	TEEL3	7.5E+02 mg/m3	1hour	1hour	Critical	TEEL3
2.0E+01 mg/m3		1hour	Marginal	TEEL2	2.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
3.0E+00 mg/m3		1hour	Negligible	TEEL1	1.3E+01 mg/m3	1hour	1hour	Negligible	TEEL1
Dichlorooctane, 1,8-				2162-99-4	Dichloropropene, 1,2-				563-54-2
5.0E+02 mg/m3		1hour	Critical	TEEL3	7.5E+02 mg/m3	1hour	1hour	Critical	TEEL3
2.0E+02 mg/m3		1hour	Marginal	TEEL2	1.5E+02 mg/m3	1hour	1hour	Marginal	TEEL2
3.0E+01 mg/m3		1hour	Negligible	TEEL1	2.5E+01 mg/m3	1hour	1hour	Negligible	TEEL1
Dichlorophen				97-23-4	Dichloropropene, 1,3-				542-75-6
5.0E+02 mg/m3		1hour	Critical	TEEL3	2.0E+03 mg/m3	1hour	1hour	Critical	TEEL3
1.3E+02 mg/m3		1hour	Marginal	TEEL2	6.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
1.5E+01 mg/m3		1hour	Negligible	TEEL1	1.0E+02 mg/m3	1hour	1hour	Negligible	TEEL1
Dichlorophenol, 2,4-				120-83-2	Dichloropropene, 2,3-				78-88-6
1.3E+02 mg/m3		1hour	Critical	ERPG3	4.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
1.3E+01 mg/m3		1hour	Marginal	ERPG2	2.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
1.3E+00 mg/m3		1hour	Negligible	ERPG1	3.0E+00 mg/m3	1hour	1hour	Negligible	TEEL1
Dichlorophenol, 2,6-				87-65-0	Dichloropropene, cis-1,2-				6923-20-2
1.5E+02 mg/m3		1hour	Critical	TEEL3	7.5E+02 mg/m3	1hour	1hour	Critical	TEEL3
3.5E+01 mg/m3		1hour	Marginal	TEEL2	1.5E+02 mg/m3	1hour	1hour	Marginal	TEEL2
5.0E+00 mg/m3		1hour	Negligible	TEEL1	2.5E+01 mg/m3	1hour	1hour	Negligible	TEEL1
Dichlorophenoxy acetic acid, 2,4-				94-75-7	Dichloropropene, cis-1,3-				10061-01-5
1.0E+02 mg/m3		1hour	Critical	TEEL3	2.0E+01 mg/m3	1hour	1hour	Critical	TEEL3
4.0E+01 mg/m3		1hour	Marginal	TEEL2	4.0E+00 mg/m3	1hour	1hour	Marginal	TEEL2
1.0E+01 mg/m3		1hour	Negligible	TEEL1	6.0E-01 mg/m3	1hour	1hour	Negligible	TEEL1
1.0E+01 mg/m3		8hour	Negligible	TLV_TWA_irr	Dichloropropene, trans-1,3-				10061-02-6
3.4E+00 mg/m3		14day	Negligible	TLV_TWA_irr	7.5E+02 mg/m3	1hour	1hour	Critical	TEEL3
3.4E+00 mg/m3		1year	Negligible	TLVirr	6.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
Dichloropropane				26638-19-7	Dichloropropene, trans-1,3-				10061-02-6
1.5E+03 mg/m3		1hour	Critical	TEEL3	7.5E+01 mg/m3	1hour	1hour	Negligible	TEEL1
1.5E+03 mg/m3		1hour	Marginal	TEEL2					
1.3E+03 mg/m3		1hour	Negligible	TEEL1					
Dichloropropane, 1,1-				78-99-9					
2.0E+03 mg/m3		1hour	Critical	TEEL3					
4.0E+02 mg/m3		1hour	Marginal	TEEL2					
5.0E+01 mg/m3		1hour	Negligible	TEEL1					

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Dichlorosilane				4109-96-0	Didecyl dimethyl ammonium chloride				7173-51-5
2.1E+02 mg/m3		1hour	Critical	AEGL3_1hr	3.5E+01 mg/m3	1hour	1hour	Critical	TEEL3
4.5E+01 mg/m3		1hour	Marginal	AEGL2_1hr	3.5E+01 mg/m3	1hour	1hour	Marginal	TEEL2
3.7E+00 mg/m3		1hour	Negligible	AEGL1_1hr	5.0E+00 mg/m3	1hour	1hour	Negligible	TEEL1
3.7E+00 mg/m3		8hour	Negligible	AEGL1_8hr	Dieldrin				60-57-1
Dichlorotetrafluoroethane				76-14-2	5.0E+01 mg/m3	1hour	1hour	Critical	TEEL3
1.0E+05 mg/m3		1hour	Critical	TEEL3	2.5E+01 mg/m3	1hour	1hour	Marginal	TEEL2
1.0E+05 mg/m3		1hour	Marginal	TEEL2	7.5E-01 mg/m3	1hour	1hour	Negligible	TEEL1
2.0E+04 mg/m3		1hour	Negligible	TEEL1	1.0E-01 mg/m3	8hour	8hour	Negligible	TLV_TWA
7.0E+03 mg/m3		8hour	Negligible	TLV_TWA	2.4E-02 mg/m3	14day	14day	Negligible	TLV_TWA
8.7E+02 mg/m3		14day	Negligible	CEGL	1.0E-03 mg/m3	1year	1year	Negligible	IRIS
8.7E+02 mg/m3		1year	Negligible	CEGL*	Diesel engine exhaust				Diesel
Dichlorotetrafluoroethane (MEG)				1320-37-2	3.4E-03 mg/m3	1year	1year	Negligible	IRIS_chr
5.0E+05 mg/m3		1hour	Critical	TEEL3	Diesel fuel marine				77650-28-3
5.0E+05 mg/m3		1hour	Marginal	TEEL2	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
2.0E+05 mg/m3		1hour	Negligible	TEEL1	5.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
Dichlorvos				62-73-7	3.5E+02 mg/m3	1hour	1hour	Negligible	TEEL1
7.2E+01 mg/m3		1hour	Critical	AEGL3_1hr	1.0E+02 mg/m3	8hour	8hour	Negligible	TLV_TWA_irr
5.1E+00 mg/m3		1hour	Marginal	AEGL2_1hr	3.4E+01 mg/m3	14day	14day	Negligible	TLV_TWA_irr
9.9E-01 mg/m3		1hour	Negligible	AEGL1_1hr	3.4E+01 mg/m3	1year	1year	Negligible	TLVirr
9.9E-01 mg/m3		8hour	Negligible	AEGL1_8hr	Diesel fuels				68334-30-5
1.2E-02 mg/m3		14day	Negligible	MRLi_acute	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
1.9E-03 mg/m3		1year	Negligible	MRL_inter	5.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
Dicyclohexano-18-crown-6				16069-36-6	2.5E+02 mg/m3	1hour	1hour	Negligible	TEEL1
7.5E+01 mg/m3		1hour	Critical	TEEL3	1.0E+02 mg/m3	8hour	8hour	Negligible	TLV_TWA_irr
4.0E+00 mg/m3		1hour	Marginal	TEEL2	3.4E+01 mg/m3	14day	14day	Negligible	TLV_TWA_irr
6.0E-01 mg/m3		1hour	Negligible	TEEL1	3.4E+01 mg/m3	1year	1year	Negligible	TLVirr
Dicyclohexyl				92-51-3	Diethanolamine				111-42-2
5.0E+02 mg/m3		1hour	Critical	TEEL3	3.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
1.5E+02 mg/m3		1hour	Marginal	TEEL2	3.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
2.5E+01 mg/m3		1hour	Negligible	TEEL1	1.5E+02 mg/m3	1hour	1hour	Negligible	TEEL1
Dicyclohexylcarbodiimide				538-75-0	1.0E+00 mg/m3	8hour	8hour	Negligible	TLV_TWA
1.0E+02 mg/m3		1hour	Critical	TEEL3	2.4E-01 mg/m3	14day	14day	Negligible	TLV_TWA
6.0E-02 mg/m3		1hour	Marginal	TEEL2	2.4E-01 mg/m3	1year	1year	Negligible	TLVadj
1.0E-02 mg/m3		1hour	Negligible	TEEL1	Diethanollauramide				120-40-1
Dicyclopentadiene				77-73-6	1.0E+03 mg/m3	1hour	1hour	Critical	TEEL3
4.1E+02 mg/m3		1hour	Critical	ERPG3	1.0E+00 mg/m3	1hour	1hour	Marginal	TEEL2
2.7E+01 mg/m3		1hour	Marginal	ERPG2	1.3E-01 mg/m3	1hour	1hour	Negligible	TEEL1
5.4E-02 mg/m3		1hour	Negligible	ERPG1	Diethenylethylbenzene, polymer with ethenylbenzene				69011-20-7
5.4E-02 mg/m3		8hour	Negligible	ERPG1*	2.5E+02 mg/m3	1hour	1hour	Critical	TEEL3
1.4E-02 mg/m3		14day	Negligible	PPRTV_sub*	5.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
1.4E-02 mg/m3		1year	Negligible	PPRTV_sub	3.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
Dicyclopentadienyl iron				102-54-5	Diethoxydimethylsilane				78-62-6
1.0E+01 mg/m3		8hour	Negligible	TLV_TWA_irr	3.0E+03 mg/m3	1hour	1hour	Critical	TEEL3
3.4E+00 mg/m3		14day	Negligible	TLV_TWA_irr	6.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
3.4E+00 mg/m3		1year	Negligible	TLVirr	7.5E+01 mg/m3	1hour	1hour	Negligible	TEEL1

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Diethyl (methylthiomethyl) phosphonate				28460-01-7	Diethyl phosphite				762-04-9
4.0E+01 mg/m3		1hour	Critical	TEEL3	5.0E+02 mg/m3	1hour	Critical	TEEL3	
7.5E+00 mg/m3		1hour	Marginal	TEEL2	3.5E+02 mg/m3	1hour	Marginal	TEEL2	
1.3E+00 mg/m3		1hour	Negligible	TEEL1	5.0E+01 mg/m3	1hour	Negligible	TEEL1	
Diethyl (trichloromethyl)phosphonate				866-23-9	Diethyl phthalate				84-66-2
3.0E+02 mg/m3		1hour	Critical	TEEL3	5.0E+02 mg/m3	1hour	Critical	TEEL3	
6.0E+01 mg/m3		1hour	Marginal	TEEL2	1.0E+02 mg/m3	1hour	Marginal	TEEL2	
7.5E+00 mg/m3		1hour	Negligible	TEEL1	1.5E+01 mg/m3	1hour	Negligible	TEEL1	
Diethyl benzene isomers				25340-17-4	Diethyl pyrocarbonate				1609-47-8
2.7E+03 mg/m3		1hour	Critical	ERPG3	5.0E+00 mg/m3	8hour	Negligible	TLV_TWA_irr	
5.5E+02 mg/m3		1hour	Marginal	ERPG2	1.7E+00 mg/m3	14day	Negligible	TLV_TWA_irr	
5.5E+01 mg/m3		1hour	Negligible	ERPG1	1.7E+00 mg/m3	1year	Negligible	TLVirr	
Diethyl carbonate				105-58-8	Diethyl succinate				123-25-1
1.5E+03 mg/m3		1hour	Critical	TEEL3	5.0E+02 mg/m3	1hour	Critical	TEEL3	
3.0E+02 mg/m3		1hour	Marginal	TEEL2	2.0E+02 mg/m3	1hour	Marginal	TEEL2	
4.0E+01 mg/m3		1hour	Negligible	TEEL1	3.0E+01 mg/m3	1hour	Negligible	TEEL1	
Diethyl chlorophosphate				814-49-3	Diethyl sulfate				64-67-5
8.0E+00 mg/m3		1hour	Critical	TEEL3	1.5E+02 mg/m3	1hour	Critical	TEEL3	
8.0E+00 mg/m3		1hour	Marginal	TEEL2	1.0E+01 mg/m3	1hour	Marginal	TEEL2	
5.0E+00 mg/m3		1hour	Negligible	TEEL1	1.3E+00 mg/m3	1hour	Negligible	TEEL1	
Diethyl ethylphosphonate				78-38-6	Diethyl tartrate				87-91-2
5.0E+02 mg/m3		1hour	Critical	TEEL3	2.5E+02 mg/m3	1hour	Critical	TEEL3	
4.0E+01 mg/m3		1hour	Marginal	TEEL2	5.0E+01 mg/m3	1hour	Marginal	TEEL2	
6.0E+00 mg/m3		1hour	Negligible	TEEL1	3.0E+01 mg/m3	1hour	Negligible	TEEL1	
Diethyl ketone				96-22-0	Diethyl telluride				627-54-3
3.0E+03 mg/m3		1hour	Critical	TEEL3	1.0E+01 mg/m3	1hour	Critical	TEEL3	
1.0E+03 mg/m3		1hour	Marginal	TEEL2	6.0E+00 mg/m3	1hour	Marginal	TEEL2	
1.0E+03 mg/m3		1hour	Negligible	TEEL1	3.0E-01 mg/m3	1hour	Negligible	TEEL1	
7.0E+02 mg/m3		8hour	Negligible	TLV_TWA_irr	Diethylamine				109-89-7
2.4E+02 mg/m3		14day	Negligible	TLV_TWA_irr	6.0E+02 mg/m3	1hour	Critical	TEEL3	
2.4E+02 mg/m3		1year	Negligible	TLVirr	2.0E+02 mg/m3	1hour	Marginal	TEEL2	
Diethyl malonate				105-53-3	Diethylaminoacetone				1620-14-0
6.0E+03 mg/m3		1hour	Critical	TEEL3	5.0E+01 mg/m3	1hour	Marginal	TEEL2	
1.3E+03 mg/m3		1hour	Marginal	TEEL2	7.5E+00 mg/m3	1hour	Negligible	TEEL1	
1.5E+02 mg/m3		1hour	Negligible	TEEL1	Diethyl methylphosphonate				683-08-9
Diethyl mercury				627-44-1	Diethyl oxalate				95-92-1
2.6E+00 mg/m3		1hour	Critical	TEEL3	1.5E+02 mg/m3	1hour	Critical	TEEL3	
5.2E-02 mg/m3		1hour	Marginal	TEEL2	3.5E+01 mg/m3	1hour	Marginal	TEEL2	
3.9E-02 mg/m3		1hour	Negligible	TEEL1	5.0E+00 mg/m3	1hour	Negligible	TEEL1	

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME					CASRN	CHEMICAL NAME					CASRN
MEG	Units	Timeframe	Severity	Basis		MEG	Units	Timeframe	Severity	Basis	
Diethylaminoethanol, 2-					100-37-8	Diethylene glycol dimethyl ether					111-96-6
5.0E+02	mg/m3	1hour	Critical	TEEL3		2.0E+03	mg/m3	1hour	Critical	TEEL3	
1.0E+02	mg/m3	1hour	Marginal	TEEL2		2.0E+03	mg/m3	1hour	Marginal	TEEL2	
5.0E+01	mg/m3	1hour	Negligible	TEEL1		7.5E+01	mg/m3	1hour	Negligible	TEEL1	
9.6E+00	mg/m3	8hour	Negligible	TLV_TWA_irr		Diethylene glycol hexyl ether					112-59-4
3.3E+00	mg/m3	14day	Negligible	TLV_TWA_irr		5.0E+02	mg/m3	1hour	Critical	TEEL3	
3.3E+00	mg/m3	1year	Negligible	TLVirr		1.5E+02	mg/m3	1hour	Marginal	TEEL2	
Diethylaminopropylamine					104-78-9	2.5E+01	mg/m3	1hour	Negligible	TEEL1	
2.5E+02	mg/m3	1hour	Critical	TEEL3		Diethylene glycol methyl ether					111-77-3
5.0E+01	mg/m3	1hour	Marginal	TEEL2		1.0E+02	mg/m3	1hour	Critical	TEEL3	
6.0E+00	mg/m3	1hour	Negligible	TEEL1		1.0E+02	mg/m3	1hour	Marginal	TEEL2	
Diethylaniline, N,N-					91-66-7	2.0E+01	mg/m3	1hour	Negligible	TEEL1	
5.0E+02	mg/m3	1hour	Critical	TEEL3		Diethylene glycol monobutyl ether					112-34-5
1.5E+02	mg/m3	1hour	Marginal	TEEL2		2.5E+03	mg/m3	1hour	Critical	TEEL3	
2.0E+01	mg/m3	1hour	Negligible	TEEL1		6.0E+02	mg/m3	1hour	Marginal	TEEL2	
Diethylbenzene, m-					141-93-5	1.0E+02	mg/m3	1hour	Negligible	TEEL1	
5.0E+02	mg/m3	1hour	Critical	TEEL3		6.8E-04	mg/m3	1year	Negligible	PPRTV_sub	
5.0E+02	mg/m3	1hour	Marginal	TEEL2		Diethylene glycol monoethyl ether					111-90-0
1.3E+02	mg/m3	1hour	Negligible	TEEL1		2.0E+03	mg/m3	1hour	Critical	TEEL3	
Diethylbenzene, o-					135-01-3	1.0E+03	mg/m3	1hour	Marginal	TEEL2	
5.0E+02	mg/m3	1hour	Critical	TEEL3		1.5E+02	mg/m3	1hour	Negligible	TEEL1	
3.5E+01	mg/m3	1hour	Marginal	TEEL2		2.1E-03	mg/m3	1year	Negligible	PPRTV_sub	
5.0E+00	mg/m3	1hour	Negligible	TEEL1		Diethylene triamine					111-40-0
Diethyldichlorosilane					1719-53-5	7.5E+00	mg/m3	1hour	Critical	TEEL3	
6.4E+02	mg/m3	1hour	Critical	AEGL3_1hr		6.0E+00	mg/m3	1hour	Marginal	TEEL2	
1.4E+02	mg/m3	1hour	Marginal	AEGL2_1hr		4.2E+00	mg/m3	1hour	Negligible	TLV_TWA_irr*	
1.2E+01	mg/m3	1hour	Negligible	AEGL1_1hr		4.2E+00	mg/m3	8hour	Negligible	TLV_TWA_irr	
5.8E+00	mg/m3	8hour	Negligible	AEGL1_8hr		1.4E+00	mg/m3	14day	Negligible	TLV_TWA_irr	
Diethylene glycol					111-46-6	1.4E+00	mg/m3	1year	Negligible	TLVirr	
7.5E+02	mg/m3	1hour	Critical	TEEL3		Diethylenetriaminepentacetic acid					67-43-6
7.5E+02	mg/m3	1hour	Marginal	TEEL2		2.5E+02	mg/m3	1hour	Critical	TEEL3	
2.0E+02	mg/m3	1hour	Negligible	TEEL1		5.0E+01	mg/m3	1hour	Marginal	TEEL2	
Diethylene glycol diacetate					628-68-2	7.5E+00	mg/m3	1hour	Negligible	TEEL1	
5.0E+02	mg/m3	1hour	Critical	TEEL3		Diethylphosphatoethyltriethoxy silane					757-44-8
5.0E+02	mg/m3	1hour	Marginal	TEEL2		5.0E+02	mg/m3	1hour	Critical	TEEL3	
3.0E+02	mg/m3	1hour	Negligible	TEEL1		5.0E+02	mg/m3	1hour	Marginal	TEEL2	
Diethylene glycol dibutyl ether					112-73-2	2.0E+02	mg/m3	1hour	Negligible	TEEL1	
1.5E+03	mg/m3	1hour	Critical	TEEL3		Diethylstilbestrol					56-53-1
1.0E+03	mg/m3	1hour	Marginal	TEEL2		1.5E+01	mg/m3	1hour	Critical	TEEL3	
1.5E+02	mg/m3	1hour	Negligible	TEEL1		6.0E-01	mg/m3	1hour	Marginal	TEEL2	
Diethylene glycol diethyl ether					112-36-7	7.5E-02	mg/m3	1hour	Negligible	TEEL1	
5.0E+02	mg/m3	1hour	Critical	TEEL3		Diethylthiourea, N,N'-					105-55-5
5.0E+02	mg/m3	1hour	Marginal	TEEL2		1.3E+02	mg/m3	1hour	Critical	TEEL3	
2.5E+02	mg/m3	1hour	Negligible	TEEL1		1.3E+01	mg/m3	1hour	Marginal	TEEL2	
						1.5E+00	mg/m3	1hour	Negligible	TEEL1	

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Diethylurea, 1,3-				623-76-7	Digoxin				20830-75-5
2.5E+03	mg/m3	1hour	Critical	TEEL3	3.5E-01	mg/m3	1hour	Critical	TEEL3
5.0E+02	mg/m3	1hour	Marginal	TEEL2	2.0E-01	mg/m3	1hour	Marginal	TEEL2
7.5E+01	mg/m3	1hour	Negligible	TEEL1	1.3E-01	mg/m3	1hour	Negligible	TEEL1
Diethylzinc				557-20-0	Dihydro-2h-pyran, 3,4-				110-87-2
5.0E+01	mg/m3	1hour	Critical	TEEL3	1.5E+02	mg/m3	1hour	Critical	TEEL3
1.0E+01	mg/m3	1hour	Marginal	TEEL2	3.0E+01	mg/m3	1hour	Marginal	TEEL2
1.5E+00	mg/m3	1hour	Negligible	TEEL1	4.0E+00	mg/m3	1hour	Negligible	TEEL1
Difluorodibromomethane				75-61-6	Dihydro-3-(Nonenyl)-2,5-furandione				28928-97-4
8.6E+02	mg/m3	8hour	Negligible	TLV_TWA_irr	2.5E+02	mg/m3	1hour	Critical	TEEL3
2.9E+02	mg/m3	14day	Negligible	TLV_TWA_irr	5.0E+01	mg/m3	1hour	Marginal	TEEL2
2.9E+02	mg/m3	1year	Negligible	TLVirr	3.0E+01	mg/m3	1hour	Negligible	TEEL1
Difluoroethane, 1,1-				75-37-6	Dihydro-3-(tetrapropenyl)furan-2,5-dione				26544-38-7
6.8E+04	mg/m3	1hour	Critical	ERPG3	5.0E+02	mg/m3	1hour	Critical	TEEL3
4.1E+04	mg/m3	1hour	Marginal	ERPG2	2.0E+02	mg/m3	1hour	Marginal	TEEL2
2.7E+04	mg/m3	1hour	Negligible	ERPG1	3.0E+01	mg/m3	1hour	Negligible	TEEL1
2.7E+01	mg/m3	1year	Negligible	IRIS_chr	Dihydro-4-methyl furan, 2,3-				34314-83-5
Difluoromethane				75-10-5	1.5E+02	mg/m3	1hour	Critical	TEEL3
7.5E+05	mg/m3	1hour	Critical	TEEL3	3.5E+01	mg/m3	1hour	Marginal	TEEL2
1.0E+05	mg/m3	1hour	Marginal	TEEL2	5.0E+00	mg/m3	1hour	Negligible	TEEL1
6.0E+03	mg/m3	1hour	Negligible	TEEL1	Dihydroxy-1,3-indandione, 2,2-				485-47-2
Difluorotetrachloroethane, 1,2-				76-12-0	3.5E+01	mg/m3	1hour	Critical	TEEL3
1.5E+04	mg/m3	1hour	Critical	TEEL3	6.0E+00	mg/m3	1hour	Marginal	TEEL2
1.5E+04	mg/m3	1hour	Marginal	TEEL2	1.0E+00	mg/m3	1hour	Negligible	TEEL1
1.3E+03	mg/m3	1hour	Negligible	TEEL1	Dihydroxy-2-butene, 1,4-				110-64-5
4.2E+02	mg/m3	8hour	Negligible	TLV_TWA	5.0E+02	mg/m3	1hour	Critical	TEEL3
1.0E+02	mg/m3	14day	Negligible	TLV_TWA	1.0E+02	mg/m3	1hour	Marginal	TEEL2
1.0E+02	mg/m3	1year	Negligible	TLVadj	1.5E+01	mg/m3	1hour	Negligible	TEEL1
Difluorotetrachloroethane, 2,2-				76-11-9	Dihydroxybenzoic acid, 2,4-				89-86-1
8.3E+02	mg/m3	8hour	Negligible	TLV_TWA	3.5E+02	mg/m3	1hour	Critical	TEEL3
2.0E+02	mg/m3	14day	Negligible	TLV_TWA	2.0E+01	mg/m3	1hour	Marginal	TEEL2
2.0E+02	mg/m3	1year	Negligible	TLVadj	3.0E+00	mg/m3	1hour	Negligible	TEEL1
Digitoxin				71-63-6	Dihydroxynaphthalene-2,7-disulfonic acid, disodium salt dihydrate, 4,5-				5808-22-0
2.5E-01	mg/m3	1hour	Critical	TEEL3	2.5E+02	mg/m3	1hour	Critical	TEEL3
1.8E-01	mg/m3	1hour	Marginal	TEEL2	5.0E+01	mg/m3	1hour	Marginal	TEEL2
2.5E-02	mg/m3	1hour	Negligible	TEEL1	3.0E+01	mg/m3	1hour	Negligible	TEEL1
Diglycidyl ether				2238-07-5	Diiodomethane				75-11-6
5.0E+01	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
5.0E+01	mg/m3	1hour	Marginal	TEEL2	5.0E+02	mg/m3	1hour	Marginal	TEEL2
5.0E+01	mg/m3	1hour	Negligible	TEEL1	2.0E+02	mg/m3	1hour	Negligible	TEEL1
5.3E-02	mg/m3	8hour	Negligible	TLV_TWA_irr	Diisoamylamine				544-00-3
1.8E-02	mg/m3	14day	Negligible	TLV_TWA_irr	7.5E+02	mg/m3	1hour	Critical	TEEL3
1.8E-02	mg/m3	1year	Negligible	TLVirr	1.5E+02	mg/m3	1hour	Marginal	TEEL2
Diglycolamine				929-06-6	1.0E+02	mg/m3	1hour	Negligible	TEEL1
5.0E+02	mg/m3	1hour	Critical	TEEL3					
2.5E+02	mg/m3	1hour	Marginal	TEEL2					
3.5E+01	mg/m3	1hour	Negligible	TEEL1					

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Diisobutyl ketone				108-83-8	Diisopropylbenzene, 1,4-				100-18-5
3.0E+03 mg/m3		1hour	Critical	TEEL3	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
3.0E+02 mg/m3		1hour	Marginal	TEEL2	1.5E+02 mg/m3	1hour	1hour	Marginal	TEEL2
3.0E+02 mg/m3		1hour	Negligible	TEEL1	2.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
1.5E+02 mg/m3		8hour	Negligible	TLV_TWA_irr	Diisopropylethylamine, n,n-				7087-68-5
5.0E+01 mg/m3		14day	Negligible	TLV_TWA_irr	1.0E+03 mg/m3	1hour	1hour	Critical	TEEL3
5.0E+01 mg/m3		1year	Negligible	TLVirr	2.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
Di-isobutylaluminum hydride				1191-15-7	3.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
5.0E+03 mg/m3		1hour	Critical	TEEL3	Diisopropylfluorophosphate				55-91-4
5.0E+01 mg/m3		1hour	Marginal	TEEL2	3.6E+00 mg/m3	1hour	1hour	Critical	TEEL3
3.0E+01 mg/m3		1hour	Negligible	TEEL1	3.6E+00 mg/m3	1hour	1hour	Marginal	TEEL2
Diisobutylamine				110-96-3	2.0E+00 mg/m3	1hour	1hour	Negligible	TEEL1
1.0E+02 mg/m3		1hour	Critical	TEEL3	Diisopropylbenzene				25321-09-9
2.0E+01 mg/m3		1hour	Marginal	TEEL2	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
3.0E+00 mg/m3		1hour	Negligible	TEEL1	1.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
Diisooctyl phosphate				27215-10-7	1.5E+01 mg/m3	1hour	1hour	Negligible	TEEL1
5.0E+02 mg/m3		1hour	Critical	TEEL3	Diketene				674-82-8
1.5E+02 mg/m3		1hour	Marginal	TEEL2	6.2E+01 mg/m3	1hour	1hour	Critical	AEGL3_1hr
2.5E+01 mg/m3		1hour	Negligible	TEEL1	2.1E+01 mg/m3	1hour	1hour	Marginal	AEGL2_1hr
Diisopropyl ether				108-20-3	3.4E+00 mg/m3	1hour	1hour	Negligible	ERPG1
6.0E+03 mg/m3		1hour	Critical	TEEL3	Dilauroyl peroxide				105-74-8
1.3E+03 mg/m3		1hour	Marginal	TEEL2	3.5E-01 mg/m3	1hour	1hour	Critical	TEEL3
1.3E+03 mg/m3		1hour	Negligible	TEEL1	6.0E-02 mg/m3	1hour	1hour	Marginal	TEEL2
1.0E+03 mg/m3		8hour	Negligible	TLV_TWA_irr	1.0E-02 mg/m3	1hour	1hour	Negligible	TEEL1
3.6E+02 mg/m3		14day	Negligible	TLV_TWA_irr	Dimefox				115-26-4
2.7E+00 mg/m3		1year	Negligible	PPRTV_sub	1.0E+00 mg/m3	1hour	1hour	Critical	TEEL3
Diisopropyl methylphosphonate				1445-75-6	1.0E+00 mg/m3	1hour	1hour	Marginal	TEEL2
3.5E+02 mg/m3		1hour	Critical	TEEL3	6.0E-01 mg/m3	1hour	1hour	Negligible	TEEL1
4.0E+01 mg/m3		1hour	Marginal	TEEL2	Dimethicone				9016-00-6
6.0E+00 mg/m3		1hour	Negligible	TEEL1	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
Diisopropyl peroxydicarbonate				105-64-6	1.5E+02 mg/m3	1hour	1hour	Marginal	TEEL2
5.0E+02 mg/m3		1hour	Critical	TEEL3	2.5E+01 mg/m3	1hour	1hour	Negligible	TEEL1
1.5E+02 mg/m3		1hour	Marginal	TEEL2	Dimethoate				60-51-5
2.5E+01 mg/m3		1hour	Negligible	TEEL1	3.0E+01 mg/m3	1hour	1hour	Critical	TEEL3
Diisopropylamine				108-18-9	3.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
7.5E+02 mg/m3		1hour	Critical	TEEL3	1.5E+01 mg/m3	1hour	1hour	Negligible	TEEL1
3.0E+02 mg/m3		1hour	Marginal	TEEL2	Dimethoxybenzene, 1,3-				151-10-0
4.0E+01 mg/m3		1hour	Negligible	TEEL1	4.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
2.1E+01 mg/m3		8hour	Negligible	TLV_TWA_irr	7.5E+01 mg/m3	1hour	1hour	Marginal	TEEL2
7.1E+00 mg/m3		14day	Negligible	TLV_TWA_irr	1.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
7.1E+00 mg/m3		1year	Negligible	TLVirr	Dimethoxybenzene, O-				91-16-7
Diisopropylaminoethanol, 2-				96-80-0	4.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
2.5E+02 mg/m3		1hour	Critical	TEEL3	7.5E+01 mg/m3	1hour	1hour	Marginal	TEEL2
5.0E+01 mg/m3		1hour	Marginal	TEEL2	1.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
7.5E+00 mg/m3		1hour	Negligible	TEEL1					

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Dimethoxybenzidine, 3,3'-				119-90-4	Dimethyl disulfide				624-92-0
4.0E+02 mg/m3		1hour	Critical	TEEL3	9.6E+02 mg/m3	1hour	1hour	Critical	ERPG3
2.5E+01 mg/m3		1hour	Marginal	TEEL2	1.9E+02 mg/m3	1hour	1hour	Marginal	ERPG2
4.0E+00 mg/m3		1hour	Negligible	TEEL1	3.9E-02 mg/m3	1hour	1hour	Negligible	ERPG1
Dimethoxybutane, 2,2-				3453-99-4	3.9E-02 mg/m3	8hour	1hour	Negligible	ERPG1*
4.0E+03 mg/m3		1hour	Critical	TEEL3	Dimethyl glyoxime				95-45-4
7.5E+02 mg/m3		1hour	Marginal	TEEL2	2.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
1.0E+02 mg/m3		1hour	Negligible	TEEL1	4.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
Dimethoxydiphenylsilane				6843-66-9	6.0E+00 mg/m3	1hour	1hour	Negligible	TEEL1
1.5E+01 mg/m3		1hour	Critical	TEEL3	Dimethyl hydrogen phosphite				868-85-9
3.5E+00 mg/m3		1hour	Marginal	TEEL2	6.8E+02 mg/m3	1hour	1hour	Critical	AEGL3_1hr
5.0E-01 mg/m3		1hour	Negligible	TEEL1	4.3E+02 mg/m3	1hour	1hour	Marginal	AEGL2_1hr
Dimethoxyethane, 1,2-				110-71-4	6.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
4.0E+03 mg/m3		1hour	Critical	TEEL3	Dimethyl mercury				593-74-8
3.0E+02 mg/m3		1hour	Marginal	TEEL2	2.3E+00 mg/m3	1hour	1hour	Critical	TEEL3
4.0E+01 mg/m3		1hour	Negligible	TEEL1	4.6E-02 mg/m3	1hour	1hour	Marginal	TEEL2
Dimethyl acetamide, N, N-				127-19-5	3.5E-02 mg/m3	1hour	1hour	Negligible	TEEL1
1.0E+03 mg/m3		1hour	Critical	TEEL3	Dimethyl methylphosphonate				756-79-6
1.0E+03 mg/m3		1hour	Marginal	TEEL2	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
2.5E+02 mg/m3		1hour	Negligible	TEEL1	5.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
3.6E+01 mg/m3		8hour	Negligible	TLV_TWA	3.5E+02 mg/m3	1hour	1hour	Negligible	TEEL1
8.7E+00 mg/m3		14day	Negligible	TLV_TWA	Dimethyl phosphorochloridothioate				2524-03-0
8.7E+00 mg/m3		1year	Negligible	TLVadj	1.5E+02 mg/m3	1hour	1hour	Critical	TEEL3
Dimethyl butane, 2,2-				75-83-2	3.2E+01 mg/m3	1hour	1hour	Marginal	TEEL2
7.5E+03 mg/m3		1hour	Critical	TEEL3	4.0E+00 mg/m3	1hour	1hour	Negligible	TEEL1
1.5E+03 mg/m3		1hour	Marginal	TEEL2	Dimethyl phthalate				131-11-3
1.5E+03 mg/m3		1hour	Negligible	TEEL1	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
Dimethyl carbamoly chloride				79-44-7	7.5E+01 mg/m3	1hour	1hour	Marginal	TEEL2
5.0E+02 mg/m3		1hour	Critical	TEEL3	1.5E+01 mg/m3	1hour	1hour	Negligible	TEEL1
1.0E+01 mg/m3		1hour	Marginal	TEEL2	5.0E+00 mg/m3	8hour	1hour	Negligible	TLV_TWA_irr
6.0E-02 mg/m3		1hour	Negligible	TEEL1	1.7E+00 mg/m3	14day	1hour	Negligible	TLV_TWA_irr
2.2E-02 mg/m3		8hour	Negligible	TLV_TWA_irr	1.7E+00 mg/m3	1year	1hour	Negligible	TLVirr
7.5E-03 mg/m3		14day	Negligible	TLV_TWA_irr	Dimethyl succinate				106-65-0
7.5E-03 mg/m3		1year	Negligible	TLVirr	2.0E+03 mg/m3	1hour	1hour	Critical	TEEL3
Dimethyl carbonate				616-38-6	4.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
5.0E+03 mg/m3		1hour	Critical	TEEL3	6.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
1.0E+03 mg/m3		1hour	Marginal	TEEL2	Dimethyl sulfate				77-78-1
1.5E+02 mg/m3		1hour	Negligible	TEEL1	8.3E+00 mg/m3	1hour	1hour	Critical	AEGL3_1hr
Dimethyl cyclopentanol, 1,3-				19550-46-0	6.2E-01 mg/m3	1hour	1hour	Marginal	AEGL2_1hr
2.5E+02 mg/m3		1hour	Critical	TEEL3	1.2E-01 mg/m3	1hour	1hour	Negligible	AEGL1_1hr
5.0E+01 mg/m3		1hour	Marginal	TEEL2	4.5E-02 mg/m3	8hour	1hour	Negligible	AEGL1_8hr
3.0E+01 mg/m3		1hour	Negligible	TEEL1	4.5E-02 mg/m3	14day	1hour	Negligible	AEGL1_8hr*
Dimethyl dichlorosilane				75-78-5	4.5E-02 mg/m3	1year	1hour	Negligible	AEGL1_8hr*
2.8E+02 mg/m3		1hour	Critical	AEGL3_1hr					
6.9E+01 mg/m3		1hour	Marginal	AEGL2_1hr					
4.8E+00 mg/m3		1hour	Negligible	AEGL1_1hr					
4.8E+00 mg/m3		8hour	Negligible	AEGL1_8hr					

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME					CASRN	CHEMICAL NAME					CASRN
MEG	Units	Timeframe	Severity	Basis		MEG	Units	Timeframe	Severity	Basis	
Dimethyl sulfide					75-18-3	Dimethylamine					124-40-3
1.3E+04	mg/m3	1hour	Critical	ERPG3		4.6E+02	mg/m3	1hour	Critical	AEGL3_1hr*	
2.5E+03	mg/m3	1hour	Marginal	ERPG2		1.2E+02	mg/m3	1hour	Marginal	AEGL2_1hr*	
1.3E+00	mg/m3	1hour	Negligible	ERPG1		1.8E+01	mg/m3	1hour	Negligible	AEGL1_1hr*	
1.3E+00	mg/m3	8hour	Negligible	ERPG1*		1.8E+01	mg/m3	8hour	Negligible	AEGL1_8hr*	
1.3E+00	mg/m3	14day	Negligible	ERPG1*		3.2E+00	mg/m3	14day	Negligible	TLV_TWA_irr	
1.3E+00	mg/m3	1year	Negligible	ERPG1*		3.2E+00	mg/m3	1year	Negligible	TLVirr	
Dimethyl sulfone					67-71-0	Dimethylaminoazobenzene, 4-					60-11-7
5.0E+02	mg/m3	1hour	Critical	TEEL3		1.8E+01	mg/m3	10min	Negligible	AEGL1_10min	
4.0E+02	mg/m3	1hour	Marginal	TEEL2		5.9E+01	mg/m3	8hour	Marginal	AEGL2_8h*	
6.0E+01	mg/m3	1hour	Negligible	TEEL1		2.2E+02	mg/m3	8hour	Critical	AEGL3_8h*	
Dimethyl sulfoxide					67-68-5	Dimethylaminobenzaldehyde, p-					100-10-7
6.0E+03	mg/m3	1hour	Critical	TEEL3		2.5E+02	mg/m3	1hour	Critical	TEEL3	
7.5E+02	mg/m3	1hour	Marginal	TEEL2		1.5E+02	mg/m3	1hour	Marginal	TEEL2	
7.5E+02	mg/m3	1hour	Negligible	TEEL1		5.0E+01	mg/m3	1hour	Negligible	TEEL1	
Dimethyl(polysiloxane)					70131-67-8	Dimethylaminobenzaldehyde, p-					100-10-7
5.0E+02	mg/m3	1hour	Critical	TEEL3		2.5E+02	mg/m3	1hour	Critical	TEEL3	
5.0E+02	mg/m3	1hour	Marginal	TEEL2		1.5E+02	mg/m3	1hour	Marginal	TEEL2	
5.0E+02	mg/m3	1hour	Negligible	TEEL1		2.5E+01	mg/m3	1hour	Negligible	TEEL1	
Dimethyl-1,3-dioxolane-4-methanol, 2,2-					100-79-8	Dimethylaminoethanol, 2-					108-01-0
3.0E+03	mg/m3	1hour	Critical	TEEL3		6.0E+02	mg/m3	1hour	Critical	TEEL3	
6.0E+02	mg/m3	1hour	Marginal	TEEL2		6.0E+02	mg/m3	1hour	Marginal	TEEL2	
7.5E+01	mg/m3	1hour	Negligible	TEEL1		1.3E+02	mg/m3	1hour	Negligible	TEEL1	
Dimethyl-2-pentene, (E)-3,4-					4914-92-5	Dimethylammonium-dimethylcarbamate					4137-10-4
1.5E+02	mg/m3	1hour	Critical	TEEL3		1.5E+02	mg/m3	1hour	Critical	TEEL3	
3.5E+01	mg/m3	1hour	Marginal	TEEL2		3.5E+01	mg/m3	1hour	Marginal	TEEL2	
5.0E+00	mg/m3	1hour	Negligible	TEEL1		5.0E+00	mg/m3	1hour	Negligible	TEEL1	
Dimethyl-3-nitrobenzene, 1,2-					83-41-0	Dimethylaniline, N,N-					121-69-7
2.5E+02	mg/m3	1hour	Critical	TEEL3		5.0E+02	mg/m3	1hour	Critical	TEEL3	
5.0E+01	mg/m3	1hour	Marginal	TEEL2		5.0E+01	mg/m3	1hour	Marginal	TEEL2	
3.0E+01	mg/m3	1hour	Negligible	TEEL1		5.0E+01	mg/m3	1hour	Negligible	TEEL1	
Dimethyl-3-pentanone, 2,4-					565-80-0	Dimethylbenzidine, 3,3'-					119-93-7
4.0E+03	mg/m3	1hour	Critical	TEEL3		1.0E+02	mg/m3	1hour	Critical	TEEL3	
5.0E+02	mg/m3	1hour	Marginal	TEEL2		1.7E+01	mg/m3	1hour	Marginal	TLV_TWA*	
7.5E+01	mg/m3	1hour	Negligible	TEEL1		1.7E+01	mg/m3	1hour	Negligible	TLV_TWA*	
Dimethylacrylamide, N,N-					2680-03-7	Dimethylbenzidine, 3,3'-					119-93-7
2.0E+02	mg/m3	1hour	Critical	TEEL3		1.7E+01	mg/m3	8hour	Negligible	TLV_TWA	
1.3E+01	mg/m3	1hour	Marginal	TEEL2		4.2E+00	mg/m3	14day	Negligible	TLV_TWA	
1.5E+00	mg/m3	1hour	Negligible	TEEL1		4.2E+00	mg/m3	1year	Negligible	TLVadj	
						Dimethylchlorosilane					1066-35-9
						3.9E+02	mg/m3	1hour	Critical	AEGL3_1hr	
						8.5E+01	mg/m3	1hour	Marginal	AEGL2_1hr	
						7.0E+00	mg/m3	1hour	Negligible	AEGL1_1hr	
						7.0E+00	mg/m3	8hour	Negligible	AEGL1_8hr	

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Dimethylcyclohexane, cis-1,4-				624-29-3	Dimethylhydrazine, 1,2-				540-73-8
3.5E+02 mg/m3		1hour	Critical	TEEL3	2.7E+01 mg/m3	1hour	1hour	Critical	AEGL3_1hr
6.0E+01 mg/m3		1hour	Marginal	TEEL2	7.4E+00 mg/m3	1hour	1hour	Marginal	AEGL2_1hr
1.0E+01 mg/m3		1hour	Negligible	TEEL1	4.0E+00 mg/m3	1hour	1hour	Negligible	TEEL1
Dimethyldecane, 2,2-				17302-37-3	Dimethylphenol, 2,4-				105-67-9
7.5E+03 mg/m3		1hour	Critical	TEEL3	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
1.5E+03 mg/m3		1hour	Marginal	TEEL2	6.0E+00 mg/m3	1hour	1hour	Marginal	TEEL2
3.5E+02 mg/m3		1hour	Negligible	TEEL1	1.0E+00 mg/m3	1hour	1hour	Negligible	TEEL1
Dimethyldicyclopentadiene				26472-00-4	Dimethylphenol, 2,6-				576-26-1
5.0E+02 mg/m3		1hour	Critical	TEEL3	1.3E+02 mg/m3	1hour	1hour	Critical	TEEL3
2.0E+02 mg/m3		1hour	Marginal	TEEL2	1.5E+01 mg/m3	1hour	1hour	Marginal	TEEL2
2.5E+01 mg/m3		1hour	Negligible	TEEL1	2.0E+00 mg/m3	1hour	1hour	Negligible	TEEL1
Dimethyldimethoxysilane				1112-39-6	Dimethylpolysilane				28883-63-8
5.0E+02 mg/m3		1hour	Critical	TEEL3	2.5E+01 mg/m3	1hour	1hour	Critical	TEEL3
4.0E+02 mg/m3		1hour	Marginal	TEEL2	1.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
6.0E+01 mg/m3		1hour	Negligible	TEEL1	2.5E+00 mg/m3	1hour	1hour	Negligible	TEEL1
Dimethylethoxysilane				14857-34-2	Dimethyl-p-phenylenediamine, N,N-				99-98-9
2.1E+00 mg/m3		8hour	Negligible	TLV_TWA_irr	1.0E+00 mg/m3	1hour	1hour	Critical	TEEL3
7.3E-01 mg/m3		14day	Negligible	TLV_TWA_irr	1.3E-01 mg/m3	1hour	1hour	Marginal	TEEL2
7.3E-01 mg/m3		1year	Negligible	TLVirr	7.5E-02 mg/m3	1hour	1hour	Negligible	TEEL1
Dimethylethyl hydroperoxide				75-91-2	Dimethylpyridine, 2,4-				108-47-4
2.0E+02 mg/m3		1hour	Critical	TEEL3	7.5E+01 mg/m3	1hour	1hour	Critical	TEEL3
6.0E+01 mg/m3		1hour	Marginal	TEEL2	1.5E+01 mg/m3	1hour	1hour	Marginal	TEEL2
1.0E+01 mg/m3		1hour	Negligible	TEEL1	2.5E+00 mg/m3	1hour	1hour	Negligible	TEEL1
Dimethylformamide				68-12-2	Dimethyltetrahydrofuran, 2,5-				1003-38-9
5.4E+02 mg/m3		1hour	Critical	AEGL3_1hr	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
2.7E+02 mg/m3		1hour	Marginal	AEGL2_1hr	3.5E+02 mg/m3	1hour	1hour	Marginal	TEEL2
6.0E+00 mg/m3		1hour	Negligible	ERPG1	5.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
6.0E+00 mg/m3		8hour	Negligible	ERPG1*	Dimethypropyl acetate, 1,1-				625-16-1
6.0E+00 mg/m3		14day	Negligible	ERPG1*	2.7E+02 mg/m3	8hour	8hour	Negligible	TLV_TWA_irr
4.8E-02 mg/m3		1year	Negligible	PPRTV_sub	9.1E+01 mg/m3	14day	14day	Negligible	TLV_TWA_irr
Dimethylheptane, 2,2-				1071-26-7	9.1E+01 mg/m3	1year	1year	Negligible	TLVirr
7.5E+03 mg/m3		1hour	Critical	TEEL3	Dimetilan				644-64-4
1.5E+03 mg/m3		1hour	Marginal	TEEL2	2.5E+01 mg/m3	1hour	1hour	Critical	TEEL3
3.5E+02 mg/m3		1hour	Negligible	TEEL1	2.5E+01 mg/m3	1hour	1hour	Marginal	TEEL2
Dimethylhexane, 3,3-				563-16-6	1.5E+01 mg/m3	1hour	1hour	Negligible	TEEL1
7.5E+03 mg/m3		1hour	Critical	TEEL3	Di-N-amylamine				2050-92-2
1.5E+03 mg/m3		1hour	Marginal	TEEL2	4.0E+01 mg/m3	1hour	1hour	Critical	TEEL3
3.5E+02 mg/m3		1hour	Negligible	TEEL1	7.5E+00 mg/m3	1hour	1hour	Marginal	TEEL2
Dimethylhydrazine, 1,1-				57-14-7	1.3E+00 mg/m3	1hour	1hour	Negligible	TEEL1
2.7E+01 mg/m3		1hour	Critical	AEGL3_1hr	Di-n-butylamine				111-92-2
7.4E+00 mg/m3		1hour	Marginal	AEGL2_1hr	2.5E+02 mg/m3	1hour	1hour	Critical	TEEL3
1.3E+00 mg/m3		1hour	Negligible	TEEL1	2.5E+01 mg/m3	1hour	1hour	Marginal	TEEL2
2.5E-02 mg/m3		8hour	Negligible	TLV_TWA_irr	3.5E+00 mg/m3	1hour	1hour	Negligible	TEEL1
8.4E-03 mg/m3		14day	Negligible	TLV_TWA_irr					
5.5E-06 mg/m3		1year	Negligible	PPRTV_sub					

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Dinitolmide				148-01-6	Dinitrophenol				25550-58-7
1.0E+00	mg/m3	8hour	Negligible	TLV_TWA	4.0E+00	mg/m3	1hour	Critical	TEEL3
2.4E-01	mg/m3	14day	Negligible	TLV_TWA	7.5E-01	mg/m3	1hour	Marginal	TEEL2
2.4E-01	mg/m3	1year	Negligible	TLVadj	1.0E-01	mg/m3	1hour	Negligible	TEEL1
Dinitraniline orange				3468-63-1	Dinitrophenol, 2,3-				66-56-8
2.5E+02	mg/m3	1hour	Critical	TEEL3	7.5E+01	mg/m3	1hour	Critical	TEEL3
5.0E+01	mg/m3	1hour	Marginal	TEEL2	1.5E+01	mg/m3	1hour	Marginal	TEEL2
3.0E+01	mg/m3	1hour	Negligible	TEEL1	2.0E+00	mg/m3	1hour	Negligible	TEEL1
Dinitroaniline, 2,4-				97-02-9	Dinitrophenol, 2,4-				51-28-5
1.3E+01	mg/m3	1hour	Critical	TEEL3	3.0E+01	mg/m3	1hour	Critical	TEEL3
7.5E-01	mg/m3	1hour	Marginal	TEEL2	2.5E+01	mg/m3	1hour	Marginal	TEEL2
1.0E-01	mg/m3	1hour	Negligible	TEEL1	3.5E+00	mg/m3	1hour	Negligible	TEEL1
Dinitrobenzene (mixed isomers)				0-323*	Dinitrophenol, 2,6-				573-56-8
1.0E+00	mg/m3	8hour	Negligible	TLV_TWA	1.5E+01	mg/m3	1hour	Critical	TEEL3
2.5E-01	mg/m3	14day	Negligible	TLV_TWA	3.0E+00	mg/m3	1hour	Marginal	TEEL2
2.5E-01	mg/m3	1year	Negligible	TLVadj	4.0E-01	mg/m3	1hour	Negligible	TEEL1
Dinitrobenzene, 1,2-				528-29-0	Dinitrosopiperazine				140-79-4
5.0E+01	mg/m3	1hour	Critical	TEEL3	6.0E+01	mg/m3	1hour	Critical	TEEL3
5.0E+00	mg/m3	1hour	Marginal	TEEL2	1.0E+01	mg/m3	1hour	Marginal	TEEL2
3.0E+00	mg/m3	1hour	Negligible	TEEL1	1.5E+00	mg/m3	1hour	Negligible	TEEL1
1.0E+00	mg/m3	8hour	Negligible	TLV_TWA	Dinitrotoluene				25321-14-6
2.5E-01	mg/m3	14day	Negligible	TLV_TWA	5.0E+01	mg/m3	1hour	Critical	TEEL3
2.5E-01	mg/m3	1year	Negligible	TLVadj	1.3E+01	mg/m3	1hour	Marginal	TEEL2
Dinitrobenzene, 1,3-				99-65-0	6.0E-01	mg/m3	1hour	Negligible	TEEL1
5.0E+01	mg/m3	1hour	Critical	TEEL3	2.0E-01	mg/m3	8hour	Negligible	TLV_TWA
2.5E+01	mg/m3	1hour	Marginal	TEEL2	4.9E-02	mg/m3	14day	Negligible	TLV_TWA
3.0E+00	mg/m3	1hour	Negligible	TEEL1	4.9E-02	mg/m3	1year	Negligible	TLVadj
1.0E+00	mg/m3	8hour	Negligible	TLV_TWA	Dinitrotoluene, 2,4-				121-14-2
2.5E-01	mg/m3	14day	Negligible	TLV_TWA	5.0E+01	mg/m3	1hour	Critical	TEEL3
2.5E-01	mg/m3	1year	Negligible	TLVadj	5.0E+01	mg/m3	1hour	Marginal	TEEL2
Dinitrobenzene, 1,4-				100-25-4	6.0E-01	mg/m3	1hour	Negligible	TEEL1
5.0E+01	mg/m3	1hour	Critical	TEEL3	Dinitrotoluene, 2,6-				606-20-2
5.0E+00	mg/m3	1hour	Marginal	TEEL2	5.0E+01	mg/m3	1hour	Critical	TEEL3
3.0E+00	mg/m3	1hour	Negligible	TEEL1	6.0E+00	mg/m3	1hour	Marginal	TEEL2
1.0E+00	mg/m3	8hour	Negligible	TLV_TWA	6.0E-01	mg/m3	1hour	Negligible	TEEL1
2.5E-01	mg/m3	14day	Negligible	TLV_TWA	Dinitrotoluene, 3,4-				610-39-9
2.5E-01	mg/m3	1year	Negligible	TLVadj	5.0E+01	mg/m3	1hour	Critical	TEEL3
Dinitro-o-cresol, 4,6-				534-52-1	1.0E+00	mg/m3	1hour	Marginal	TEEL2
5.0E+00	mg/m3	1hour	Critical	TEEL3	6.0E-01	mg/m3	1hour	Negligible	TEEL1
5.0E-01	mg/m3	1hour	Marginal	TEEL2	Di-n-octadecyl phosphite				19047-85-9
2.0E-01	mg/m3	1hour	Negligible	TEEL1	2.0E+00	mg/m3	1hour	Critical	TEEL3
2.0E-01	mg/m3	8hour	Negligible	TLV_TWA	4.0E-01	mg/m3	1hour	Marginal	TEEL2
4.9E-02	mg/m3	14day	Negligible	TLV_TWA	6.0E-02	mg/m3	1hour	Negligible	TEEL1
4.9E-02	mg/m3	1year	Negligible	TLVadj	Di-n-octyl phthalate				117-84-0
					5.0E+02	mg/m3	1hour	Critical	TEEL3
					4.0E+02	mg/m3	1hour	Marginal	TEEL2
					5.0E+01	mg/m3	1hour	Negligible	TEEL1

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Dinoseb				88-85-7	Diphacinone				82-66-6
1.0E+01	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
4.5E+00	mg/m3	1hour	Marginal	TEEL2	9.0E-01	mg/m3	1hour	Marginal	TEEL2
2.5E+00	mg/m3	1hour	Negligible	TEEL1	5.0E-01	mg/m3	1hour	Negligible	TEEL1
Dinoterb				1420-07-1	Diphenyl mercury				587-85-9
2.5E+01	mg/m3	1hour	Critical	TEEL3	1.8E+01	mg/m3	1hour	Critical	TEEL3
2.5E+01	mg/m3	1hour	Marginal	TEEL2	1.8E-01	mg/m3	1hour	Marginal	TEEL2
1.5E+01	mg/m3	1hour	Negligible	TEEL1	1.8E-01	mg/m3	1hour	Negligible	TEEL1
Diocetyl sebacate				122-62-3	Diphenyl o-cresol phosphate				26444-49-5
5.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
1.5E+02	mg/m3	1hour	Marginal	TEEL2	5.0E+01	mg/m3	1hour	Marginal	TEEL2
2.0E+01	mg/m3	1hour	Negligible	TEEL1	7.5E+00	mg/m3	1hour	Negligible	TEEL1
Diocetyl sodium sulfosuccinate				577-11-7	Diphenylamine				122-39-4
5.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
1.5E+02	mg/m3	1hour	Marginal	TEEL2	5.0E+02	mg/m3	1hour	Marginal	TEEL2
2.0E+01	mg/m3	1hour	Negligible	TEEL1	3.0E+01	mg/m3	1hour	Negligible	TEEL1
Dioxane, 1,4-				123-91-1	Diphenylboronic acid				524-95-8
2.7E+03	mg/m3	1hour	Critical	AEGL3_1hr	5.0E+01	mg/m3	1hour	Critical	TEEL3
1.2E+03	mg/m3	1hour	Marginal	AEGL2_1hr	1.0E+01	mg/m3	1hour	Marginal	TEEL2
6.1E+01	mg/m3	1hour	Negligible	AEGL1_1hr	1.3E+00	mg/m3	1hour	Negligible	TEEL1
6.1E+01	mg/m3	8hour	Negligible	AEGL1_8hr	Diphenyldichloroarsine				712-48-1
4.9E+00	mg/m3	14day	Negligible	MRLi_acute	1.2E+00	mg/m3	1hour	Critical	AEGL3_1hr
2.5E+00	mg/m3	1year	Negligible	MRL_inter	3.9E-01	mg/m3	1hour	Marginal	AEGL2_1hr
Dioxathion				78-34-2	Diphenyldichlorosilane				80-10-4
1.5E+02	mg/m3	1hour	Critical	TEEL3	5.2E+02	mg/m3	1hour	Critical	AEGL3_1hr
3.4E+00	mg/m3	1hour	Marginal	TEEL2	1.1E+02	mg/m3	1hour	Marginal	AEGL2_1hr
3.0E-01	mg/m3	1hour	Negligible	TEEL1	9.3E+00	mg/m3	1hour	Negligible	AEGL1_1hr
1.0E-01	mg/m3	8hour	Negligible	TLV_TWA	9.3E+00	mg/m3	8hour	Negligible	AEGL1_8hr
2.4E-02	mg/m3	14day	Negligible	TLV_TWA	Diphenylguanidine, 1,3-				102-06-7
2.4E-02	mg/m3	1year	Negligible	TLVadj	1.3E+02	mg/m3	1hour	Critical	TEEL3
Dioxolane				646-06-0	Diphenylhydrazine, 1,2-				122-66-7
7.5E+03	mg/m3	1hour	Critical	TEEL3	1.3E+02	mg/m3	1hour	Critical	TEEL3
2.1E+02	mg/m3	1hour	Marginal	TEEL2	4.0E+00	mg/m3	1hour	Marginal	TEEL2
1.5E+02	mg/m3	1hour	Negligible	TEEL1	6.0E-01	mg/m3	1hour	Negligible	TEEL1
6.1E+01	mg/m3	8hour	Negligible	TLV_TWA	2.2E-02	mg/m3	1year	Negligible	IRIS
1.5E+01	mg/m3	14day	Negligible	TLV_TWA	Diphenylmethane				101-81-5
1.5E+01	mg/m3	1year	Negligible	TLVadj	5.0E+02	mg/m3	1hour	Critical	TEEL3
Dipentaerythritol				126-58-9	Diphenylmethane				101-81-5
2.5E+02	mg/m3	1hour	Critical	TEEL3	2.0E+02	mg/m3	1hour	Marginal	TEEL2
5.0E+01	mg/m3	1hour	Marginal	TEEL2	2.5E+01	mg/m3	1hour	Negligible	TEEL1
3.0E+01	mg/m3	1hour	Negligible	TEEL1	Dipentyl pentylphosphonate				6418-56-0
Dipentyl pentylphosphonate				6418-56-0	Dipentyl pentylphosphonate				6418-56-0
5.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
5.0E+02	mg/m3	1hour	Marginal	TEEL2	5.0E+02	mg/m3	1hour	Marginal	TEEL2
7.5E+01	mg/m3	1hour	Negligible	TEEL1	7.5E+01	mg/m3	1hour	Negligible	TEEL1

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME					CASRN	CHEMICAL NAME					CASRN
MEG	Units	Timeframe	Severity	Basis		MEG	Units	Timeframe	Severity	Basis	
Diphenyloxazole, 2,5-					92-71-7	Direct black 38					1937-37-7
3.0E+02 mg/m3		1hour	Critical	TEEL3		5.0E+02 mg/m3	1hour	Critical		TEEL3	
6.0E+01 mg/m3		1hour	Marginal	TEEL2		5.0E+02 mg/m3	1hour	Marginal		TEEL2	
7.5E+00 mg/m3		1hour	Negligible	TEEL1		7.5E+01 mg/m3	1hour	Negligible		TEEL1	
Dipicolinic acid					499-83-2	Disodium (2-ethylhexyl)phosphate					18541-72-5
2.5E+02 mg/m3		1hour	Critical	TEEL3		2.0E+00 mg/m3	1hour	Critical		TEEL3	
5.0E+01 mg/m3		1hour	Marginal	TEEL2		4.0E-01 mg/m3	1hour	Marginal		TEEL2	
3.0E+01 mg/m3		1hour	Negligible	TEEL1		6.0E-02 mg/m3	1hour	Negligible		TEEL1	
Dipropyl ketone					123-19-3	Disodium 3,6-endoxohexahydrophthalate					129-67-9
1.5E+03 mg/m3		1hour	Critical	TEEL3		2.0E+01 mg/m3	1hour	Critical		TEEL3	
1.5E+03 mg/m3		1hour	Marginal	TEEL2		2.0E+01 mg/m3	1hour	Marginal		TEEL2	
1.5E+03 mg/m3		1hour	Negligible	TEEL1		3.0E+00 mg/m3	1hour	Negligible		TEEL1	
2.3E+02 mg/m3		8hour	Negligible	TLV_TWA_irr		Disodium ethylenediaminediacetate					38011-25-5
8.0E+01 mg/m3		14day	Negligible	TLV_TWA_irr		4.0E+02 mg/m3	1hour	Critical		TEEL3	
8.0E+01 mg/m3		1year	Negligible	TLVirr		7.5E+01 mg/m3	1hour	Marginal		TEEL2	
Dipropylamine					142-84-7	Disodium ethylenediaminetetraacetate dihydrate					6381-92-6
5.0E+02 mg/m3		1hour	Critical	TEEL3		2.5E+02 mg/m3	1hour	Critical		TEEL3	
4.0E+00 mg/m3		1hour	Marginal	TEEL2		5.0E+01 mg/m3	1hour	Marginal		TEEL2	
6.0E-01 mg/m3		1hour	Negligible	TEEL1		3.0E+01 mg/m3	1hour	Negligible		TEEL1	
Dipropylene glycol monomethyl ether					34590-94-8	Disodium pyrophosphate					7758-16-9
3.5E+03 mg/m3		1hour	Critical	TEEL3		5.0E+02 mg/m3	1hour	Critical		TEEL3	
1.5E+03 mg/m3		1hour	Marginal	TEEL2		2.0E+02 mg/m3	1hour	Marginal		TEEL2	
7.5E+02 mg/m3		1hour	Negligible	TEEL1		3.0E+01 mg/m3	1hour	Negligible		TEEL1	
6.1E+02 mg/m3		8hour	Negligible	TLV_TWA_irr		Distillates, petroleum, solvent-refined light naphthenic					64741-97-5
2.1E+02 mg/m3		14day	Negligible	TLV_TWA_irr		5.0E+02 mg/m3	1hour	Critical		TEEL3	
2.1E+02 mg/m3		1year	Negligible	TLVirr		2.5E+01 mg/m3	1hour	Marginal		TEEL2	
Diquat					2764-72-9	Disulfiram					97-77-8
1.0E-01 mg/m3		8hour	Negligible	TLV_TWA		1.3E+02 mg/m3	1hour	Critical		TEEL3	
1.0E-01 mg/m3		8hour	Negligible	TLV_TWA_irr		1.0E+01 mg/m3	1hour	Marginal		TEEL2	
2.4E-02 mg/m3		14day	Negligible	TLV_TWA		6.0E+00 mg/m3	1hour	Negligible		TEEL1	
3.4E-02 mg/m3		14day	Negligible	TLV_TWA_irr		2.0E+00 mg/m3	8hour	Negligible		TLV_TWA	
2.4E-02 mg/m3		1year	Negligible	TLVadj		4.9E-01 mg/m3	14day	Negligible		TLV_TWA	
3.4E-02 mg/m3		1year	Negligible	TLVirr		4.9E-01 mg/m3	1year	Negligible		TLVadj	
Diquat					85-00-7	Disulfoton					298-04-4
1.0E-01 mg/m3		8hour	Negligible	TLV_TWA		7.5E+01 mg/m3	1hour	Critical		TEEL3	
1.0E-01 mg/m3		8hour	Negligible	TLV_TWA_irr		2.0E+00 mg/m3	1hour	Marginal		TEEL2	
2.4E-02 mg/m3		14day	Negligible	TLV_TWA		1.5E-01 mg/m3	1hour	Negligible		TEEL1	
3.4E-02 mg/m3		14day	Negligible	TLV_TWA_irr		5.0E-02 mg/m3	8hour	Negligible		TLV_TWA	
2.4E-02 mg/m3		1year	Negligible	TLVadj		4.1E-03 mg/m3	14day	Negligible		MRLi_acute	
3.4E-02 mg/m3		1year	Negligible	TLVirr		1.4E-04 mg/m3	1year	Negligible		MRL_inter	
Diquat dibromide monohydrate					6385-62-2						
1.0E-01 mg/m3		8hour	Negligible	TLV_TWA							
2.4E-02 mg/m3		14day	Negligible	TLV_TWA							
2.4E-02 mg/m3		1year	Negligible	TLVadj							

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Disulfur dichloride				10025-67-9	Dodecamethylcyclohexasiloxane				540-97-6
8.3E+01	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
3.5E+01	mg/m3	1hour	Marginal	TEEL2	5.0E+01	mg/m3	1hour	Marginal	TEEL2
2.9E+00	mg/m3	1hour	Negligible	TEEL1	3.0E+01	mg/m3	1hour	Negligible	TEEL1
Di-tert-butyl dicarbonate				24424-99-5	Dodecane				112-40-3
4.0E+01	mg/m3	1hour	Critical	TEEL3	1.5E+02	mg/m3	1hour	Critical	TEEL3
7.5E+00	mg/m3	1hour	Marginal	TEEL2	2.5E+00	mg/m3	1hour	Marginal	TEEL2
1.3E+00	mg/m3	1hour	Negligible	TEEL1	3.5E-01	mg/m3	1hour	Negligible	TEEL1
Di-tert-butyl-hydroquinone, 2,5-				88-58-4	Dodecenylsuccinic anhydride				25377-73-5
4.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
2.5E+02	mg/m3	1hour	Marginal	TEEL2	1.0E+02	mg/m3	1hour	Marginal	TEEL2
4.0E+01	mg/m3	1hour	Negligible	TEEL1	1.5E+01	mg/m3	1hour	Negligible	TEEL1
Dithiazanine iodide				514-73-8	Dodecyl alcohol				112-53-8
2.0E+01	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
2.0E+01	mg/m3	1hour	Marginal	TEEL2	7.5E+00	mg/m3	1hour	Marginal	TEEL2
1.3E+01	mg/m3	1hour	Negligible	TEEL1	1.0E+00	mg/m3	1hour	Negligible	TEEL1
Dithiobiuret				541-53-7	Dodecyl mercaptan				112-55-0
5.0E+00	mg/m3	1hour	Critical	TEEL3	2.0E+01	mg/m3	1hour	Critical	TEEL3
5.0E+00	mg/m3	1hour	Marginal	TEEL2	4.0E+00	mg/m3	1hour	Marginal	TEEL2
3.0E+00	mg/m3	1hour	Negligible	TEEL1	8.3E-01	mg/m3	1hour	Negligible	TLV_TWA_irr*
Dithiodiethanol, 2,2-				1892-29-1	Dodecyl methacrylate				142-90-5
7.5E+01	mg/m3	1hour	Critical	TEEL3	5.0E+03	mg/m3	1hour	Critical	TEEL3
1.5E+01	mg/m3	1hour	Marginal	TEEL2	1.0E+03	mg/m3	1hour	Marginal	TEEL2
2.0E+00	mg/m3	1hour	Negligible	TEEL1	1.5E+02	mg/m3	1hour	Negligible	TEEL1
Dithioerythritol, 1,4-				6892-68-8	Dodecylbenzene sulfonic acid				27176-87-0
1.3E+02	mg/m3	1hour	Critical	TEEL3	2.5E+02	mg/m3	1hour	Critical	TEEL3
2.5E+01	mg/m3	1hour	Marginal	TEEL2	5.0E+01	mg/m3	1hour	Marginal	TEEL2
4.0E+00	mg/m3	1hour	Negligible	TEEL1	7.5E+00	mg/m3	1hour	Negligible	TEEL1
Diurethane dimethacrylate				72869-86-4	Dodecylphenol, 4-				27193-86-8
5.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
5.0E+02	mg/m3	1hour	Marginal	TEEL2	1.5E+02	mg/m3	1hour	Marginal	TEEL2
2.5E+02	mg/m3	1hour	Negligible	TEEL1	2.5E+01	mg/m3	1hour	Negligible	TEEL1
Diuron				330-54-1	Dodecyltrichlorosilane				4484-72-4
1.0E+01	mg/m3	8hour	Negligible	TLV_TWA_irr	4.1E+02	mg/m3	1hour	Critical	AEGL3_1hr
3.4E+00	mg/m3	14day	Negligible	TLV_TWA_irr	9.1E+01	mg/m3	1hour	Marginal	AEGL2_1hr
3.4E+00	mg/m3	1year	Negligible	TLVirr	7.5E+00	mg/m3	1hour	Negligible	AEGL1_1hr
Divinyl benzene				1321-74-0	Dowex 50WX4				11113-61-4
2.0E+03	mg/m3	1hour	Critical	TEEL3	2.5E+02	mg/m3	1hour	Critical	TEEL3
4.0E+02	mg/m3	1hour	Marginal	TEEL2	5.0E+01	mg/m3	1hour	Marginal	TEEL2
6.0E+01	mg/m3	1hour	Negligible	TEEL1	3.0E+01	mg/m3	1hour	Negligible	TEEL1
5.3E+01	mg/m3	8hour	Negligible	TLV_TWA_irr					
1.8E+01	mg/m3	14day	Negligible	TLV_TWA_irr					
1.8E+01	mg/m3	1year	Negligible	TLVirr					
Divinyl benzene, m-				108-57-6					
2.0E+03	mg/m3	1hour	Critical	TEEL3					
4.0E+02	mg/m3	1hour	Marginal	TEEL2					
5.0E+01	mg/m3	1hour	Negligible	TEEL1					

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Dowex 50X8 ion-exchange resin				11119-67-8	Epibatidine				140111-52-0
2.5E+02 mg/m3		1hour	Critical	TEEL3	2.5E-02 mg/m3	1hour	1hour	Critical	TEEL3
5.0E+01 mg/m3		1hour	Marginal	TEEL2	2.5E-02 mg/m3	1hour	1hour	Marginal	TEEL2
3.0E+01 mg/m3		1hour	Negligible	TEEL1	4.0E-03 mg/m3	1hour	1hour	Negligible	TEEL1
Dysprosium				7429-91-6	Epibromohydrin				3132-64-7
2.5E+02 mg/m3		1hour	Critical	TEEL3	1.3E+02 mg/m3	1hour	1hour	Critical	TEEL3
5.0E+01 mg/m3		1hour	Marginal	TEEL2	2.5E+01 mg/m3	1hour	1hour	Marginal	TEEL2
3.0E+01 mg/m3		1hour	Negligible	TEEL1	3.5E+00 mg/m3	1hour	1hour	Negligible	TEEL1
Dysprosium oxide				1308-87-8	Epichlorohydrin				106-89-8
5.0E+02 mg/m3		1hour	Critical	TEEL3	2.7E+02 mg/m3	1hour	1hour	Critical	AEGL3_1hr
4.0E+02 mg/m3		1hour	Marginal	TEEL2	9.1E+01 mg/m3	1hour	1hour	Marginal	AEGL2_1hr
6.0E+01 mg/m3		1hour	Negligible	TEEL1	2.2E+01 mg/m3	1hour	1hour	Negligible	AEGL1_1hr
EDTA, dipotassium salt, dihydrate				2001-94-7	2.2E+01 mg/m3	8hour	8hour	Negligible	AEGL1_8hr
2.0E+02 mg/m3		1hour	Critical	TEEL3	6.5E-01 mg/m3	14day	14day	Negligible	TLV_TWA_irr
4.0E+01 mg/m3		1hour	Marginal	TEEL2	6.8E-03 mg/m3	1year	1year	Negligible	PPRTV_sub
5.0E+00 mg/m3		1hour	Negligible	TEEL1	Epinephrine				51-43-4
Emetine dihydrochloride				316-42-7	2.5E-03 mg/m3	1hour	1hour	Critical	TEEL3
4.0E-01 mg/m3		1hour	Critical	TEEL3	2.5E-03 mg/m3	1hour	1hour	Marginal	TEEL2
4.0E-01 mg/m3		1hour	Marginal	TEEL2	2.5E-03 mg/m3	1hour	1hour	Negligible	TEEL1
1.5E-01 mg/m3		1hour	Negligible	TEEL1	Epon 1001 resin				25068-38-6
EMPA				1832-53-7	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
2.1E-02 mg/m3		1year	Negligible	Munro	5.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
Endosulfan				115-29-7	3.5E+02 mg/m3	1hour	1hour	Negligible	TEEL1
3.5E+01 mg/m3		1hour	Critical	TEEL3	Epoxy resin				25928-94-3
8.0E-01 mg/m3		1hour	Marginal	TEEL2	6.0E+00 mg/m3	1hour	1hour	Critical	TEEL3
3.0E-01 mg/m3		1hour	Negligible	TEEL1	1.3E+00 mg/m3	1hour	1hour	Marginal	TEEL2
1.0E-01 mg/m3		8hour	Negligible	TLV_TWA	2.0E-01 mg/m3	1hour	1hour	Negligible	TEEL1
2.4E-02 mg/m3		14day	Negligible	TLV_TWA	Epoxybutane, 1,2-				106-88-7
2.4E-02 mg/m3		1year	Negligible	TLVadj	9.7E+02 mg/m3	1hour	1hour	Critical	AEGL3_1hr
Endothion				2778-04-3	4.1E+02 mg/m3	1hour	1hour	Marginal	AEGL2_1hr
1.7E+01 mg/m3		1hour	Critical	TEEL3	2.1E+02 mg/m3	1hour	1hour	Negligible	AEGL1_1hr
1.7E+01 mg/m3		1hour	Marginal	TEEL2	2.1E+02 mg/m3	8hour	8hour	Negligible	AEGL1_8hr
1.0E+01 mg/m3		1hour	Negligible	TEEL1	1.4E-02 mg/m3	1year	1year	Negligible	IRIS_chr
Endrin				72-20-8	Erbium (III) oxide				12061-16-4
2.0E+00 mg/m3		1hour	Critical	TEEL3	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
2.0E+00 mg/m3		1hour	Marginal	TEEL2	4.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
3.0E-01 mg/m3		1hour	Negligible	TEEL1	6.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
1.0E-01 mg/m3		8hour	Negligible	TLV_TWA	Erbium nitrate pentahydrate				10031-51-3
2.4E-02 mg/m3		14day	Negligible	TLV_TWA	2.5E+02 mg/m3	1hour	1hour	Critical	TEEL3
2.4E-02 mg/m3		1year	Negligible	TLVadj	5.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
Enflurane				13838-16-9	3.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
5.7E+02 mg/m3		8hour	Negligible	TLV_TWA	Ergocalciferol				50-14-6
1.4E+02 mg/m3		14day	Negligible	TLV_TWA	4.0E+01 mg/m3	1hour	1hour	Critical	TEEL3
1.4E+02 mg/m3		1year	Negligible	TLVadj	4.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
					2.5E+01 mg/m3	1hour	1hour	Negligible	TEEL1

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Ergotamine tartrate				379-79-3	Ethion				563-12-2
6.0E+01	mg/m3	1hour	Critical	TEEL3	3.5E+02	mg/m3	1hour	Critical	TEEL3
1.0E+01	mg/m3	1hour	Marginal	TEEL2	1.3E+01	mg/m3	1hour	Marginal	TEEL2
6.0E+00	mg/m3	1hour	Negligible	TEEL1	1.5E-01	mg/m3	1hour	Negligible	TEEL1
Ethane				74-84-0	5.0E-02 mg/m3 8hour Negligible TLV_TWA				
3.0E+04	mg/m3	1hour	Critical	TEEL3	1.2E-02	mg/m3	14day	Negligible	TLV_TWA
6.0E+03	mg/m3	1hour	Marginal	TEEL2	1.2E-02	mg/m3	1year	Negligible	TLVadj
3.5E+03	mg/m3	1hour	Negligible	TEEL1	Ethoprop				13194-48-4
Ethanedioic acid, dimethyl ester				553-90-2	2.6E+01 mg/m3 1hour Critical TEEL3				
4.0E+02	mg/m3	1hour	Critical	TEEL3	2.6E+01	mg/m3	1hour	Marginal	TEEL2
7.5E+01	mg/m3	1hour	Marginal	TEEL2	1.5E+01	mg/m3	1hour	Negligible	TEEL1
1.3E+01	mg/m3	1hour	Negligible	TEEL1	Ethoxyethanol, 2-				110-80-5
Ethanedithiol, 1,2-				540-63-6	1.5E+03 mg/m3 1hour Critical TEEL3				
1.5E+02	mg/m3	1hour	Critical	TEEL3	7.5E+01	mg/m3	1hour	Marginal	TEEL2
3.0E+01	mg/m3	1hour	Marginal	TEEL2	5.0E+01	mg/m3	1hour	Negligible	TEEL1
4.0E+00	mg/m3	1hour	Negligible	TEEL1	1.8E+01	mg/m3	8hour	Negligible	TLV_TWA
EthanediyI-bis, 1,1'-(1,2-(oxy))bisbenzene				104-66-5	4.5E+00 mg/m3 14day Negligible TLV_TWA				
2.5E+02	mg/m3	1hour	Critical	TEEL3	1.4E+00	mg/m3	1year	Negligible	IRIS_sub
5.0E+01	mg/m3	1hour	Marginal	TEEL2	Ethoxyethyl acetate, 2-				111-15-9
3.0E+01	mg/m3	1hour	Negligible	TEEL1	2.5E+03 mg/m3 1hour Critical TEEL3				
Ethanol				64-17-5	2.5E+03 mg/m3 1hour Marginal TEEL2				
6.0E+03	mg/m3	1hour	Critical	TEEL3	4.0E+02	mg/m3	1hour	Negligible	TEEL1
1.5E+03	mg/m3	1hour	Marginal	TEEL2	2.7E+01	mg/m3	8hour	Negligible	TLV_TWA
1.5E+03	mg/m3	1hour	Negligible	TEEL1	6.6E+00	mg/m3	14day	Negligible	TLV_TWA
Ethanol, titanium(4+) salt				3087-36-3	2.1E-01 mg/m3 1year Negligible HEAST_sub				
2.5E+02	mg/m3	1hour	Critical	TEEL3	Ethoxyethyl methacrylate, 2-				2370-63-0
5.0E+01	mg/m3	1hour	Marginal	TEEL2	4.0E+02 mg/m3 1hour Critical TEEL3				
3.0E+01	mg/m3	1hour	Negligible	TEEL1	7.5E+01 mg/m3 1hour Marginal TEEL2				
Ethanolamine				141-43-5	1.3E+01 mg/m3 1hour Negligible TEEL1				
7.5E+01	mg/m3	1hour	Critical	TEEL3	Ethoxylated alcohols, C16-18				68439-49-6
7.5E+01	mg/m3	1hour	Marginal	TEEL2	5.0E+02 mg/m3 1hour Critical TEEL3				
1.5E+01	mg/m3	1hour	Negligible	TEEL1	1.0E+02 mg/m3 1hour Marginal TEEL2				
7.5E+00	mg/m3	8hour	Negligible	TLV_TWA_irr	1.5E+01 mg/m3 1hour Negligible TEEL1				
1.2E+00	mg/m3	14day	Negligible	CEGL	Ethoxylated nonylphenol				9016-45-9
1.2E+00	mg/m3	1year	Negligible	CEGL*	5.0E+02 mg/m3 1hour Critical TEEL3				
Ethenylsilanetriol triacetate				4130-08-9	1.0E+02 mg/m3 1hour Marginal TEEL2				
2.5E+02	mg/m3	1hour	Critical	TEEL3	1.5E+01 mg/m3 1hour Negligible TEEL1				
5.0E+01	mg/m3	1hour	Marginal	TEEL2	Ethyl 3-ethoxypropionate				763-69-9
3.0E+01	mg/m3	1hour	Negligible	TEEL1	5.0E+02 mg/m3 1hour Critical TEEL3				
Ethidium bromide				1239-45-8	4.0E+02 mg/m3 1hour Marginal TEEL2				
2.0E+01	mg/m3	1hour	Critical	TEEL3	6.0E+01 mg/m3 1hour Negligible TEEL1				
4.0E+00	mg/m3	1hour	Marginal	TEEL2	Ethienocarb				58270-08-9
5.0E-01	mg/m3	1hour	Negligible	TEEL1	9.0E+00 mg/m3 1hour Critical TEEL3				
Ethienocarb				58270-08-9	9.0E+00 mg/m3 1hour Marginal TEEL2				
9.0E+00	mg/m3	1hour	Critical	TEEL3	5.0E+00 mg/m3 1hour Negligible TEEL1				
9.0E+00	mg/m3	1hour	Marginal	TEEL2					
5.0E+00	mg/m3	1hour	Negligible	TEEL1					

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Ethyl acetate				141-78-6	Ethyl bromoacetate				105-36-2
7.5E+03 mg/m3		1hour	Critical	TEEL3	6.0E-01 mg/m3	1hour	1hour	Critical	TEEL3
1.5E+03 mg/m3		1hour	Marginal	TEEL2	1.3E-01 mg/m3	1hour	1hour	Marginal	TEEL2
1.5E+03 mg/m3		1hour	Negligible	TEEL1	2.0E-02 mg/m3	1hour	1hour	Negligible	TEEL1
1.4E+03 mg/m3		8hour	Negligible	TLV_TWA_irr	Ethyl butyl ketone				106-35-4
4.9E+02 mg/m3		14day	Negligible	TLV_TWA_irr	4.0E+03 mg/m3	1hour	1hour	Critical	TEEL3
4.9E+02 mg/m3		1year	Negligible	TLVirr	7.5E+02 mg/m3	1hour	1hour	Marginal	TEEL2
Ethyl acetoacetate				141-97-9	3.5E+02 mg/m3	1hour	1hour	Negligible	TEEL1
5.0E+02 mg/m3		1hour	Critical	TEEL3	2.3E+02 mg/m3	8hour	14day	Negligible	TLV_TWA_irr
3.5E+02 mg/m3		1hour	Marginal	TEEL2	8.0E+01 mg/m3	14day	14day	Negligible	TLV_TWA_irr
5.0E+01 mg/m3		1hour	Negligible	TEEL1	8.0E+01 mg/m3	1year	1year	Negligible	TLVirr
Ethyl acrylate				140-88-5	Ethyl carbamate				51-79-6
9.8E+02 mg/m3		1hour	Critical	AEGL3_1hr	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
1.5E+02 mg/m3		1hour	Marginal	AEGL2_1hr	5.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
3.4E+01 mg/m3		1hour	Negligible	AEGL1_1hr	5.0E+02 mg/m3	1hour	1hour	Negligible	TEEL1
3.4E+01 mg/m3		8hour	Negligible	AEGL1_8hr	Ethyl cellulose				9004-57-3
7.0E+00 mg/m3		14day	Negligible	TLV_TWA_irr	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
7.0E+00 mg/m3		1year	Negligible	TLVirr	4.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
Ethyl Alcohol D				925-93-9	6.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
6.0E+03 mg/m3		1hour	Critical	TEEL3	Ethyl chloride				75-00-3
2.0E+03 mg/m3		1hour	Marginal	TEEL2	1.0E+04 mg/m3	1hour	1hour	Critical	TEEL3
2.0E+03 mg/m3		1hour	Negligible	TEEL1	1.0E+04 mg/m3	1hour	1hour	Marginal	TEEL2
Ethyl alpha-hydroxy isobutyrate				80-55-7	5.0E+03 mg/m3	1hour	1hour	Negligible	TEEL1
5.0E+02 mg/m3		1hour	Critical	TEEL3	2.6E+02 mg/m3	8hour	8hour	Negligible	TLV_TWA
4.0E+02 mg/m3		1hour	Marginal	TEEL2	2.7E+01 mg/m3	14day	14day	Negligible	MRLi_acute
5.0E+01 mg/m3		1hour	Negligible	TEEL1	2.7E+00 mg/m3	1year	1year	Negligible	PPRTV_sub
Ethyl amyl ketone				541-85-5	Ethyl chloroacetate				105-39-5
5.0E+02 mg/m3		1hour	Critical	TEEL3	7.5E+01 mg/m3	1hour	1hour	Critical	TEEL3
1.3E+02 mg/m3		1hour	Marginal	TEEL2	1.5E+01 mg/m3	1hour	1hour	Marginal	TEEL2
1.3E+02 mg/m3		1hour	Negligible	TEEL1	2.0E+00 mg/m3	1hour	1hour	Negligible	TEEL1
5.2E+01 mg/m3		8hour	Negligible	TLV_TWA	Ethyl chloroformate				541-41-3
1.3E+01 mg/m3		14day	Negligible	TLV_TWA	2.1E+01 mg/m3	1hour	1hour	Critical	AEGL3_1hr
1.3E+01 mg/m3		1year	Negligible	TLVadj	7.1E+00 mg/m3	1hour	1hour	Marginal	AEGL2_1hr
Ethyl benzoate				93-89-0	4.0E+00 mg/m3	1hour	1hour	Negligible	TEEL1
5.0E+02 mg/m3		1hour	Critical	TEEL3	Ethyl cyanoacrylate				7085-85-0
1.5E+02 mg/m3		1hour	Marginal	TEEL2	1.0E+00 mg/m3	8hour	8hour	Negligible	TLV_TWA_irr
2.5E+01 mg/m3		1hour	Negligible	TEEL1	3.5E-01 mg/m3	14day	14day	Negligible	TLV_TWA_irr
Ethyl bromide				74-96-4	3.5E-01 mg/m3	1year	1year	Negligible	TLVirr
7.5E+03 mg/m3		1hour	Critical	TEEL3	Ethyl ether				60-29-7
7.5E+03 mg/m3		1hour	Marginal	TEEL2	6.0E+03 mg/m3	1hour	1hour	Critical	TEEL3
4.0E+03 mg/m3		1hour	Negligible	TEEL1	1.5E+03 mg/m3	1hour	1hour	Marginal	TEEL2
2.2E+01 mg/m3		8hour	Negligible	TLV_TWA	1.5E+03 mg/m3	1hour	1hour	Negligible	TEEL1
5.5E+00 mg/m3		14day	Negligible	TLV_TWA	1.2E+03 mg/m3	8hour	8hour	Negligible	TLV_TWA_irr
5.5E+00 mg/m3		1year	Negligible	TLVadj	4.2E+02 mg/m3	14day	14day	Negligible	TLV_TWA_irr
					2.1E+00 mg/m3	1year	1year	Negligible	PPRTV_sub

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Ethyl formate				109-94-4	Ethyl propionate				105-37-3
4.0E+03 mg/m3		1hour	Critical	TEEL3	4.0E+03 mg/m3	1hour	1hour	Critical	TEEL3
1.5E+03 mg/m3		1hour	Marginal	TEEL2	7.5E+02 mg/m3	1hour	1hour	Marginal	TEEL2
7.5E+02 mg/m3		1hour	Negligible	TEEL1	1.0E+02 mg/m3	1hour	1hour	Negligible	TEEL1
3.0E+02 mg/m3		8hour	Negligible	TLV_TWA_irr	Ethyl silicate polymer				11099-06-2
1.0E+02 mg/m3		14day	Negligible	TLV_TWA_irr	2.5E+02 mg/m3	1hour	1hour	Critical	TEEL3
1.0E+02 mg/m3		1year	Negligible	TLVirr	5.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
Ethyl isocyanate				109-90-0	3.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
4.7E-01 mg/m3		1hour	Critical	AEGL3_1hr	Ethyl tert-butyl ether				637-92-3
1.5E-01 mg/m3		1hour	Marginal	AEGL2_1hr	2.1E+01 mg/m3	8hour	8hour	Negligible	TLV_TWA_irr
Ethyl lactate				687-47-8	7.2E+00 mg/m3	14day	14day	Negligible	TLV_TWA_irr
5.0E+02 mg/m3		1hour	Critical	TEEL3	7.2E+00 mg/m3	1year	1year	Negligible	TLVirr
3.0E+02 mg/m3		1hour	Marginal	TEEL2	Ethyl-1-hexanol, 2-				104-76-7
4.0E+01 mg/m3		1hour	Negligible	TEEL1	1.1E+03 mg/m3	1hour	1hour	Critical	ERPG3
Ethyl mercaptan				75-08-1	5.3E+02 mg/m3	1hour	1hour	Marginal	ERPG2
9.1E+02 mg/m3		1hour	Critical	AEGL3_1hr	5.3E-01 mg/m3	1hour	1hour	Negligible	ERPG1
3.0E+02 mg/m3		1hour	Marginal	AEGL2_1hr	Ethyl-2-methylheptane, 3-				14676-29-0
2.5E+00 mg/m3		1hour	Negligible	AEGL1_1hr	1.0E+04 mg/m3	1hour	1hour	Critical	TEEL3
2.5E+00 mg/m3		8hour	Negligible	AEGL1_8hr	2.0E+03 mg/m3	1hour	1hour	Marginal	TEEL2
4.4E-01 mg/m3		14day	Negligible	TLV_TWA_irr	2.5E+02 mg/m3	1hour	1hour	Negligible	TEEL1
4.4E-01 mg/m3		1year	Negligible	TLVirr	Ethyl-4-hydroxybenzoate				120-47-8
Ethyl mercury chloride				107-27-7	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
2.6E+00 mg/m3		1hour	Critical	TEEL3	5.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
5.3E-02 mg/m3		1hour	Marginal	TEEL2	5.0E+02 mg/m3	1hour	1hour	Negligible	TEEL1
4.0E-02 mg/m3		1hour	Negligible	TEEL1	Ethylamine				75-04-7
Ethyl methacrylate				97-63-2	5.0E+02 mg/m3	1hour	1hour	Critical	AEGL3_1hr
4.0E+03 mg/m3		1hour	Critical	TEEL3	9.0E+01 mg/m3	1hour	1hour	Marginal	AEGL2_1hr
4.0E+03 mg/m3		1hour	Marginal	TEEL2	1.4E+01 mg/m3	1hour	1hour	Negligible	AEGL1_1hr
6.0E+02 mg/m3		1hour	Negligible	TEEL1	1.4E+01 mg/m3	8hour	8hour	Negligible	AEGL1_8hr
Ethyl nitrite				109-95-5	3.2E+00 mg/m3	14day	14day	Negligible	TLV_TWA_irr
2.0E+02 mg/m3		1hour	Critical	TEEL3	3.2E+00 mg/m3	1year	1year	Negligible	TLVirr
4.0E+01 mg/m3		1hour	Marginal	TEEL2	Ethylbenzaldehyde				22927-13-5
6.0E+00 mg/m3		1hour	Negligible	TEEL1	6.0E+03 mg/m3	1hour	1hour	Critical	TEEL3
Ethyl O-2-diisopropylaminoethylmethylphosphonite, QL O-				57856-11-8	1.0E+03 mg/m3	1hour	1hour	Marginal	TEEL2
2.5E+02 mg/m3		1hour	Critical	TEEL3	1.5E+02 mg/m3	1hour	1hour	Negligible	TEEL1
5.0E+01 mg/m3		1hour	Marginal	TEEL2	Ethylbenzene				100-41-4
3.0E+01 mg/m3		1hour	Negligible	TEEL1	3.5E+03 mg/m3	1hour	1hour	Critical	TEEL3
Ethyl p-nitrophenyl phenylphosphorothioate				2104-64-5	5.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
5.0E+00 mg/m3		1hour	Critical	TEEL3	5.0E+02 mg/m3	1hour	1hour	Negligible	TEEL1
5.0E+00 mg/m3		1hour	Marginal	TEEL2	3.0E+01 mg/m3	14day	14day	Negligible	MRLi_acute
5.0E-01 mg/m3		1hour	Negligible	TEEL1	2.1E+00 mg/m3	1year	1year	Negligible	MRL_inter
1.0E-01 mg/m3		8hour	Negligible	TLV_TWA	Ethylbis(2-chloroethyl)amine				538-07-8
2.4E-02 mg/m3		14day	Negligible	TLV_TWA	3.7E-01 mg/m3	1hour	1hour	Critical	AEGL3_1hr
2.4E-02 mg/m3		1year	Negligible	TLVadj	2.2E-02 mg/m3	1hour	1hour	Marginal	AEGL2_1hr
					1.3E-02 mg/m3	1hour	1hour	Negligible	TEEL1

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Ethylchloroformate				2941-64-2	Ethylene glycol dinitrate				628-96-6
4.0E+00	mg/m3	1hour	Critical	AEGL3_1hr	3.1E-01	mg/m3	8hour	Negligible	TLV_TWA
1.3E+00	mg/m3	1hour	Marginal	AEGL2_1hr	7.6E-02	mg/m3	14day	Negligible	TLV_TWA
7.5E-01	mg/m3	1hour	Negligible	TEEL1	7.6E-02	mg/m3	1year	Negligible	TLVadj
Ethylchloroarsine				598-14-1	Ethylene glycol monobutyl ether				111-76-2
8.6E-02	mg/m3	1hour	Critical	AEGL3_1hr	3.5E+03	mg/m3	1hour	Critical	TEEL3
2.9E-02	mg/m3	1hour	Marginal	AEGL2_1hr	5.0E+02	mg/m3	1hour	Marginal	TEEL2
2.3E-02	mg/m3	1hour	Negligible	TEEL1	2.5E+02	mg/m3	1hour	Negligible	TEEL1
Ethylene				74-85-1	Ethylene glycol monopropyl ether				2807-30-9
1.0E+04	mg/m3	1hour	Critical	TEEL3	9.7E+01	mg/m3	8hour	Negligible	TLV_TWA_irr
1.5E+03	mg/m3	1hour	Marginal	TEEL2	2.0E+01	mg/m3	14day	Negligible	MRLi_acute
6.0E+02	mg/m3	1hour	Negligible	TEEL1	9.9E+00	mg/m3	1year	Negligible	MRL_inter
2.3E+02	mg/m3	8hour	Negligible	TLV_TWA	Ethylene glycol monopropyl ether				2807-30-9
5.6E+01	mg/m3	14day	Negligible	TLV_TWA	4.0E+03	mg/m3	1hour	Critical	TEEL3
5.6E+01	mg/m3	1year	Negligible	TLVadj	3.5E+02	mg/m3	1hour	Marginal	TEEL2
Ethylene carbonate				96-49-1	Ethylene glycol mono-sec-butyl ether				7795-91-7
5.0E+02	mg/m3	1hour	Critical	TEEL3	7.5E+01	mg/m3	1hour	Negligible	TEEL1
5.0E+02	mg/m3	1hour	Marginal	TEEL2	Ethylene glycol mono-sec-butyl ether				7795-91-7
1.3E+02	mg/m3	1hour	Negligible	TEEL1	3.5E+02	mg/m3	1hour	Marginal	TEEL2
Ethylene chlorohydrin				107-07-3	Ethylene Oxide				75-21-8
4.0E+01	mg/m3	1hour	Critical	AEGL3_1hr	3.6E+02	mg/m3	1hour	Critical	AEGL3_1hr*
1.3E+01	mg/m3	1hour	Marginal	AEGL2_1hr	8.1E+01	mg/m3	1hour	Marginal	AEGL2_1hr*
3.0E+00	mg/m3	1hour	Negligible	TEEL1	9.0E+00	mg/m3	1hour	Negligible	TEEL1 (fixed)*
Ethylene diamine				107-15-3	Ethylene diamine dihydrochloride				333-18-6
4.9E+01	mg/m3	1hour	Critical	AEGL3_1hr	1.8E+00	mg/m3	8hour	Negligible	TLV_TWA*
2.4E+01	mg/m3	1hour	Marginal	AEGL2_1hr	4.4E-01	mg/m3	14day	Negligible	TLV_TWA
2.4E+01	mg/m3	1hour	Negligible	AEGL2_1hr*	4.8E-02	mg/m3	1year	Negligible	HEAST
2.4E+01	mg/m3	8hour	Negligible	AEGL2_1hr*	9.0E+00	mg/m3	10min	Negligible	TEEL1 (fixed)*
8.4E+00	mg/m3	14day	Negligible	TLV_TWA_irr	1.4E+01	mg/m3	8hour	Marginal	AEGL2_8h*
8.4E+00	mg/m3	1year	Negligible	TLVirr	6.3E+01	mg/m3	8hour	Critical	AEGL3_8h*
Ethylene fluorohydrin				371-62-0	Ethylene thiourea				96-45-7
3.5E+00	mg/m3	1hour	Critical	TEEL3	6.5E+02	mg/m3	10min	Critical	AEGL3_10min
6.0E-02	mg/m3	1hour	Marginal	TEEL2	Ethylene thiourea				96-45-7
3.5E-02	mg/m3	1hour	Negligible	TEEL1	5.0E+02	mg/m3	1hour	Critical	TEEL3
Ethylene glycol				107-21-1	Ethylene/vinyl acetate copolmer				24937-78-8
1.5E+02	mg/m3	1hour	Critical	TEEL3	2.5E+02	mg/m3	1hour	Critical	TEEL3
1.0E+02	mg/m3	1hour	Marginal	TEEL2	5.0E+01	mg/m3	1hour	Marginal	TEEL2
2.5E+01	mg/m3	1hour	Negligible	TEEL1	3.0E+01	mg/m3	1hour	Negligible	TEEL1
1.0E+01	mg/m3	14day	Negligible	CEGL	Ethylenediamine dihydrochloride				333-18-6
Ethylene glycol diacetate				111-55-7	Ethylenediamine dihydrochloride				333-18-6
5.0E+02	mg/m3	1hour	Critical	TEEL3	6.0E+01	mg/m3	1hour	Critical	TEEL3
5.0E+02	mg/m3	1hour	Marginal	TEEL2	2.0E+00	mg/m3	1hour	Marginal	TEEL2
7.5E+01	mg/m3	1hour	Negligible	TEEL1	3.0E-01	mg/m3	1hour	Negligible	TEEL1
Ethylene glycol dimethacrylate				97-90-5	Ethylenediaminetetraacetic acid				60-00-4
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.5E+02	mg/m3	1hour	Critical	TEEL3
3.0E+02	mg/m3	1hour	Marginal	TEEL2	1.5E+02	mg/m3	1hour	Marginal	TEEL2
4.0E+01	mg/m3	1hour	Negligible	TEEL1	1.3E+02	mg/m3	1hour	Negligible	TEEL1

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME					CASRN	CHEMICAL NAME					CASRN
MEG	Units	Timeframe	Severity	Basis		MEG	Units	Timeframe	Severity	Basis	
Ethylenediaminetetraacetic acid tetrasodium salt					10378-23-1	Ethylidene norbornene					16219-75-3
5.0E+02 mg/m3		1hour	Critical	TEEL3		2.5E+03 mg/m3	1hour		Critical	ERPG3	
1.5E+02 mg/m3		1hour	Marginal	TEEL2		4.9E+02 mg/m3	1hour		Marginal	ERPG2	
2.5E+01 mg/m3		1hour	Negligible	TEEL1		9.8E-01 mg/m3	1hour		Negligible	ERPG1	
Ethylenediaminetetraacetic acid, disodium salt					139-33-3	Ethylmagnesium chloride					2386-64-3
5.0E+02 mg/m3		1hour	Critical	TEEL3		2.5E+02 mg/m3	1hour		Critical	TEEL3	
5.0E+02 mg/m3		1hour	Marginal	TEEL2		5.0E+01 mg/m3	1hour		Marginal	TEEL2	
1.5E+02 mg/m3		1hour	Negligible	TEEL1		3.0E+01 mg/m3	1hour		Negligible	TEEL1	
Ethylenediaminetetraacetic acid, ferric ammonium s					21265-50-9	Ethylphosphorodichloridate					1498-51-7
2.5E+02 mg/m3		1hour	Critical	TEEL3		4.0E+01 mg/m3	1hour		Critical	AEGL3_1hr	
5.0E+01 mg/m3		1hour	Marginal	TEEL2		4.0E+00 mg/m3	1hour		Marginal	AEGL2_1hr	
7.5E+00 mg/m3		1hour	Negligible	TEEL1		Ethylpropyl ethanoate, 1-					620-11-1
Ethylenedinitrilo)tetra-2-propanol, 1,1',1'',1'''-(102-60-3	2.7E+02 mg/m3	8hour		Negligible	TLV_TWA_irr	
5.0E+02 mg/m3		1hour	Critical	TEEL3		9.1E+01 mg/m3	14day		Negligible	TLV_TWA_irr	
3.5E+02 mg/m3		1hour	Marginal	TEEL2		9.1E+01 mg/m3	1year		Negligible	TLVirr	
5.0E+01 mg/m3		1hour	Negligible	TEEL1		Ethylthiocyanate					542-90-5
Ethyleneimine					151-56-4	1.0E+02 mg/m3	1hour		Critical	TEEL3	
1.7E+01 mg/m3		1hour	Critical	AEGL3_1hr		1.0E+02 mg/m3	1hour		Marginal	TEEL2	
8.1E+00 mg/m3		1hour	Marginal	AEGL2_1hr		6.0E+01 mg/m3	1hour		Negligible	TEEL1	
1.5E-01 mg/m3		1hour	Negligible	TEEL1		Ethyltoluene, o-					611-14-3
8.8E-02 mg/m3		8hour	Negligible	TLV_TWA_irr		5.0E+02 mg/m3	1hour		Critical	TEEL3	
3.0E-02 mg/m3		14day	Negligible	TLV_TWA_irr		5.0E+02 mg/m3	1hour		Marginal	TEEL2	
3.0E-02 mg/m3		1year	Negligible	TLVirr		5.0E+02 mg/m3	1hour		Negligible	TEEL1	
Ethylheptane, 4-					2216-32-2	Ethyltoluene, p-					622-96-8
1.5E+03 mg/m3		1hour	Critical	TEEL3		5.0E+02 mg/m3	1hour		Critical	TEEL3	
3.5E+02 mg/m3		1hour	Marginal	TEEL2		5.0E+02 mg/m3	1hour		Marginal	TEEL2	
5.0E+01 mg/m3		1hour	Negligible	TEEL1		5.0E+02 mg/m3	1hour		Negligible	TEEL1	
Ethylhexanoic acid					149-57-5	Etidronic acid					2809-21-4
5.0E+02 mg/m3		1hour	Critical	TEEL3		5.0E+02 mg/m3	1hour		Critical	TEEL3	
1.3E+02 mg/m3		1hour	Marginal	TEEL2		3.5E+00 mg/m3	1hour		Marginal	TEEL2	
1.5E+01 mg/m3		1hour	Negligible	TEEL1		5.0E-01 mg/m3	1hour		Negligible	TEEL1	
5.0E+00 mg/m3		8hour	Negligible	TLV_TWA		Europium					7440-53-1
1.2E+00 mg/m3		14day	Negligible	TLV_TWA		2.5E+02 mg/m3	1hour		Critical	TEEL3	
1.2E+00 mg/m3		1year	Negligible	TLVadj		5.0E+01 mg/m3	1hour		Marginal	TEEL2	
Ethylhexyl bromide, 2-					18908-66-2	3.0E+01 mg/m3	1hour		Negligible	TEEL1	
2.5E+02 mg/m3		1hour	Critical	TEEL3		Europium (III) oxide					1308-96-9
5.0E+01 mg/m3		1hour	Marginal	TEEL2		5.0E+02 mg/m3	1hour		Critical	TEEL3	
3.0E+01 mg/m3		1hour	Negligible	TEEL1		4.0E+02 mg/m3	1hour		Marginal	TEEL2	
Ethylhexylchloroformate, 2-					24468-13-1	6.0E+01 mg/m3	1hour		Negligible	TEEL1	
2.3E+01 mg/m3		1hour	Critical	AEGL3_1hr		Europium diiodide					22015-35-6
7.6E+00 mg/m3		1hour	Marginal	AEGL2_1hr		2.5E+02 mg/m3	1hour		Critical	TEEL3	
1.0E+00 mg/m3		1hour	Negligible	TEEL1		5.0E+01 mg/m3	1hour		Marginal	TEEL2	
						3.0E+01 mg/m3	1hour		Negligible	TEEL1	
						Extracts, petroleum, middle distillate solvent					64742-06-9
						2.5E+02 mg/m3	1hour		Critical	TEEL3	
						5.0E+01 mg/m3	1hour		Marginal	TEEL2	
						3.0E+01 mg/m3	1hour		Negligible	TEEL1	

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Farnesol				4602-84-0	Ferric chloride, hexahydrate				10025-77-1
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.0E+02	mg/m3	1hour	Critical	TEEL3
5.0E+02	mg/m3	1hour	Marginal	TEEL2	1.0E+02	mg/m3	1hour	Marginal	TEEL2
7.5E+01	mg/m3	1hour	Negligible	TEEL1	7.5E+01	mg/m3	1hour	Negligible	TEEL1
Fats and Glyceridic oils, neat's-foot				8002-64-0	Ferric fluoride				7783-50-8
2.5E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
5.0E+01	mg/m3	1hour	Marginal	TEEL2	1.0E+02	mg/m3	1hour	Marginal	TEEL2
3.0E+01	mg/m3	1hour	Negligible	TEEL1	1.3E+01	mg/m3	1hour	Negligible	TEEL1
Fenamiphos				22224-92-6	Ferric hydroxide				1309-33-7
2.1E+00	mg/m3	1hour	Critical	AEGL3_1hr	4.0E+02	mg/m3	1hour	Critical	TEEL3
7.0E-01	mg/m3	1hour	Marginal	AEGL2_1hr	7.5E+01	mg/m3	1hour	Marginal	TEEL2
1.5E-01	mg/m3	1hour	Negligible	TEEL1	1.0E+01	mg/m3	1hour	Negligible	TEEL1
5.0E-02	mg/m3	8hour	Negligible	TLV_TWA	Ferric nitrate				10421-48-4
1.2E-02	mg/m3	14day	Negligible	TLV_TWA	5.0E+02	mg/m3	1hour	Critical	TEEL3
1.2E-02	mg/m3	1year	Negligible	TLVadj	2.2E+01	mg/m3	1hour	Marginal	TEEL2
Fensulfothion				115-90-2	Ferric nitrate, nonahydrate				7782-61-8
1.3E+01	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
2.0E+00	mg/m3	1hour	Marginal	TEEL2	2.5E+02	mg/m3	1hour	Marginal	TEEL2
3.0E-02	mg/m3	1hour	Negligible	TEEL1	4.0E+01	mg/m3	1hour	Negligible	TEEL1
1.0E-02	mg/m3	8hour	Negligible	TLV_TWA	Ferric oxide				1309-37-1
2.4E-03	mg/m3	14day	Negligible	TLV_TWA	5.0E+02	mg/m3	1hour	Critical	TEEL3
2.4E-03	mg/m3	1year	Negligible	TLVadj	4.0E+01	mg/m3	1hour	Marginal	TEEL2
Fenthion				55-38-9	Ferric phosphate				10045-86-0
4.0E+01	mg/m3	1hour	Critical	TEEL3	6.0E+01	mg/m3	1hour	Critical	TEEL3
4.0E+01	mg/m3	1hour	Marginal	TEEL2	1.4E+01	mg/m3	1hour	Marginal	TEEL2
1.5E-01	mg/m3	1hour	Negligible	TEEL1	8.3E+00	mg/m3	1hour	Negligible	TEEL1
5.0E-02	mg/m3	8hour	Negligible	TLV_TWA	Ferric sulfate				10028-22-5
1.2E-02	mg/m3	14day	Negligible	TLV_TWA	7.5E+01	mg/m3	1hour	Critical	TEEL3
1.2E-02	mg/m3	1year	Negligible	TLVadj	1.8E+01	mg/m3	1hour	Marginal	TEEL2
Ferbam				14484-64-1	Ferrous ammonium sulfate				10045-89-3
5.0E+00	mg/m3	8hour	Negligible	TLV_TWA_irr	1.3E+02	mg/m3	1hour	Critical	TEEL3
1.7E+00	mg/m3	14day	Negligible	TLV_TWA_irr	2.5E+01	mg/m3	1hour	Marginal	TEEL2
1.7E+00	mg/m3	1year	Negligible	TLVirr	1.5E+01	mg/m3	1hour	Negligible	TEEL1
Ferric ammonium citrate				1185-57-5	Ferrous carbonate				563-71-3
5.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
5.0E+02	mg/m3	1hour	Marginal	TEEL2	3.0E+02	mg/m3	1hour	Marginal	TEEL2
5.4E+00	mg/m3	1hour	Negligible	TEEL1	4.0E+01	mg/m3	1hour	Negligible	TEEL1
Ferric ammonium sulfate dodecahydrate				7783-83-7	Ferrous chloride				7758-94-3
2.0E+02	mg/m3	1hour	Critical	TEEL3	2.0E+02	mg/m3	1hour	Critical	TEEL3
4.3E+01	mg/m3	1hour	Marginal	TEEL2	1.1E+01	mg/m3	1hour	Marginal	TEEL2
2.6E+01	mg/m3	1hour	Negligible	TEEL1	6.8E+00	mg/m3	1hour	Negligible	TEEL1
Ferric chloride				7705-08-0					
1.3E+02	mg/m3	1hour	Critical	TEEL3					
1.0E+01	mg/m3	1hour	Marginal	TEEL2					
2.9E+00	mg/m3	1hour	Negligible	TEEL1					

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Ferrous hydroxide				18624-44-7	Fluorene				86-73-7
4.0E+02 mg/m3		1hour	Critical	TEEL3	5.0E+02 mg/m3	1hour	Critical	TEEL3	
7.5E+01 mg/m3		1hour	Marginal	TEEL2	1.5E+02 mg/m3	1hour	Marginal	TEEL2	
1.0E+01 mg/m3		1hour	Negligible	TEEL1	2.5E+01 mg/m3	1hour	Negligible	TEEL1	
Ferrous sulfamate				14017-39-1	Fluorescein				2321-07-5
6.0E+01 mg/m3		1hour	Critical	TEEL3	2.5E+02 mg/m3	1hour	Critical	TEEL3	
1.4E+01 mg/m3		1hour	Marginal	TEEL2	7.5E+00 mg/m3	1hour	Marginal	TEEL2	
8.4E+00 mg/m3		1hour	Negligible	TEEL1	1.3E+00 mg/m3	1hour	Negligible	TEEL1	
Ferrous sulfate				7720-78-7	Fluoride				16984-48-8
3.5E+02 mg/m3		1hour	Critical	TEEL3	2.5E+02 mg/m3	1hour	Critical	TEEL3	
1.4E+01 mg/m3		1hour	Marginal	TEEL2	1.3E+01 mg/m3	1hour	Marginal	TEEL2	
8.2E+00 mg/m3		1hour	Negligible	TEEL1	7.5E+00 mg/m3	1hour	Negligible	TEEL1	
Ferrous sulfate heptahydrate				7782-63-0	Fluoride, sodium				7681-49-4
5.0E+02 mg/m3		1hour	Critical	TEEL3	2.5E+00 mg/m3	8hour	Negligible	TLV_TWA_irr	
2.5E+01 mg/m3		1hour	Marginal	TEEL2	8.6E-01 mg/m3	14day	Negligible	TLV_TWA_irr	
1.5E+01 mg/m3		1hour	Negligible	TEEL1	8.6E-01 mg/m3	1year	Negligible	TLVirr	
Ferrous sulfide				12068-85-8	Fluorine				7782-41-4
5.0E+01 mg/m3		1hour	Critical	TEEL3	2.0E+01 mg/m3	1hour	Critical	AEGL3_1hr*	
1.1E+01 mg/m3		1hour	Marginal	TEEL2	7.8E+00 mg/m3	1hour	Marginal	AEGL2_1hr*	
6.4E+00 mg/m3		1hour	Negligible	TEEL1	2.6E+00 mg/m3	1hour	Negligible	AEGL1_1hr*	
Ferrovanadium				12604-58-9	Fluoro-4-nitrophenol, 2-				403-19-0
1.0E+00 mg/m3		8hour	Negligible	TLV_TWA_irr	2.6E+00 mg/m3	8hour	Negligible	AEGL1_8hr*	
3.4E-01 mg/m3		14day	Negligible	TLV_TWA_irr	1.1E-02 mg/m3	14day	Negligible	MRLi_acute	
3.4E-01 mg/m3		1year	Negligible	TLVirr	1.1E-02 mg/m3	1year	Negligible	MRLi_acute*	
Fibrous glass filter media				65997-17-3	Fluoro-6-nitrophenol, 2-				1526-17-6
5.0E+02 mg/m3		1hour	Critical	TEEL3	2.6E+00 mg/m3	10min	Negligible	AEGL1_10min	
6.0E+01 mg/m3		1hour	Marginal	TEEL2	3.6E+00 mg/m3	8hour	Marginal	AEGL2_8h*	
1.5E+01 mg/m3		1hour	Negligible	TEEL1	8.9E+00 mg/m3	8hour	Critical	AEGL3_8h*	
Fisherbrand vacuum pump oil				64742-65-0	Fluoro-4-nitrophenol, 2-				403-19-0
5.0E+02 mg/m3		1hour	Critical	TEEL3	3.1E+01 mg/m3	10min	Marginal	AEGL2_10min	
5.0E+02 mg/m3		1hour	Marginal	TEEL2	5.6E+01 mg/m3	10min	Critical	AEGL3_10min	
3.0E+02 mg/m3		1hour	Negligible	TEEL1	Fluoroacetamide				640-19-7
Fluenetil				4301-50-2	Fluoroacetic acid				144-49-0
6.0E+00 mg/m3		1hour	Critical	TEEL3	5.8E+00 mg/m3	1hour	Critical	TEEL3	
6.0E+00 mg/m3		1hour	Marginal	TEEL2	5.8E+00 mg/m3	1hour	Marginal	TEEL2	
3.5E+00 mg/m3		1hour	Negligible	TEEL1	3.5E+00 mg/m3	1hour	Negligible	TEEL1	
Fluoboric acid				16872-11-0	Fluoroacetic acid				144-49-0
2.9E+02 mg/m3		1hour	Critical	TEEL3	2.0E+00 mg/m3	1hour	Critical	TEEL3	
6.0E+01 mg/m3		1hour	Marginal	TEEL2	4.7E-01 mg/m3	1hour	Marginal	TEEL2	
7.5E+00 mg/m3		1hour	Negligible	TEEL1	2.5E-01 mg/m3	1hour	Negligible	TEEL1	
Fluoranthene				206-44-0					
5.0E+02 mg/m3		1hour	Critical	TEEL3					
1.5E+02 mg/m3		1hour	Marginal	TEEL2					
2.5E+01 mg/m3		1hour	Negligible	TEEL1					

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Fluoroacetyl chloride				359-06-8	Formaldehyde hydrosulfite				149-44-0
1.0E+01 mg/m3		1hour	Critical	TEEL3	5.0E+02 mg/m3	1hour	Critical	TEEL3	
1.0E+01 mg/m3		1hour	Marginal	TEEL2	3.5E+02 mg/m3	1hour	Marginal	TEEL2	
6.0E+00 mg/m3		1hour	Negligible	TEEL1	5.0E+01 mg/m3	1hour	Negligible	TEEL1	
Fluorobenzene				462-06-6	Formaldehyde, melamine polymer, methylated				68002-20-0
5.0E+02 mg/m3		1hour	Critical	TEEL3	5.0E+02 mg/m3	1hour	Critical	TEEL3	
5.0E+02 mg/m3		1hour	Marginal	TEEL2	5.0E+02 mg/m3	1hour	Marginal	TEEL2	
3.5E+02 mg/m3		1hour	Negligible	TEEL1	1.5E+02 mg/m3	1hour	Negligible	TEEL1	
Fluorosulfonic acid				7789-21-1	Formamide				75-12-7
3.0E+01 mg/m3		1hour	Critical	ERPG3	2.5E+03 mg/m3	1hour	Critical	TEEL3	
1.0E+01 mg/m3		1hour	Marginal	ERPG2	2.5E+02 mg/m3	1hour	Marginal	TEEL2	
2.0E+00 mg/m3		1hour	Negligible	ERPG1	3.5E+01 mg/m3	1hour	Negligible	TEEL1	
Fluorotrimethylsilane				420-56-4	Formetanate hydrochloride				23422-53-9
1.0E+03 mg/m3		1hour	Critical	TEEL3	1.8E+01 mg/m3	1hour	Critical	TEEL3	
2.0E+02 mg/m3		1hour	Marginal	TEEL2	1.8E+01 mg/m3	1hour	Marginal	TEEL2	
3.0E+01 mg/m3		1hour	Negligible	TEEL1	1.0E+01 mg/m3	1hour	Negligible	TEEL1	
Fluorouracil				51-21-8	Formic acid				64-18-6
1.0E+02 mg/m3		1hour	Critical	TEEL3	5.0E+01 mg/m3	1hour	Critical	TEEL3	
1.9E+01 mg/m3		1hour	Marginal	TEEL2	1.5E+01 mg/m3	1hour	Marginal	TEEL2	
2.5E+00 mg/m3		1hour	Negligible	TEEL1	1.5E+01 mg/m3	1hour	Negligible	TEEL1	
Fonofos				944-22-9	Formic acid butyl ester				592-84-7
2.0E+02 mg/m3		1hour	Critical	TEEL3	4.0E+03 mg/m3	1hour	Critical	TEEL3	
1.3E+00 mg/m3		1hour	Marginal	TEEL2	4.0E+03 mg/m3	1hour	Marginal	TEEL2	
3.0E-01 mg/m3		1hour	Negligible	TEEL1	6.0E+02 mg/m3	1hour	Negligible	TEEL1	
1.0E-02 mg/m3		8hour	Negligible	TLV_TWA	Formothion				2540-82-1
2.4E-03 mg/m3		14day	Negligible	TLV_TWA	1.0E+01 mg/m3	1hour	Critical	TEEL3	
2.4E-03 mg/m3		1year	Negligible	TLVadj	2.7E-01 mg/m3	1hour	Marginal	TEEL2	
Forane				26675-46-7	Formparanate				17702-57-7
3.5E+04 mg/m3		1hour	Critical	TEEL3	7.2E+00 mg/m3	1hour	Critical	TEEL3	
3.5E+04 mg/m3		1hour	Marginal	TEEL2	7.2E+00 mg/m3	1hour	Marginal	TEEL2	
3.5E+04 mg/m3		1hour	Negligible	TEEL1	4.0E+00 mg/m3	1hour	Negligible	TEEL1	
Formaldehyde				50-00-0	Formylpiperidine, 1-				2591-86-8
6.9E+01 mg/m3		1hour	Critical	AEGL3_1hr*	4.0E+02 mg/m3	1hour	Critical	TEEL3	
1.7E+01 mg/m3		1hour	Marginal	AEGL2_1hr*	4.0E+02 mg/m3	1hour	Marginal	TEEL2	
1.1E+00 mg/m3		1hour	Negligible	AEGL1_1hr*	5.0E+01 mg/m3	1hour	Negligible	TEEL1	
1.1E+00 mg/m3		8hour	Negligible	AEGL1_8hr*	Fosthietan				21548-32-3
3.7E-01 mg/m3		14day	Negligible	CEGL	4.7E+00 mg/m3	1hour	Critical	TEEL3	
2.5E-02 mg/m3		1year	Negligible	MRL_inter	4.7E+00 mg/m3	1hour	Marginal	TEEL2	
1.1E+00 mg/m3		10min	Negligible	AEGL1_10min	2.5E+00 mg/m3	1hour	Negligible	TEEL1	
1.7E+01 mg/m3		10min	Marginal	AEGL2_10min	Formaldehyde cyanohydrin				107-16-4
1.7E+01 mg/m3		8hour	Marginal	AEGL2_8h*	1.0E+01 mg/m3	1hour	Critical	TEEL3	
4.3E+01 mg/m3		8hour	Critical	AEGL3_8h*	6.0E+00 mg/m3	1hour	Marginal	TEEL2	
1.2E+02 mg/m3		10min	Critical	AEGL3_10min	7.5E-01 mg/m3	1hour	Negligible	TEEL1	

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN		
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis		
Fuberidazole					3878-19-1	Furfuryl alcohol					98-00-0
1.3E+02	mg/m3	1hour	Critical	TEEL3	3.0E+02	mg/m3	1hour	Critical	TEEL3		
3.3E+00	mg/m3	1hour	Marginal	TEEL2	6.0E+01	mg/m3	1hour	Marginal	TEEL2		
2.0E+00	mg/m3	1hour	Negligible	TEEL1	6.0E+01	mg/m3	1hour	Negligible	TEEL1		
Fuel oil no. 2					68476-30-2	4.0E+01	mg/m3	8hour	Negligible	TLV_TWA_irr	
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.4E+01	mg/m3	14day	Negligible	TLV_TWA_irr		
5.0E+02	mg/m3	1hour	Marginal	TEEL2	1.4E+01	mg/m3	1year	Negligible	TLVirr		
1.0E+02	mg/m3	1hour	Negligible	TEEL1	Furoic acid, ethyl ester					614-99-3	
1.0E+02	mg/m3	8hour	Negligible	TLV_TWA_irr	1.5E+02	mg/m3	1hour	Critical	TEEL3		
1.4E-02	mg/m3	14day	Negligible	MRLi_acute	3.0E+01	mg/m3	1hour	Marginal	TEEL2		
1.4E-02	mg/m3	1year	Negligible	MRLi_acute*	4.0E+00	mg/m3	1hour	Negligible	TEEL1		
Fuel oil no. 2-D					68476-34-6	Fusariotoxin T2					21259-20-1
1.0E+02	mg/m3	8hour	Negligible	TLV_TWA_irr	4.0E-01	mg/m3	1hour	Critical	TEEL3		
3.4E+01	mg/m3	14day	Negligible	TLV_TWA_irr	3.0E-02	mg/m3	1hour	Marginal	TEEL2		
3.4E+01	mg/m3	1year	Negligible	TLVirr	4.0E-03	mg/m3	1hour	Negligible	TEEL1		
Fuel oil no. 4					68476-31-3	GA					77-81-6
1.0E+02	mg/m3	8hour	Negligible	TLV_TWA_irr	3.0E-04	mg/m3	24hour	Negligible	AEGL1-based		
3.4E+01	mg/m3	14day	Negligible	TLV_TWA_irr	1.0E-03	mg/m3	8hour	Negligible	AEGL1_8hr		
3.4E+01	mg/m3	1year	Negligible	TLVirr	2.8E-03	mg/m3	1hour	Negligible	AEGL1_1hr		
Fuel oil, residual					68476-33-5	6.7E-03	mg/m3	24hour	Marginal	EC16_mild_24	
5.0E+02	mg/m3	1hour	Critical	TEEL3	6.9E-03	mg/m3	10min	Negligible	AEGL1_10min		
2.0E+02	mg/m3	1hour	Marginal	TEEL2	1.1E-02	mg/m3	24hour	Critical	EC50_mild_24		
3.0E+01	mg/m3	1hour	Negligible	TEEL1	2.0E-02	mg/m3	8hour	Marginal	EC16_mild_8h		
Fuller's earth					8031-18-3	3.2E-02	mg/m3	8hour	Critical	EC50_mild_8h	
5.0E+02	mg/m3	1hour	Critical	TEEL3	5.8E-02	mg/m3	1hour	Marginal	EC16_mild_1h		
1.3E+02	mg/m3	1hour	Marginal	TEEL2	9.1E-02	mg/m3	1hour	Critical	EC50_mild_1h		
6.0E+00	mg/m3	1hour	Negligible	TEEL1	1.4E-01	mg/m3	10min	Marginal	EC16_mild_10		
Fulminic acid					506-85-4	2.2E-01	mg/m3	10min	Critical	EC50_mild_10	
1.0E+02	mg/m3	1hour	Critical	TEEL3	5.4E-01	mg/m3	24hour	Catastrophic	EC50_sev_24h		
2.0E+01	mg/m3	1hour	Marginal	TEEL2	1.6E+00	mg/m3	8hour	Catastrophic	EC50_sev_8hr		
3.0E+00	mg/m3	1hour	Negligible	TEEL1	4.6E+00	mg/m3	1hour	Catastrophic	EC50_sev_1hr		
Fumaric acid					110-17-8	1.1E+01	mg/m3	10min	Catastrophic	EC50_sev_10r	
5.0E+02	mg/m3	1hour	Critical	TEEL3	Gadolinium					7440-54-2	
5.0E+02	mg/m3	1hour	Marginal	TEEL2	5.0E+02	mg/m3	1hour	Critical	TEEL3		
1.0E+02	mg/m3	1hour	Negligible	TEEL1	5.0E+02	mg/m3	1hour	Marginal	TEEL2		
Furan					110-00-9	5.0E+02	mg/m3	1hour	Negligible	TEEL1	
5.3E+01	mg/m3	1hour	Critical	AEGL3_1hr	Gadolinium (III) oxide					12064-62-9	
1.9E+01	mg/m3	1hour	Marginal	AEGL2_1hr	5.0E+02	mg/m3	1hour	Critical	TEEL3		
1.0E+01	mg/m3	1hour	Negligible	TEEL1	5.0E+01	mg/m3	1hour	Marginal	TEEL2		
Furfural					98-01-1	6.0E+00	mg/m3	1hour	Negligible	TEEL1	
3.9E+02	mg/m3	1hour	Critical	ERPG3	Gadolinium chloride hexahydrate					13450-84-5	
3.9E+01	mg/m3	1hour	Marginal	ERPG2	7.5E+01	mg/m3	1hour	Critical	TEEL3		
7.9E+00	mg/m3	1hour	Negligible	ERPG1	7.5E+01	mg/m3	1hour	Marginal	TEEL2		
7.9E+00	mg/m3	8hour	Negligible	TLV_TWA_irr	7.5E+01	mg/m3	1hour	Negligible	TEEL1		
2.7E+00	mg/m3	14day	Negligible	TLV_TWA_irr							
3.4E-01	mg/m3	1year	Negligible	HEAST_sub							

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Gadolinium hydroxide				16469-18-4	GB				107-44-8
7.5E+01 mg/m3		1hour	Critical	TEEL3	3.0E-04 mg/m3	24hour	Negligible		AEGL1-based
2.5E+00 mg/m3		1hour	Marginal	TEEL2	1.0E-03 mg/m3	8hour	Negligible		AEGL1_8hr
7.5E-01 mg/m3		1hour	Negligible	TEEL1	2.8E-03 mg/m3	1hour	Negligible		AEGL1_1hr
Gallic acid monohydrate				5995-86-8	6.7E-03 mg/m3	24hour	Marginal		EC16_mild_24
5.0E+02 mg/m3		1hour	Critical	TEEL3	6.9E-03 mg/m3	10min	Negligible		AEGL1_10min
3.5E+02 mg/m3		1hour	Marginal	TEEL2	1.1E-02 mg/m3	24hour	Critical		EC50_mild_24
5.0E+01 mg/m3		1hour	Negligible	TEEL1	2.0E-02 mg/m3	8hour	Marginal		EC16_mild_8hr
Gallium				7440-55-3	3.2E-02 mg/m3	8hour	Critical		EC50_mild_8hr
2.5E+02 mg/m3		1hour	Critical	TEEL3	5.8E-02 mg/m3	1hour	Marginal		EC16_mild_1hr
5.0E+01 mg/m3		1hour	Marginal	TEEL2	9.1E-02 mg/m3	1hour	Critical		EC50_mild_1hr
3.0E+01 mg/m3		1hour	Negligible	TEEL1	1.4E-01 mg/m3	10min	Marginal		EC16_mild_10
Gallium arsenide				1303-00-0	2.2E-01 mg/m3	10min	Critical		EC50_mild_10
3.0E-04 mg/m3		8hour	Negligible	TLV_TWA	2.7E-01 mg/m3	24hour	Catastrophic		EC50_sev_24hr
7.3E-05 mg/m3		14day	Negligible	TLV_TWA	8.1E-01 mg/m3	8hour	Catastrophic		EC50_sev_8hr
7.3E-05 mg/m3		1year	Negligible	TLVadj	2.3E+00 mg/m3	1hour	Catastrophic		EC50_sev_1hr
Gallium oxide				12024-21-4	5.6E+00 mg/m3	10min	Catastrophic		EC50_sev_10hr
5.0E+02 mg/m3		1hour	Critical	TEEL3	GD				96-64-0
4.0E+01 mg/m3		1hour	Marginal	TEEL2	2.0E-04 mg/m3	24hour	Negligible		AEGL1-based
5.0E+00 mg/m3		1hour	Negligible	TEEL1	5.0E-04 mg/m3	8hour	Negligible		AEGL1_8hr
Gallium trichloride				13450-90-3	1.4E-03 mg/m3	1hour	Negligible		AEGL1_1hr
1.0E+02 mg/m3		1hour	Critical	TEEL3	3.0E-03 mg/m3	24hour	Marginal		EC16_mild_24
3.2E+01 mg/m3		1hour	Marginal	TEEL2	3.5E-03 mg/m3	10min	Negligible		AEGL1_10min
2.0E+01 mg/m3		1hour	Negligible	TEEL1	4.3E-03 mg/m3	24hour	Critical		EC50_mild_24
Gallium trifluoride				7783-51-9	9.0E-03 mg/m3	8hour	Marginal		EC16_mild_8hr
1.3E+02 mg/m3		1hour	Critical	TEEL3	1.3E-02 mg/m3	8hour	Critical		EC50_mild_8hr
2.8E+01 mg/m3		1hour	Marginal	TEEL2	2.5E-02 mg/m3	1hour	Marginal		EC16_mild_1hr
1.7E+01 mg/m3		1hour	Negligible	TEEL1	3.7E-02 mg/m3	1hour	Critical		EC50_mild_1hr
gamma-Aminopropyltriethoxysilane				919-30-2	6.1E-02 mg/m3	10min	Marginal		EC16_mild_10
5.0E+02 mg/m3		1hour	Critical	TEEL3	8.9E-02 mg/m3	10min	Critical		EC50_mild_10
1.3E+02 mg/m3		1hour	Marginal	TEEL2	2.7E-01 mg/m3	24hour	Catastrophic		EC50_sev_24hr
1.5E+01 mg/m3		1hour	Negligible	TEEL1	8.1E-01 mg/m3	8hour	Catastrophic		EC50_sev_8hr
Gasoline				8006-61-9	2.3E+00 mg/m3	1hour	Catastrophic		EC50_sev_1hr
7.5E+03 mg/m3		1hour	Marginal	AEGL2_1hr	5.6E+00 mg/m3	10min	Catastrophic		EC50_sev_10hr
7.3E+02 mg/m3		1hour	Negligible	AEGL1_1hr	Gelatin				9000-70-8
7.3E+02 mg/m3		8hour	Negligible	AEGL1_8hr	3.0E+02 mg/m3	1hour	Critical		TEEL3
					6.0E+01 mg/m3	1hour	Marginal		TEEL2
					7.5E+00 mg/m3	1hour	Negligible		TEEL1
					Germanium				7440-56-4
					5.0E+02 mg/m3	1hour	Critical		TEEL3
					2.5E-01 mg/m3	1hour	Marginal		TEEL2
					3.5E-02 mg/m3	1hour	Negligible		TEEL1
					Germanium oxide				1310-53-8
					5.0E+02 mg/m3	1hour	Critical		TEEL3
					1.5E+01 mg/m3	1hour	Marginal		TEEL2
					2.0E+00 mg/m3	1hour	Negligible		TEEL1

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Germanium tetrafluoride				7783-58-6	Gluteraldehyde				111-30-8
4.9E+02 mg/m3		1hour	Critical	TEEL3	2.0E+01 mg/m3	1hour	1hour	Critical	ERPG3
1.0E+02 mg/m3		1hour	Marginal	TEEL2	4.1E+00 mg/m3	1hour	1hour	Marginal	ERPG2
1.3E+01 mg/m3		1hour	Negligible	TEEL1	8.2E-01 mg/m3	1hour	1hour	Negligible	ERPG1
Germanium tetrahydride				7782-65-2	Glycerin				56-81-5
1.6E+00 mg/m3		1hour	Critical	AEGL3_1hr	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
5.3E-01 mg/m3		1hour	Marginal	AEGL2_1hr	5.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
5.3E-01 mg/m3		1hour	Negligible	AEGL2_1hr*	1.3E+02 mg/m3	1hour	1hour	Negligible	TEEL1
5.3E-01 mg/m3		8hour	Negligible	AEGL2_1hr*	1.0E+01 mg/m3	8hour	8hour	Negligible	TLV_TWA_irr
1.5E-01 mg/m3		14day	Negligible	TLV_TWA	3.4E+00 mg/m3	14day	14day	Negligible	TLV_TWA_irr
1.5E-01 mg/m3		1year	Negligible	TLVadj	3.4E+00 mg/m3	1year	1year	Negligible	TLVirr
GF				329-99-7	Glycerine carbonate				931-40-8
2.0E-04 mg/m3		24hour	Negligible	AEGL1-based	2.5E+02 mg/m3	1hour	1hour	Critical	TEEL3
5.0E-04 mg/m3		8hour	Negligible	AEGL1_8hr	5.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
1.4E-03 mg/m3		1hour	Negligible	AEGL1_1hr	3.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
2.7E-03 mg/m3		24hour	Marginal	EC16_mild_24	Glyceryl monostearate				31566-31-1
3.5E-03 mg/m3		10min	Negligible	AEGL1_10min	7.5E+01 mg/m3	1hour	1hour	Critical	TEEL3
4.3E-03 mg/m3		24hour	Critical	EC50_mild_24	1.5E+01 mg/m3	1hour	1hour	Marginal	TEEL2
8.0E-03 mg/m3		8hour	Marginal	EC16_mild_8h	2.5E+00 mg/m3	1hour	1hour	Negligible	TEEL1
1.3E-02 mg/m3		8hour	Critical	EC50_mild_8h	Glycidaldehyde				765-34-4
2.3E-02 mg/m3		1hour	Marginal	EC16_mild_1h	7.5E+01 mg/m3	1hour	1hour	Critical	TEEL3
3.7E-02 mg/m3		1hour	Critical	EC50_mild_1h	1.5E+00 mg/m3	1hour	1hour	Marginal	TEEL2
5.7E-02 mg/m3		10min	Marginal	EC16_mild_10	2.0E-01 mg/m3	1hour	1hour	Negligible	TEEL1
8.9E-02 mg/m3		10min	Critical	EC50_mild_10	6.8E-03 mg/m3	1year	1year	Negligible	HEAST_sub
2.7E-01 mg/m3		24hour	Catastrophic	EC50_sev_24h	Glycidol				556-52-5
8.1E-01 mg/m3		8hour	Catastrophic	EC50_sev_8hr	4.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
2.3E+00 mg/m3		1hour	Catastrophic	EC50_sev_1hr	7.5E+01 mg/m3	1hour	1hour	Marginal	TEEL2
5.6E+00 mg/m3		10min	Catastrophic	EC50_sev_10r	1.3E+01 mg/m3	1hour	1hour	Negligible	TEEL1
Giemsa's stain				51811-82-6	6.1E+00 mg/m3	8hour	8hour	Negligible	TLV_TWA_irr
2.5E+02 mg/m3		1hour	Critical	TEEL3	2.1E+00 mg/m3	14day	14day	Negligible	TLV_TWA_irr
5.0E+01 mg/m3		1hour	Marginal	TEEL2	2.1E+00 mg/m3	1year	1year	Negligible	TLVirr
3.0E+01 mg/m3		1hour	Negligible	TEEL1	Glycidoxypropyltrimethoxysilane				2530-83-8
Glucose, alpha-D-				492-62-6	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
5.0E+02 mg/m3		1hour	Critical	TEEL3	5.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
7.5E+00 mg/m3		1hour	Marginal	TEEL2	4.0E+02 mg/m3	1hour	1hour	Negligible	TEEL1
1.3E+00 mg/m3		1hour	Negligible	TEEL1	Glycidyl acrylate				106-90-1
Glucose, d-				50-99-7	6.0E+01 mg/m3	1hour	1hour	Critical	TEEL3
5.0E+02 mg/m3		1hour	Critical	TEEL3	1.3E+01 mg/m3	1hour	1hour	Marginal	TEEL2
7.5E+00 mg/m3		1hour	Marginal	TEEL2	2.0E+00 mg/m3	1hour	1hour	Negligible	TEEL1
1.3E+00 mg/m3		1hour	Negligible	TEEL1	Glycine				56-40-6
Glutamic acid, L-				56-86-0	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
2.0E+02 mg/m3		1hour	Critical	TEEL3	5.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
4.0E+01 mg/m3		1hour	Marginal	TEEL2	7.5E+01 mg/m3	1hour	1hour	Negligible	TEEL1
6.0E+00 mg/m3		1hour	Negligible	TEEL1	Glycolic acid				79-14-1
					5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
					5.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
					2.5E+02 mg/m3	1hour	1hour	Negligible	TEEL1

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Glycols, polyethylene, dimethyl ether				24991-55-7	Gypsum				13397-24-5
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.0E+01	mg/m3	8hour	Negligible	TLV_TWA
5.0E+02	mg/m3	1hour	Marginal	TEEL2	2.4E+00	mg/m3	14day	Negligible	TLV_TWA
2.0E+02	mg/m3	1hour	Negligible	TEEL1	2.4E+00	mg/m3	1year	Negligible	TLVadj
Glycols, polyethylene, mono(p-octylphenyl) ether				26636-32-8	Hafnium				7440-58-6
3.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+01	mg/m3	1hour	Critical	TEEL3
6.0E+01	mg/m3	1hour	Marginal	TEEL2	2.5E+00	mg/m3	1hour	Marginal	TEEL2
7.5E+00	mg/m3	1hour	Negligible	TEEL1	1.5E+00	mg/m3	1hour	Negligible	TEEL1
Glycoluril				496-46-8	Hafnium oxide				12055-23-1
2.5E+02	mg/m3	1hour	Critical	TEEL3	5.0E-01	mg/m3	8hour	Negligible	TLV_TWA_irr
5.0E+01	mg/m3	1hour	Marginal	TEEL2	1.7E-01	mg/m3	14day	Negligible	TLV_TWA_irr
3.0E+01	mg/m3	1hour	Negligible	TEEL1	1.7E-01	mg/m3	1year	Negligible	TLVirr
Glyoxal				107-22-2	Halothane				151-67-7
7.5E+01	mg/m3	1hour	Critical	TEEL3	4.0E+02	mg/m3	8hour	Negligible	TLV_TWA
7.5E+01	mg/m3	1hour	Marginal	TEEL2	9.9E+01	mg/m3	14day	Negligible	TLV_TWA
3.5E+01	mg/m3	1hour	Negligible	TEEL1	9.9E+01	mg/m3	1year	Negligible	TLVadj
1.0E-01	mg/m3	8hour	Negligible	TLV_TWA_irr	HCFC-141b				1717-00-6
3.4E-02	mg/m3	14day	Negligible	TLV_TWA_irr	1.4E+04	mg/m3	1hour	Critical	AEGL3_1hr
3.4E-02	mg/m3	1year	Negligible	TLVirr	8.1E+03	mg/m3	1hour	Marginal	AEGL2_1hr
Gold				7440-57-5	HCFC-142b				75-68-3
1.0E+02	mg/m3	1hour	Critical	TEEL3	1.0E+05	mg/m3	1hour	Critical	ERPG3
1.0E+02	mg/m3	1hour	Marginal	TEEL2	6.2E+04	mg/m3	1hour	Marginal	ERPG2
2.5E+01	mg/m3	1hour	Negligible	TEEL1	4.1E+04	mg/m3	1hour	Negligible	ERPG1
Graphite				7782-42-5	HD				505-60-2
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.4E-05	mg/m3	1year	Negligible	MRL_inter
1.0E+01	mg/m3	1hour	Marginal	TEEL2	3.0E-03	mg/m3	24hour	Negligible	AEGL1-based
6.0E+00	mg/m3	1hour	Negligible	TEEL1	8.0E-03	mg/m3	8hour	Negligible	AEGL1_8hr
2.0E+00	mg/m3	8hour	Negligible	TLV_TWA	8.1E-03	mg/m3	24hour	Marginal	EC16_mild_24hr
4.9E-01	mg/m3	14day	Negligible	TLV_TWA	1.2E-02	mg/m3	24hour	Critical	EC01_sev_24hr
4.9E-01	mg/m3	1year	Negligible	TLVadj	2.4E-02	mg/m3	8hour	Marginal	EC16_mild_8hr
Grease				68153-81-1	HCFC-142b				75-68-3
2.5E+02	mg/m3	1hour	Critical	TEEL3	5.2E-02	mg/m3	8hour	Critical	EC01_sev_8hr
5.0E+01	mg/m3	1hour	Marginal	TEEL2	6.7E-02	mg/m3	1hour	Negligible	AEGL1_1hr
3.0E+01	mg/m3	1hour	Negligible	TEEL1	7.0E-02	mg/m3	24hour	Catastrophic	EC50_sev_24hr
Guanidine hydrochloride				50-01-1	HD				505-60-2
2.0E+02	mg/m3	1hour	Critical	TEEL3	1.9E-01	mg/m3	1hour	Marginal	EC16_mild_1hr
4.0E+01	mg/m3	1hour	Marginal	TEEL2	2.1E-01	mg/m3	8hour	Catastrophic	EC50_sev_8hr
6.0E+00	mg/m3	1hour	Negligible	TEEL1	4.0E-01	mg/m3	10min	Negligible	AEGL1_10min
Guanidine thiocyanate				593-84-0	HD				505-60-2
1.3E+02	mg/m3	1hour	Critical	TEEL3	4.2E-01	mg/m3	1hour	Critical	EC50_mild_1hr
2.5E+01	mg/m3	1hour	Marginal	TEEL2	1.2E+00	mg/m3	10min	Marginal	EC16_mild_10min
3.5E+00	mg/m3	1hour	Negligible	TEEL1	1.7E+00	mg/m3	1hour	Catastrophic	EC50_sev_1hr
Guanyurea Sulfate				591-01-5	HD				505-60-2
2.5E+02	mg/m3	1hour	Critical	TEEL3	2.5E+00	mg/m3	10min	Critical	EC50_mild_10min
5.0E+01	mg/m3	1hour	Marginal	TEEL2	1.0E+01	mg/m3	10min	Catastrophic	EC50_sev_10min
3.0E+01	mg/m3	1hour	Negligible	TEEL1					

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Heavy naphthenic distillate				64741-53-3	Heptanoic acid				111-14-8
5.0E+02 mg/m3		1hour	Critical	TEEL3	3.0E+03 mg/m3	1hour	Critical	TEEL3	
1.0E+02 mg/m3		1hour	Marginal	TEEL2	6.0E+02 mg/m3	1hour	Marginal	TEEL2	
1.5E+01 mg/m3		1hour	Negligible	TEEL1	7.5E+01 mg/m3	1hour	Negligible	TEEL1	
Helium				7440-59-7	Heptanol, 1-				111-70-6
6.0E+04 mg/m3		1hour	Critical	TEEL3	5.0E+02 mg/m3	1hour	Critical	TEEL3	
3.5E+04 mg/m3		1hour	Marginal	TEEL2	5.0E+02 mg/m3	1hour	Marginal	TEEL2	
1.0E+04 mg/m3		1hour	Negligible	TEEL1	1.0E+01 mg/m3	1hour	Negligible	TEEL1	
Hematoxilin				517-28-2	Heptene, 1-				592-76-7
1.0E+01 mg/m3		1hour	Critical	TEEL3	7.5E+05 mg/m3	1hour	Critical	TEEL3	
2.0E+00 mg/m3		1hour	Marginal	TEEL2	1.5E+05 mg/m3	1hour	Marginal	TEEL2	
2.5E-01 mg/m3		1hour	Negligible	TEEL1	2.0E+04 mg/m3	1hour	Negligible	TEEL1	
Hepes				7365-45-9	Hexaammonium molybdate				12027-67-7
1.3E+02 mg/m3		1hour	Critical	TEEL3	5.0E+02 mg/m3	1hour	Critical	TEEL3	
2.5E+01 mg/m3		1hour	Marginal	TEEL2	4.3E+00 mg/m3	1hour	Marginal	TEEL2	
4.0E+00 mg/m3		1hour	Negligible	TEEL1	2.6E+00 mg/m3	1hour	Negligible	TEEL1	
Heptachlor				76-44-8	Hexachloroacetone				116-16-5
3.5E+01 mg/m3		1hour	Critical	TEEL3	2.0E+02 mg/m3	1hour	Critical	TEEL3	
3.5E+01 mg/m3		1hour	Marginal	TEEL2	7.5E+00 mg/m3	1hour	Marginal	TEEL2	
1.5E-01 mg/m3		1hour	Negligible	TEEL1	1.3E+00 mg/m3	1hour	Negligible	TEEL1	
5.0E-02 mg/m3		8hour	Negligible	TLV_TWA	Hexachlorobenzene				118-74-1
1.2E-02 mg/m3		14day	Negligible	TLV_TWA	2.0E+02 mg/m3	1hour	Critical	TEEL3	
3.7E-03 mg/m3		1year	Negligible	IRIS	1.5E+00 mg/m3	1hour	Marginal	TEEL2	
Heptachlor epoxide				1024-57-3	6.0E-03 mg/m3	1hour	Negligible	TEEL1	
6.0E+00 mg/m3		1hour	Critical	TEEL3	2.0E-03 mg/m3	8hour	Negligible	TLV_TWA	
6.0E+00 mg/m3		1hour	Marginal	TEEL2	4.9E-04 mg/m3	14day	Negligible	TLV_TWA	
1.5E-01 mg/m3		1hour	Negligible	TEEL1	4.9E-04 mg/m3	1year	Negligible	TLV_TWA*	
5.0E-02 mg/m3		8hour	Negligible	TLV_TWA	Hexachlorobutadiene				87-68-3
1.2E-02 mg/m3		14day	Negligible	TLV_TWA	1.1E+02 mg/m3	1hour	Critical	ERPG3	
1.8E-03 mg/m3		1year	Negligible	IRIS	3.2E+01 mg/m3	1hour	Marginal	ERPG2	
Heptadecane				629-78-7	1.1E+01 mg/m3	1hour	Negligible	ERPG1	
1.5E+04 mg/m3		1hour	Critical	TEEL3	2.1E-01 mg/m3	8hour	Negligible	TLV_TWA_irr	
3.5E+03 mg/m3		1hour	Marginal	TEEL2	7.3E-02 mg/m3	14day	Negligible	TLV_TWA_irr	
5.0E+02 mg/m3		1hour	Negligible	TEEL1	7.3E-02 mg/m3	1year	Negligible	TLV_TWA_irr*	
Heptafluorobutyric acid				375-22-4	Hexachlorocyclohexane, alpha-				319-84-6
6.0E+01 mg/m3		1hour	Critical	TEEL3	5.0E+02 mg/m3	1hour	Critical	TEEL3	
1.3E+01 mg/m3		1hour	Marginal	TEEL2	2.5E+00 mg/m3	1hour	Marginal	TEEL2	
2.0E+00 mg/m3		1hour	Negligible	TEEL1	1.5E+00 mg/m3	1hour	Negligible	TEEL1	
Heptane, n-				142-82-5	2.7E-03 mg/m3	1year	Negligible	IRIS	
3.0E+03 mg/m3		1hour	Critical	TEEL3	Hexachlorocyclohexane, beta-				319-85-7
1.6E+03 mg/m3		1hour	Marginal	TLV_TWA_irr*	5.0E+02 mg/m3	1hour	Critical	TEEL3	
1.6E+03 mg/m3		1hour	Negligible	TLV_TWA_irr*	2.5E+00 mg/m3	1hour	Marginal	TEEL2	
1.6E+03 mg/m3		8hour	Negligible	TLV_TWA_irr	1.5E+00 mg/m3	1hour	Negligible	TEEL1	
5.6E+02 mg/m3		14day	Negligible	TLV_TWA_irr	9.0E-03 mg/m3	1year	Negligible	IRIS	
5.6E+02 mg/m3		1year	Negligible	TLVirr					

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Hexachlorocyclohexane, technical				608-73-1	Hexadecanol, 1-				36653-82-4
3.0E+02	mg/m3	1hour	Critical	TEEL3	3.0E+02	mg/m3	1hour	Critical	TEEL3
4.0E+00	mg/m3	1hour	Marginal	TEEL2	6.0E+01	mg/m3	1hour	Marginal	TEEL2
5.0E-01	mg/m3	1hour	Negligible	TEEL1	7.5E+00	mg/m3	1hour	Negligible	TEEL1
9.4E-03	mg/m3	1year	Negligible	IRIS	Hexadecene, 1-				629-73-2
Hexachlorocyclopentadiene				77-47-4	4.0E+02	mg/m3	1hour	Critical	TEEL3
2.0E-01	mg/m3	1hour	Critical	TEEL3	7.5E+01	mg/m3	1hour	Marginal	TEEL2
2.0E-01	mg/m3	1hour	Marginal	TEEL2	1.3E+01	mg/m3	1hour	Negligible	TEEL1
2.0E-01	mg/m3	1hour	Negligible	TEEL1	Hexadecylpyridinium chloride, 1				123-03-5
1.1E-01	mg/m3	8hour	Negligible	TLV_TWA_irr	1.0E+01	mg/m3	1hour	Critical	TEEL3
7.6E-02	mg/m3	14day	Negligible	MRL_inter*	2.0E+00	mg/m3	1hour	Marginal	TEEL2
7.6E-02	mg/m3	1year	Negligible	MRL_inter	2.5E-01	mg/m3	1hour	Negligible	TEEL1
Hexachloroethane				67-72-1	Hexadecyltrimethylammonium bromide				57-09-0
3.0E+03	mg/m3	1hour	Critical	TEEL3	1.5E+02	mg/m3	1hour	Critical	TEEL3
5.0E+01	mg/m3	1hour	Marginal	TEEL2	7.5E-01	mg/m3	1hour	Marginal	TEEL2
3.0E+01	mg/m3	1hour	Negligible	TEEL1	1.0E-01	mg/m3	1hour	Negligible	TEEL1
9.7E+00	mg/m3	8hour	Negligible	TLV_TWA_irr	Hexadecyltrimethylammonium chloride				112-02-7
9.7E+00	mg/m3	14day	Negligible	TLV_TWA_irr*	2.5E+02	mg/m3	1hour	Critical	TEEL3
1.2E+00	mg/m3	1year	Negligible	IRIS	5.0E+01	mg/m3	1hour	Marginal	TEEL2
Hexachloronaphthalene				1335-87-1	7.5E+00	mg/m3	1hour	Negligible	TEEL1
2.0E+00	mg/m3	1hour	Critical	TEEL3	Hexafluoro-2-butyne				692-50-2
2.0E-01	mg/m3	1hour	Marginal	TEEL2	2.0E+02	mg/m3	1hour	Critical	TEEL3
2.0E-01	mg/m3	1hour	Negligible	TEEL1	4.0E+01	mg/m3	1hour	Marginal	TEEL2
2.0E-01	mg/m3	8hour	Negligible	TLV_TWA	6.0E+00	mg/m3	1hour	Negligible	TEEL1
4.9E-02	mg/m3	14day	Negligible	TLV_TWA	Hexafluoroacetone				684-16-2
4.9E-02	mg/m3	1year	Negligible	TLVadj	5.4E+02	mg/m3	1hour	Critical	AEGL3_1hr
Hexachlorophene				70-30-4	1.4E+00	mg/m3	1hour	Marginal	AEGL2_1hr
2.0E+02	mg/m3	1hour	Critical	TEEL3	6.8E-01	mg/m3	1hour	Negligible	TLV_TWA*
2.0E+01	mg/m3	1hour	Marginal	TEEL2	6.8E-01	mg/m3	8hour	Negligible	TLV_TWA
3.0E+00	mg/m3	1hour	Negligible	TEEL1	1.7E-01	mg/m3	14day	Negligible	TLV_TWA
Hexachloropropene				1888-71-7	1.7E-01	mg/m3	1year	Negligible	TLVadj
1.5E+02	mg/m3	1hour	Critical	TEEL3	Hexafluorobenzene				392-56-3
3.0E+01	mg/m3	1hour	Marginal	TEEL2	1.3E+04	mg/m3	1hour	Critical	TEEL3
4.0E+00	mg/m3	1hour	Negligible	TEEL1	1.3E+04	mg/m3	1hour	Marginal	TEEL2
Hexadecanamine, 1-				143-27-1	3.5E+03	mg/m3	1hour	Negligible	TEEL1
7.5E+01	mg/m3	1hour	Critical	TEEL3	Hexafluorodisodium silicate, 2-				16893-85-9
2.5E+00	mg/m3	1hour	Marginal	TEEL2	5.0E+00	mg/m3	1hour	Critical	TEEL3
3.5E-01	mg/m3	1hour	Negligible	TEEL1	5.0E+00	mg/m3	1hour	Marginal	TEEL2
Hexadecane				544-76-3	4.1E+00	mg/m3	1hour	Negligible	TEEL1
5.0E+02	mg/m3	1hour	Critical	TEEL3	Hexafluoroethane				76-16-4
6.0E+01	mg/m3	1hour	Marginal	TEEL2	2.5E+05	mg/m3	1hour	Critical	TEEL3
7.5E+00	mg/m3	1hour	Negligible	TEEL1	2.5E+05	mg/m3	1hour	Marginal	TEEL2
Hexadecanoic acid				57-10-3	2.5E+05	mg/m3	1hour	Negligible	TEEL1
5.0E+01	mg/m3	1hour	Critical	TEEL3					
5.0E+01	mg/m3	1hour	Marginal	TEEL2					
5.0E+01	mg/m3	1hour	Negligible	TEEL1					

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Hexafluoropropylene				116-15-4	Hexamethylenetetraamine				100-97-0
2.9E+03 mg/m3		1hour	Critical	AEGL3_1hr	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
5.6E+02 mg/m3		1hour	Marginal	AEGL2_1hr	5.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
2.5E+02 mg/m3		1hour	Negligible	AEGL1_1hr	7.5E+01 mg/m3	1hour	1hour	Negligible	TEEL1
5.1E+01 mg/m3		8hour	Negligible	AEGL1_8hr	Hexamethylenetetramine chloroallyl chloride				4080-31-3
1.5E-01 mg/m3		14day	Negligible	TLV_TWA	2.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
1.5E-01 mg/m3		1year	Negligible	TLVadj	2.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
Hexamethyl phosphoramidate				680-31-9	3.0E+00 mg/m3	1hour	1hour	Negligible	TEEL1
1.0E+03 mg/m3		1hour	Critical	TEEL3	Hexanal				66-25-1
6.0E+00 mg/m3		1hour	Marginal	TEEL2	7.5E+02 mg/m3	1hour	1hour	Critical	TEEL3
7.5E-01 mg/m3		1hour	Negligible	TEEL1	7.5E+02 mg/m3	1hour	1hour	Marginal	TEEL2
Hexamethylcyclotrisiloxane				541-05-9	1.5E+02 mg/m3	1hour	1hour	Negligible	TEEL1
5.0E+02 mg/m3		1hour	Critical	TEEL3	Hexane, commercial				110-54-3
2.0E+02 mg/m3		1hour	Marginal	TEEL2	3.0E+04 mg/m3	1hour	1hour	Critical	AEGL3_1hr
3.0E+01 mg/m3		1hour	Negligible	TEEL1	1.2E+04 mg/m3	1hour	1hour	Marginal	AEGL2_1hr
Hexamethyldisilazane				999-97-3	1.5E+03 mg/m3	1hour	1hour	Negligible	TEEL1
3.5E+02 mg/m3		1hour	Critical	TEEL3	1.8E+02 mg/m3	8hour	8hour	Negligible	TLV_TWA_irr
2.5E+02 mg/m3		1hour	Marginal	TEEL2	6.0E+01 mg/m3	14day	14day	Negligible	TLV_TWA_irr
4.0E+01 mg/m3		1hour	Negligible	TEEL1	1.4E+00 mg/m3	1year	1year	Negligible	PPRTV_sub
Hexamethyldisiloxane				107-46-0	Hexane, other isomers				Hexane isom
2.0E+03 mg/m3		1hour	Critical	TEEL3	1.8E+03 mg/m3	8hour	8hour	Negligible	TLV_TWA_irr
2.0E+03 mg/m3		1hour	Marginal	TEEL2	6.0E+02 mg/m3	14day	14day	Negligible	TLV_TWA_irr
7.5E+02 mg/m3		1hour	Negligible	TEEL1	6.0E+02 mg/m3	1year	1year	Negligible	TLVirr
Hexamethylene diamine				124-09-4	Hexanehexol, 1,2,3,4,5,6-				69-65-8
2.4E+00 mg/m3		8hour	Negligible	TLV_TWA_irr	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
8.1E-01 mg/m3		14day	Negligible	TLV_TWA_irr	5.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
8.1E-01 mg/m3		1year	Negligible	TLVirr	5.0E+02 mg/m3	1hour	1hour	Negligible	TEEL1
Hexamethylene diisocyanate				822-06-0	Hexanenitrile				628-73-9
2.0E+01 mg/m3		1hour	Critical	TEEL3	2.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
1.3E-01 mg/m3		1hour	Marginal	TEEL2	4.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
1.0E-01 mg/m3		1hour	Negligible	TEEL1	6.0E+00 mg/m3	1hour	1hour	Negligible	TEEL1
3.4E-02 mg/m3		8hour	Negligible	TLV_TWA_irr	Hexanethiol, n-				111-31-9
1.2E-02 mg/m3		14day	Negligible	TLV_TWA_irr	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
1.4E-04 mg/m3		1year	Negligible	MRL_inter	2.5E+00 mg/m3	1hour	1hour	Marginal	TEEL2
Hexamethylene diisocyanate polymer				28182-81-2	3.5E-01 mg/m3	1hour	1hour	Negligible	TEEL1
5.0E+02 mg/m3		1hour	Critical	TEEL3	Hexanitrostilbene				20062-22-0
2.0E+02 mg/m3		1hour	Marginal	TEEL2	3.0E+01 mg/m3	1hour	1hour	Critical	TEEL3
2.5E+01 mg/m3		1hour	Negligible	TEEL1	6.0E+00 mg/m3	1hour	1hour	Marginal	TEEL2
Hexamethylene glycol				629-11-8	7.5E-01 mg/m3	1hour	1hour	Negligible	TEEL1
5.0E+02 mg/m3		1hour	Critical	TEEL3	Hexanoic acid				142-62-1
5.0E+02 mg/m3		1hour	Marginal	TEEL2	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
1.5E+02 mg/m3		1hour	Negligible	TEEL1	1.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
Hexamethyleneimine				111-49-9	1.5E+01 mg/m3	1hour	1hour	Negligible	TEEL1
5.0E+02 mg/m3		1hour	Critical	TEEL3	Hexanol, 2-				626-93-7
3.0E+02 mg/m3		1hour	Marginal	TEEL2	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
4.0E+01 mg/m3		1hour	Negligible	TEEL1	1.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
					1.5E+01 mg/m3	1hour	1hour	Negligible	TEEL1

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Hexanol, n-				111-27-3	HFC-134A				811-97-2
3.0E+02 mg/m3		1hour	Critical	TEEL3	1.1E+05 mg/m3	1hour	1hour	Critical	AEGL3_1hr
6.0E+01 mg/m3		1hour	Marginal	TEEL2	5.4E+04 mg/m3	1hour	1hour	Marginal	AEGL2_1hr
7.5E+00 mg/m3		1hour	Negligible	TEEL1	3.3E+04 mg/m3	1hour	1hour	Negligible	AEGL1_1hr
Hexanone, 2-				591-78-6	3.3E+04 mg/m3	8hour	8hour	Negligible	AEGL1_8hr
6.0E+03 mg/m3		1hour	Critical	TEEL3	5.5E+01 mg/m3	1year	1year	Negligible	IRIS_chr
6.0E+03 mg/m3		1hour	Marginal	TEEL2	HMX				2691-41-0
4.0E+01 mg/m3		1hour	Negligible	TEEL1	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
2.0E+01 mg/m3		8hour	Negligible	TLV_TWA	7.5E-01 mg/m3	1hour	1hour	Marginal	TEEL2
5.0E+00 mg/m3		14day	Negligible	TLV_TWA	1.3E-01 mg/m3	1hour	1hour	Negligible	TEEL1
2.1E-01 mg/m3		1year	Negligible	IRIS_sub	Holmium				7440-60-0
Hexanone, 3-				589-38-8	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
1.5E+03 mg/m3		1hour	Critical	TEEL3	1.5E+02 mg/m3	1hour	1hour	Marginal	TEEL2
3.5E+02 mg/m3		1hour	Marginal	TEEL2	2.5E+01 mg/m3	1hour	1hour	Negligible	TEEL1
5.0E+01 mg/m3		1hour	Negligible	TEEL1	Holmium trioxide				12055-62-8
Hexanoyl chloride				142-61-0	2.5E+02 mg/m3	1hour	1hour	Critical	TEEL3
1.5E+02 mg/m3		1hour	Critical	TEEL3	5.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
3.5E+01 mg/m3		1hour	Marginal	TEEL2	3.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
5.0E+00 mg/m3		1hour	Negligible	TEEL1	Humic acid, sodium salt				68131-04-4
Hexaphenylcyclotrisiloxane				512-63-0	2.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
5.0E+02 mg/m3		1hour	Critical	TEEL3	4.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
1.5E+02 mg/m3		1hour	Marginal	TEEL2	6.0E+00 mg/m3	1hour	1hour	Negligible	TEEL1
2.5E+01 mg/m3		1hour	Negligible	TEEL1	Hyamine 3500				68424-85-1
Hexene				592-41-6	1.5E+02 mg/m3	1hour	1hour	Critical	TEEL3
1.7E+04 mg/m3		1hour	Critical	ERPG3	3.5E+01 mg/m3	1hour	1hour	Marginal	TEEL2
1.7E+03 mg/m3		1hour	Marginal	ERPG2	5.0E+00 mg/m3	1hour	1hour	Negligible	TEEL1
2.5E+02 mg/m3		1hour	Negligible	TEEL1	Hydrazine				302-01-2
1.7E+02 mg/m3		8hour	Negligible	TLV_TWA	4.6E+01 mg/m3	1hour	1hour	Critical	AEGL3_1hr*
4.2E+01 mg/m3		14day	Negligible	TLV_TWA	1.7E+01 mg/m3	1hour	1hour	Marginal	AEGL2_1hr*
4.2E+01 mg/m3		1year	Negligible	TLVadj	1.3E-01 mg/m3	1hour	1hour	Negligible	AEGL1_1hr*
Hexyl acetate, sec-				108-84-9	1.3E-01 mg/m3	8hour	8hour	Negligible	AEGL1_8hr*
2.9E+02 mg/m3		8hour	Negligible	TLV_TWA_irr	3.9E-02 mg/m3	14day	14day	Negligible	CEGL
1.0E+02 mg/m3		14day	Negligible	TLV_TWA_irr	6.2E-05 mg/m3	1year	1year	Negligible	PPRTV_sub
1.0E+02 mg/m3		1year	Negligible	TLVirr	1.3E-01 mg/m3	10min	10min	Negligible	AEGL1_10min
Hexylene glycol				107-41-5	2.1E+00 mg/m3	8hour	8hour	Marginal	AEGL2_8h*
1.5E+03 mg/m3		1hour	Critical	TEEL3	5.8E+00 mg/m3	8hour	8hour	Critical	AEGL3_8h*
1.3E+02 mg/m3		1hour	Marginal	TEEL2	3.0E+01 mg/m3	10min	10min	Marginal	AEGL2_10min
5.0E+01 mg/m3		1hour	Negligible	TEEL1	8.4E+01 mg/m3	10min	10min	Critical	AEGL3_10min
Hexyltrichlorosilane				928-65-4	Hydrazine hydrate, aqueous solutions				10217-52-4
3.0E+02 mg/m3		1hour	Critical	AEGL3_1hr	7.5E+00 mg/m3	1hour	1hour	Critical	TEEL3
6.6E+01 mg/m3		1hour	Marginal	AEGL2_1hr	7.5E-01 mg/m3	1hour	1hour	Marginal	TEEL2
5.4E+00 mg/m3		1hour	Negligible	AEGL1_1hr	1.0E-01 mg/m3	1hour	1hour	Negligible	TEEL1
5.4E+00 mg/m3		8hour	Negligible	AEGL1_8hr	Hydrazine monohydrate				7803-57-8
					5.0E+01 mg/m3	1hour	1hour	Critical	TEEL3
					7.5E-03 mg/m3	1hour	1hour	Marginal	TEEL2
					1.0E-03 mg/m3	1hour	1hour	Negligible	TEEL1

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Hydrazine monohydrochloride				2644-70-4	Hydrogen Fluoride				7664-39-3
5.0E+01	mg/m3	1hour	Critical	TEEL3	3.6E+01	mg/m3	1hour	Critical	AEGL3_1hr*
1.0E+01	mg/m3	1hour	Marginal	TEEL2	2.0E+01	mg/m3	1hour	Marginal	AEGL2_1hr*
1.5E+00	mg/m3	1hour	Negligible	TEEL1	8.2E-01	mg/m3	1hour	Negligible	AEGL1_1hr*
Hydrazine sulfate				10034-93-2	8.2E-01	mg/m3	8hour	Negligible	AEGL1_8hr*
2.5E+02	mg/m3	1hour	Critical	TEEL3	3.3E-02	mg/m3	14day	Negligible	CEGL
1.5E+01	mg/m3	1hour	Marginal	TEEL2	3.3E-02	mg/m3	1year	Negligible	CEGL*
2.0E+00	mg/m3	1hour	Negligible	TEEL1	8.2E-01	mg/m3	10min	Negligible	AEGL1_10min
Hydrazine, dihydrochloride				5341-61-7	9.8E+00	mg/m3	8hour	Marginal	AEGL2_8h*
4.0E+02	mg/m3	1hour	Critical	TEEL3	1.8E+01	mg/m3	8hour	Critical	AEGL3_8h*
7.5E+01	mg/m3	1hour	Marginal	TEEL2	7.8E+01	mg/m3	10min	Marginal	AEGL2_10min
1.0E+01	mg/m3	1hour	Negligible	TEEL1	1.4E+02	mg/m3	10min	Critical	AEGL3_10min
Hydrogen				1333-74-0	Hydrogen iodide				10034-85-2
3.0E+04	mg/m3	1hour	Critical	TEEL3	6.3E+02	mg/m3	1hour	Critical	TEEL3
1.5E+04	mg/m3	1hour	Marginal	TEEL2	1.2E+02	mg/m3	1hour	Marginal	TEEL2
5.0E+03	mg/m3	1hour	Negligible	TEEL1	5.2E+00	mg/m3	1hour	Negligible	TEEL1
1.7E+02	mg/m3	14day	Negligible	CEGL	Hydrogen peroxide				7722-84-1
Hydrogen bromide				10035-10-6	1.4E+02	mg/m3	1hour	Critical	ERPG3
4.0E+02	mg/m3	1hour	Critical	TEEL3	7.0E+01	mg/m3	1hour	Marginal	ERPG2
7.3E+01	mg/m3	1hour	Marginal	TEEL2	1.4E+01	mg/m3	1hour	Negligible	ERPG1
3.3E+00	mg/m3	1hour	Negligible	TEEL1	1.4E+00	mg/m3	8hour	Negligible	TLV_TWA_irr
Hydrogen Chloride				7647-01-0	4.8E-01	mg/m3	14day	Negligible	TLV_TWA_irr
1.5E+02	mg/m3	1hour	Critical	AEGL3_1hr*	4.8E-01	mg/m3	1year	Negligible	TLVirr
3.3E+01	mg/m3	1hour	Marginal	AEGL2_1hr*	Hydrogen peroxide, 30% solution				0-314*
2.7E+00	mg/m3	1hour	Negligible	AEGL1_1hr*	4.0E+02	mg/m3	1hour	Critical	TEEL3
2.7E+00	mg/m3	8hour	Negligible	AEGL1_8hr*	2.0E+02	mg/m3	1hour	Marginal	TEEL2
1.5E+00	mg/m3	14day	Negligible	CEGL	4.0E+01	mg/m3	1hour	Negligible	TEEL1
1.4E-02	mg/m3	1year	Negligible	IRIS_chr	Hydrogen potassium phthalate				877-24-7
2.7E+00	mg/m3	10min	Negligible	AEGL1_10min	5.0E+02	mg/m3	1hour	Critical	TEEL3
1.6E+01	mg/m3	8hour	Marginal	AEGL2_8h*	2.5E+02	mg/m3	1hour	Marginal	TEEL2
3.9E+01	mg/m3	8hour	Critical	AEGL3_8h*	4.0E+01	mg/m3	1hour	Negligible	TEEL1
1.5E+02	mg/m3	10min	Marginal	AEGL2_10min	Hydrogen Selenide				7783-07-5
9.4E+02	mg/m3	10min	Critical	AEGL3_10min	7.3E+00	mg/m3	1hour	Critical	AEGL3_1hr*
Hydrogen Cyanide				74-90-8	2.4E+00	mg/m3	1hour	Marginal	AEGL2_1hr*
1.7E+01	mg/m3	1hour	Critical	AEGL3_1hr*	3.5E-01	mg/m3	1hour	Negligible	TEEL1*
7.8E+00	mg/m3	1hour	Marginal	AEGL2_1hr*	2.0E-01	mg/m3	8hour	Negligible	TLV_TWA_irr*
2.2E+00	mg/m3	1hour	Negligible	AEGL1_1hr*	5.7E-02	mg/m3	14day	Negligible	TLV_TWA_irr
1.1E+00	mg/m3	8hour	Negligible	AEGL1_8hr*	5.7E-02	mg/m3	1year	Negligible	TLVirr
6.2E-03	mg/m3	1year	Negligible	IRIS_sub	3.5E-01	mg/m3	10min	Negligible	TEEL1*
2.8E+00	mg/m3	10min	Negligible	AEGL1_10min	8.6E-01	mg/m3	8hour	Marginal	AEGL2_8h*
2.8E+00	mg/m3	8hour	Marginal	AEGL2_8h*	2.6E+00	mg/m3	8hour	Critical	AEGL3_8h*
7.3E+00	mg/m3	8hour	Critical	AEGL3_8h*	6.0E+00	mg/m3	10min	Marginal	AEGL2_10min
1.9E+01	mg/m3	10min	Marginal	AEGL2_10min	1.8E+01	mg/m3	10min	Critical	AEGL3_10min
3.0E+01	mg/m3	10min	Critical	AEGL3_10min					

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Hydrogen Sulfide				7783-06-4	Hydroxyapatite				1306-06-5
7.0E+01	mg/m3	1hour	Critical	AEGL3_1hr*	5.0E+02	mg/m3	1hour	Critical	TEEL3
3.8E+01	mg/m3	1hour	Marginal	AEGL2_1hr*	6.0E+01	mg/m3	1hour	Marginal	TEEL2
7.1E-01	mg/m3	1hour	Negligible	AEGL1_1hr*	3.5E+01	mg/m3	1hour	Negligible	TEEL1
4.6E-01	mg/m3	8hour	Negligible	AEGL1_8hr*	Hydroxyethyl methacrylate, 2-				868-77-9
4.6E-01	mg/m3	14day	Negligible	AEGL1_8hr*	5.0E+02	mg/m3	1hour	Critical	TEEL3
1.4E-02	mg/m3	1year	Negligible	IRIS_sub	2.0E+00	mg/m3	1hour	Marginal	TEEL2
1.1E+00	mg/m3	10min	Negligible	AEGL1_10min	3.0E-01	mg/m3	1hour	Negligible	TEEL1
2.4E+01	mg/m3	8hour	Marginal	AEGL2_8h*	Hydroxyethylenediaminetriacetic acid				150-39-0
4.3E+01	mg/m3	8hour	Critical	AEGL3_8h*	1.5E+02	mg/m3	1hour	Critical	TEEL3
5.7E+01	mg/m3	10min	Marginal	AEGL2_10min	3.0E+01	mg/m3	1hour	Marginal	TEEL2
1.1E+02	mg/m3	10min	Critical	AEGL3_10min	4.0E+00	mg/m3	1hour	Negligible	TEEL1
Hydrogenated terphenyls				61788-32-7	Hydroxylamine				7803-49-8
7.5E+03	mg/m3	1hour	Critical	TEEL3	2.5E+01	mg/m3	1hour	Critical	TEEL3
3.0E+01	mg/m3	1hour	Marginal	TEEL2	5.0E+00	mg/m3	1hour	Marginal	TEEL2
1.5E+01	mg/m3	1hour	Negligible	TEEL1	7.5E-01	mg/m3	1hour	Negligible	TEEL1
4.9E+00	mg/m3	8hour	Negligible	TLV_TWA_irr	Hydroxylamine hydrochloride				5470-11-1
1.7E+00	mg/m3	14day	Negligible	TLV_TWA_irr	6.0E+01	mg/m3	1hour	Critical	TEEL3
1.7E+00	mg/m3	1year	Negligible	TLVirr	6.0E+01	mg/m3	1hour	Marginal	TEEL2
Hydroquinone				123-31-9	3.5E+01	mg/m3	1hour	Negligible	TEEL1
5.0E+01	mg/m3	1hour	Critical	TEEL3	Hydroxylamine nitrate				13465-08-2
2.0E+01	mg/m3	1hour	Marginal	TEEL2	1.5E+02	mg/m3	1hour	Critical	TEEL3
3.0E+00	mg/m3	1hour	Negligible	TEEL1	4.0E+01	mg/m3	1hour	Marginal	TEEL2
1.0E+00	mg/m3	8hour	Negligible	TLV_TWA	1.5E+01	mg/m3	1hour	Negligible	TEEL1
2.4E-01	mg/m3	14day	Negligible	TLV_TWA	Hydroxylamine sulfate				10039-54-0
2.4E-01	mg/m3	1year	Negligible	TLVadj	4.0E+02	mg/m3	1hour	Critical	TEEL3
Hydrotreated heavy paraffinic distillate				64742-54-7	7.5E+01	mg/m3	1hour	Marginal	TEEL2
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.0E+01	mg/m3	1hour	Negligible	TEEL1
5.0E+02	mg/m3	1hour	Marginal	TEEL2	Hydroxy-n-phenylbenzamide, N-				304-88-1
1.5E+02	mg/m3	1hour	Negligible	TEEL1	2.5E+02	mg/m3	1hour	Critical	TEEL3
3.0E-01	mg/m3	14day	Negligible	CEGL	5.0E+01	mg/m3	1hour	Marginal	TEEL2
Hydrotreated light naphthenic distillate				64742-53-6	3.0E+01	mg/m3	1hour	Negligible	TEEL1
5.0E+02	mg/m3	1hour	Critical	TEEL3	Hydroxyphenyl benzothiazole				3411-95-8
1.0E+02	mg/m3	1hour	Marginal	TEEL2	5.0E+02	mg/m3	1hour	Critical	TEEL3
1.5E+01	mg/m3	1hour	Negligible	TEEL1	5.0E+02	mg/m3	1hour	Marginal	TEEL2
Hydroxy-2-methylpropanoic acid, 2-				594-61-6	1.0E+02	mg/m3	1hour	Negligible	TEEL1
2.5E+02	mg/m3	1hour	Critical	TEEL3	Hydroxyphenylacetic acid, 1-A				90-64-2
5.0E+01	mg/m3	1hour	Marginal	TEEL2	5.0E+02	mg/m3	1hour	Critical	TEEL3
3.0E+01	mg/m3	1hour	Negligible	TEEL1	3.5E+02	mg/m3	1hour	Marginal	TEEL2
Hydroxy-4'hydroxyethoxy-2-methylpropiophenone, 2-				106797-53-9	5.0E+01	mg/m3	1hour	Negligible	TEEL1
5.0E+02	mg/m3	1hour	Critical	TEEL3	Hydroxypropyl cellulose				9004-64-2
3.5E+02	mg/m3	1hour	Marginal	TEEL2	5.0E+02	mg/m3	1hour	Critical	TEEL3
5.0E+01	mg/m3	1hour	Negligible	TEEL1	5.0E+02	mg/m3	1hour	Marginal	TEEL2
					1.3E+02	mg/m3	1hour	Negligible	TEEL1

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Hydroxyquinoline sulfate, 8-				134-31-6	Indeno(1,2,3-cd)pyrene				193-39-5
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.5E+01	mg/m3	1hour	Critical	TEEL3
1.0E+02	mg/m3	1hour	Marginal	TEEL2	3.5E+00	mg/m3	1hour	Marginal	TEEL2
1.5E+01	mg/m3	1hour	Negligible	TEEL1	5.0E-01	mg/m3	1hour	Negligible	TEEL1
Hypophosphorous acid				6303-21-5	Indigo carmine				860-22-0
2.5E+02	mg/m3	1hour	Critical	TEEL3	7.5E+01	mg/m3	1hour	Critical	TEEL3
5.0E+01	mg/m3	1hour	Marginal	TEEL2	7.5E+01	mg/m3	1hour	Marginal	TEEL2
3.0E+01	mg/m3	1hour	Negligible	TEEL1	6.0E+01	mg/m3	1hour	Negligible	TEEL1
Hypophosphorous acid-d3				57583-56-9	Indium (III) oxide				1312-43-2
6.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
1.3E+02	mg/m3	1hour	Marginal	TEEL2	6.0E-01	mg/m3	1hour	Marginal	TEEL2
7.5E+01	mg/m3	1hour	Negligible	TEEL1	3.6E-01	mg/m3	1hour	Negligible	TEEL1
Imidazole				288-32-4	Indium and compounds				7440-74-6
1.0E+02	mg/m3	1hour	Critical	TEEL3	3.5E+00	mg/m3	1hour	Critical	TEEL3
7.5E+01	mg/m3	1hour	Marginal	TEEL2	6.0E-01	mg/m3	1hour	Marginal	TEEL2
1.3E+01	mg/m3	1hour	Negligible	TEEL1	1.0E-01	mg/m3	1hour	Negligible	TEEL1
Imidazole hydrochloride				1467-16-9	Indium oxide vapor				0-318*
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.0E-01	mg/m3	8hour	Negligible	TLV_TWA
1.5E+02	mg/m3	1hour	Marginal	TEEL2	2.4E-02	mg/m3	14day	Negligible	TLV_TWA
2.5E+01	mg/m3	1hour	Negligible	TEEL1	2.4E-02	mg/m3	1year	Negligible	TLVadj
Imidazole, substituted				38668-46-1	Indium sulfate				13464-82-9
2.5E+02	mg/m3	1hour	Critical	TEEL3	4.0E+00	mg/m3	1hour	Critical	TEEL3
5.0E+01	mg/m3	1hour	Marginal	TEEL2	1.1E+00	mg/m3	1hour	Marginal	TEEL2
3.0E+01	mg/m3	1hour	Negligible	TEEL1	6.8E-01	mg/m3	1hour	Negligible	TEEL1
Iminodiacetic acid				142-73-4	Indium trichloride				10025-82-8
1.0E+02	mg/m3	1hour	Critical	TEEL3	1.0E+00	mg/m3	1hour	Critical	TEEL3
2.0E+01	mg/m3	1hour	Marginal	TEEL2	1.0E+00	mg/m3	1hour	Marginal	TEEL2
3.0E+00	mg/m3	1hour	Negligible	TEEL1	5.8E-01	mg/m3	1hour	Negligible	TEEL1
Iminodiacetic acid disodium salt				928-72-3	Indole-3-carboxaldehyde, 1H-				487-89-8
3.5E+03	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
6.0E+02	mg/m3	1hour	Marginal	TEEL2	1.0E+02	mg/m3	1hour	Marginal	TEEL2
1.0E+02	mg/m3	1hour	Negligible	TEEL1	1.5E+01	mg/m3	1hour	Negligible	TEEL1
Iminodiacetic acid, disodium salt hydrate				17593-73-6	Iodic acid				7782-68-5
5.0E+02	mg/m3	1hour	Critical	TEEL3	2.0E+01	mg/m3	1hour	Critical	TEEL3
5.0E+02	mg/m3	1hour	Marginal	TEEL2	1.4E+00	mg/m3	1hour	Marginal	TEEL2
1.0E+02	mg/m3	1hour	Negligible	TEEL1	1.4E+00	mg/m3	1hour	Negligible	TEEL1
Indan				496-11-7	Iodine				7553-56-2
5.0E+02	mg/m3	1hour	Critical	TEEL3	5.2E+01	mg/m3	1hour	Critical	ERPG3
5.0E+02	mg/m3	1hour	Marginal	TEEL2	5.2E+00	mg/m3	1hour	Marginal	ERPG2
1.3E+02	mg/m3	1hour	Negligible	TEEL1	1.0E+00	mg/m3	1hour	Negligible	ERPG1
Indene				95-13-6	Iodine				7553-56-2
1.5E+03	mg/m3	1hour	Critical	TEEL3	1.0E-01	mg/m3	8hour	Negligible	TLV_TWA
2.4E+01	mg/m3	1hour	Marginal	TLV_TWA*	2.5E-02	mg/m3	14day	Negligible	TLV_TWA
2.4E+01	mg/m3	1hour	Negligible	TLV_TWA*	2.5E-02	mg/m3	1year	Negligible	TLVadj
2.4E+01	mg/m3	8hour	Negligible	TLV_TWA					
5.8E+00	mg/m3	14day	Negligible	TLV_TWA					
5.8E+00	mg/m3	1year	Negligible	TLVadj					

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Iodine-125				17144-19-3	Iron oxide				1317-61-9
5.0E+01	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
5.0E+00	mg/m3	1hour	Marginal	TEEL2	3.5E+01	mg/m3	1hour	Marginal	TEEL2
1.0E+00	mg/m3	1hour	Negligible	TEEL1	2.1E+01	mg/m3	1hour	Negligible	TEEL1
Iodobenzene				591-50-4	Iron pentacarbonyl				13463-40-6
2.7E+01	mg/m3	1hour	Critical	TEEL3	1.4E+00	mg/m3	1hour	Critical	AEGL3_1hr
2.7E+01	mg/m3	1hour	Marginal	TEEL2	4.8E-01	mg/m3	1hour	Marginal	AEGL2_1hr
1.6E+00	mg/m3	1hour	Negligible	TEEL1	4.8E-01	mg/m3	1hour	Negligible	TEEL1
Iodoethane				75-03-6	Iron salts, soluble				Fe salts
1.5E+01	mg/m3	1hour	Critical	TEEL3	1.0E+00	mg/m3	8hour	Negligible	TLV_TWA_irr
7.5E-01	mg/m3	1hour	Marginal	TEEL2	3.4E-01	mg/m3	14day	Negligible	TLV_TWA_irr
7.5E-01	mg/m3	1hour	Negligible	TEEL1	3.4E-01	mg/m3	1year	Negligible	TLVirr
Iodoform				75-47-8	Iron(II) perchlorate hexahydrate				13520-69-9
9.7E+00	mg/m3	8hour	Negligible	TLV_TWA	1.5E+02	mg/m3	1hour	Critical	TEEL3
2.4E+00	mg/m3	14day	Negligible	TLV_TWA	3.2E+01	mg/m3	1hour	Marginal	TEEL2
2.4E+00	mg/m3	1year	Negligible	TLVadj	1.9E+01	mg/m3	1hour	Negligible	TEEL1
Iodopropynyl butylcarbamate				55406-53-6	Iron(III) perchlorate				13537-24-1
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.5E+02	mg/m3	1hour	Critical	TEEL3
1.0E+02	mg/m3	1hour	Marginal	TEEL2	3.2E+01	mg/m3	1hour	Marginal	TEEL2
1.3E+01	mg/m3	1hour	Negligible	TEEL1	1.9E+01	mg/m3	1hour	Negligible	TEEL1
Iotalamic acid				2276-90-6	Iron(III) sulfate heptahydrate				35139-28-7
8.1E+01	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
1.6E+00	mg/m3	1hour	Marginal	TEEL2	2.5E+01	mg/m3	1hour	Marginal	TEEL2
1.6E+00	mg/m3	1hour	Negligible	TEEL1	1.5E+01	mg/m3	1hour	Negligible	TEEL1
Iridium, elemental				7439-88-5	Isoamyl acetate				123-92-2
5.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+03	mg/m3	1hour	Critical	TEEL3
1.3E+02	mg/m3	1hour	Marginal	TEEL2	1.0E+03	mg/m3	1hour	Marginal	TEEL2
2.0E+01	mg/m3	1hour	Negligible	TEEL1	5.0E+02	mg/m3	1hour	Negligible	TEEL1
Iron				7439-89-6	Isoamyl alcohol				123-51-3
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.5E+03	mg/m3	1hour	Critical	TEEL3
3.0E+01	mg/m3	1hour	Marginal	TEEL2	4.0E+02	mg/m3	1hour	Marginal	TEEL2
4.0E+00	mg/m3	1hour	Negligible	TEEL1	4.0E+02	mg/m3	1hour	Negligible	TEEL1
Iron (II) chloride tetrahydrate				13478-10-9	Isoamyl nitrite				110-46-3
4.0E+01	mg/m3	1hour	Critical	TEEL3	1.5E+03	mg/m3	1hour	Critical	TEEL3
7.5E+00	mg/m3	1hour	Marginal	TEEL2	3.0E+02	mg/m3	1hour	Marginal	TEEL2
3.6E+00	mg/m3	1hour	Negligible	TEEL1	4.0E+01	mg/m3	1hour	Negligible	TEEL1
Iron carbide				12011-67-5	Isoamyl nitrite				110-46-3
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.5E+03	mg/m3	1hour	Critical	TEEL3
2.7E+01	mg/m3	1hour	Marginal	TEEL2	3.0E+02	mg/m3	1hour	Marginal	TEEL2
1.6E+01	mg/m3	1hour	Negligible	TEEL1	4.0E+01	mg/m3	1hour	Negligible	TEEL1
Iron hydroxide oxide				20344-49-4	Isoamyl nitrite				110-46-3
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.5E+03	mg/m3	1hour	Critical	TEEL3
4.0E+01	mg/m3	1hour	Marginal	TEEL2	3.0E+02	mg/m3	1hour	Marginal	TEEL2
2.4E+01	mg/m3	1hour	Negligible	TEEL1	4.0E+01	mg/m3	1hour	Negligible	TEEL1

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Isobenzan				297-78-9	Isobutyric acid				79-31-2
2.0E+00	mg/m ³	1hour	Critical	TEEL3	1.3E+02	mg/m ³	1hour	Critical	TEEL3
2.0E+00	mg/m ³	1hour	Marginal	TEEL2	2.5E+01	mg/m ³	1hour	Marginal	TEEL2
1.5E+00	mg/m ³	1hour	Negligible	TEEL1	3.5E+00	mg/m ³	1hour	Negligible	TEEL1
Isobutanol-2-amine				124-68-5	Isobutyric anhydride				97-72-3
5.0E+02	mg/m ³	1hour	Critical	TEEL3	6.0E+01	mg/m ³	1hour	Critical	TEEL3
6.0E-01	mg/m ³	1hour	Marginal	TEEL2	1.3E+01	mg/m ³	1hour	Marginal	TEEL2
7.5E-02	mg/m ³	1hour	Negligible	TEEL1	2.0E+00	mg/m ³	1hour	Negligible	TEEL1
Isobutenyl chloride				563-47-3	Isobutyronitrile				78-82-0
3.0E+02	mg/m ³	1hour	Critical	TEEL3	1.9E+02	mg/m ³	1hour	Critical	AEGL3_1hr
6.0E+01	mg/m ³	1hour	Marginal	TEEL2	5.1E+01	mg/m ³	1hour	Marginal	AEGL2_1hr
7.5E+00	mg/m ³	1hour	Negligible	TEEL1	2.8E+01	mg/m ³	1hour	Negligible	ERPG1
Isobutyl acetate				110-19-0	Isocyanatoethyl methacrylate				30674-80-7
6.0E+03	mg/m ³	1hour	Critical	TEEL3	6.3E+00	mg/m ³	1hour	Critical	ERPG3
1.3E+03	mg/m ³	1hour	Marginal	TEEL2	6.3E-01	mg/m ³	1hour	Marginal	ERPG2
7.1E+02	mg/m ³	1hour	Negligible	TLV_TWA_irr*	3.5E-01	mg/m ³	1hour	Negligible	TEEL1
7.1E+02	mg/m ³	8hour	Negligible	TLV_TWA_irr	Isocyanic acid				75-13-8
2.4E+02	mg/m ³	14day	Negligible	TLV_TWA_irr	6.0E+00	mg/m ³	1hour	Critical	TEEL3
2.4E+02	mg/m ³	1year	Negligible	TLVirr	1.3E+00	mg/m ³	1hour	Marginal	TEEL2
Isobutyl alcohol				78-83-1	Isocyanic acid 3,4-dichlorophenyl ester				102-36-3
5.0E+03	mg/m ³	1hour	Critical	TEEL3	5.0E+02	mg/m ³	1hour	Critical	TEEL3
5.0E+03	mg/m ³	1hour	Marginal	TEEL2	1.4E+01	mg/m ³	1hour	Marginal	TEEL2
3.5E+03	mg/m ³	1hour	Negligible	TEEL1	7.5E+00	mg/m ³	1hour	Negligible	TEEL1
1.5E+02	mg/m ³	8hour	Negligible	TLV_TWA_irr	Isodrin				465-73-6
5.2E+01	mg/m ³	14day	Negligible	TLV_TWA_irr	7.0E+00	mg/m ³	1hour	Critical	TEEL3
5.2E+01	mg/m ³	1year	Negligible	TLVirr	7.0E+00	mg/m ³	1hour	Marginal	TEEL2
Isobutyl chloride				513-36-0	Isolan				119-38-0
1.5E+02	mg/m ³	1hour	Critical	TEEL3	5.6E+00	mg/m ³	1hour	Critical	TEEL3
3.0E+01	mg/m ³	1hour	Marginal	TEEL2	5.6E+00	mg/m ³	1hour	Marginal	TEEL2
4.0E+00	mg/m ³	1hour	Negligible	TEEL1	3.5E+00	mg/m ³	1hour	Negligible	TEEL1
Isobutyl chloroformate				543-27-1	Isonate 181				0-310*
3.7E+01	mg/m ³	1hour	Critical	AEGL3_1hr	7.5E+01	mg/m ³	1hour	Critical	TEEL3
1.2E+01	mg/m ³	1hour	Marginal	AEGL2_1hr	6.0E+00	mg/m ³	1hour	Marginal	TEEL2
3.5E+00	mg/m ³	1hour	Negligible	TEEL1	7.5E-01	mg/m ³	1hour	Negligible	TEEL1
Isobutyl isobutyrate				97-85-8	Isooctyl alcohol				26952-21-6
5.0E+02	mg/m ³	1hour	Critical	TEEL3	2.7E+02	mg/m ³	8hour	Negligible	TLV_TWA_irr
5.0E+02	mg/m ³	1hour	Marginal	TEEL2	9.1E+01	mg/m ³	14day	Negligible	TLV_TWA_irr
5.0E+02	mg/m ³	1hour	Negligible	TEEL1	9.1E+01	mg/m ³	1year	Negligible	TLVirr
Isobutylamine				78-81-9	Isopentane				78-78-4
1.0E+02	mg/m ³	1hour	Critical	TEEL3	6.0E+04	mg/m ³	1hour	Critical	TEEL3
2.0E+01	mg/m ³	1hour	Marginal	TEEL2	1.8E+03	mg/m ³	1hour	Marginal	TLV_TWA_irr*
6.0E+00	mg/m ³	1hour	Negligible	TEEL1	1.8E+03	mg/m ³	1hour	Negligible	TLV_TWA_irr*
Isobutyraldehyde				78-84-2	Isooctyl alcohol				26952-21-6
5.0E+03	mg/m ³	1hour	Critical	TEEL3	1.8E+03	mg/m ³	8hour	Negligible	TLV_TWA_irr
5.0E+03	mg/m ³	1hour	Marginal	TEEL2	6.1E+02	mg/m ³	14day	Negligible	TLV_TWA_irr
7.5E+02	mg/m ³	1hour	Negligible	TEEL1	6.1E+02	mg/m ³	1year	Negligible	TLVirr

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME					CASRN	CHEMICAL NAME					CASRN		
MEG	Units	Timeframe	Severity	Basis		MEG	Units	Timeframe	Severity	Basis			
Isophorone					78-59-1	Isopropyl nitrate					1712-64-7		
1.0E+03 mg/m3		1hour	Critical	TEEL3		3.0E+03 mg/m3	1hour	Critical	TEEL3				
2.5E+01 mg/m3		1hour	Marginal	TEEL2		6.0E+02 mg/m3	1hour	Marginal	TEEL2				
2.0E+01 mg/m3		1hour	Negligible	TEEL1		2.0E+01 mg/m3	1hour	Negligible	TEEL1				
Isophorone diisocyanate					4098-71-9	Isopropylamine					75-31-0		
1.3E+01 mg/m3		1hour	Critical	TEEL3		1.5E+03 mg/m3	1hour	Critical	TEEL3				
1.2E+00 mg/m3		1hour	Marginal	TEEL2		3.0E+02 mg/m3	1hour	Marginal	TEEL2				
1.5E-01 mg/m3		1hour	Negligible	TEEL1		2.5E+01 mg/m3	1hour	Negligible	TEEL1				
4.5E-02 mg/m3		8hour	Negligible	TLV_TWA		1.2E+01 mg/m3	8hour	Negligible	TLV_TWA_irr				
1.1E-02 mg/m3		14day	Negligible	TLV_TWA		4.1E+00 mg/m3	14day	Negligible	TLV_TWA_irr				
1.1E-02 mg/m3		1year	Negligible	TLVadj		4.1E+00 mg/m3	1year	Negligible	TLVirr				
Isoprene					78-79-5	Isopropylaniline, N-					768-52-5		
1.1E+04 mg/m3		1hour	Critical	ERPG3		1.1E+01 mg/m3	8hour	Negligible	TLV_TWA				
2.8E+03 mg/m3		1hour	Marginal	ERPG2		2.7E+00 mg/m3	14day	Negligible	TLV_TWA				
1.4E+01 mg/m3		1hour	Negligible	ERPG1		2.7E+00 mg/m3	1year	Negligible	TLVadj				
Isopropanol					67-63-0	Isopropylmagnesium chloride					1068-55-9		
5.0E+03 mg/m3		1hour	Critical	TEEL3		1.0E+02 mg/m3	1hour	Critical	TEEL3				
1.0E+03 mg/m3		1hour	Marginal	TEEL2		2.0E+01 mg/m3	1hour	Marginal	TEEL2				
1.0E+03 mg/m3		1hour	Negligible	TEEL1		3.0E+00 mg/m3	1hour	Negligible	TEEL1				
4.9E+02 mg/m3		8hour	Negligible	TLV_TWA_irr		Isopropyltoluene, p-					99-87-6		
2.5E+00 mg/m3		14day	Negligible	CEGL		5.0E+02 mg/m3	1hour	Critical	TEEL3				
2.5E+00 mg/m3		1year	Negligible	CEGL*		5.0E+02 mg/m3	1hour	Marginal	TEEL2				
Isopropoxyethanol					109-59-1	2.5E+02 mg/m3					1hour	Negligible	TEEL1
1.1E+02 mg/m3		8hour	Negligible	TLV_TWA		Jeffamine M-600					77110-54-4		
2.6E+01 mg/m3		14day	Negligible	TLV_TWA		2.5E+02 mg/m3	1hour	Critical	TEEL3				
2.6E+01 mg/m3		1year	Negligible	TLVadj		5.0E+01 mg/m3	1hour	Marginal	TEEL2				
Isopropyl acetate					108-21-4	3.0E+01 mg/m3					1hour	Negligible	TEEL1
7.5E+03 mg/m3		1hour	Critical	TEEL3		Jet Fuel-5 (JP-5)					70892-10-3		
7.5E+02 mg/m3		1hour	Marginal	TEEL2		1.1E+03 mg/m3	1hour	Marginal	AEGL2_1hr				
7.5E+02 mg/m3		1hour	Negligible	TEEL1		2.9E+02 mg/m3	1hour	Negligible	AEGL1_1hr				
4.2E+02 mg/m3		8hour	Negligible	TLV_TWA_irr		2.9E+02 mg/m3	8hour	Negligible	AEGL1_8hr				
1.4E+02 mg/m3		14day	Negligible	TLV_TWA_irr		JP-4 jet fuel					50815-00-4		
1.4E+02 mg/m3		1year	Negligible	TLVirr		6.2E+00 mg/m3	1year	Negligible	MRL_inter				
Isopropyl chloroformate					108-23-6	JP-5/JP-8 jet fuel					94114-58-6		
5.0E+01 mg/m3		1hour	Critical	AEGL3_1hr		1.1E+03 mg/m3	1hour	Critical	TEEL3				
1.7E+01 mg/m3		1hour	Marginal	AEGL2_1hr		1.1E+03 mg/m3	1hour	Marginal	TEEL2				
2.0E+00 mg/m3		1hour	Negligible	TEEL1		2.9E+02 mg/m3	1hour	Negligible	TEEL1				
Isopropyl glycidyl ether					4016-14-2	Kaolin					1332-58-7		
2.4E+02 mg/m3		8hour	Negligible	TLV_TWA_irr		5.0E+02 mg/m3	1hour	Critical	TEEL3				
8.1E+01 mg/m3		14day	Negligible	TLV_TWA_irr		1.3E+02 mg/m3	1hour	Marginal	TEEL2				
8.1E+01 mg/m3		1year	Negligible	TLVirr		6.0E+00 mg/m3	1hour	Negligible	TEEL1				
Isopropyl myristate					110-27-0	2.0E+00 mg/m3					8hour	Negligible	TLV_TWA
5.0E+02 mg/m3		1hour	Critical	TEEL3		4.9E-01 mg/m3	14day	Negligible	TLV_TWA				
5.0E+02 mg/m3		1hour	Marginal	TEEL2		4.9E-01 mg/m3	1year	Negligible	TLVadj				
5.0E+02 mg/m3		1hour	Negligible	TEEL1									

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Kerosene				8008-20-6	Lactic acid, monosodium salt				312-85-6
1.1E+03 mg/m3		1hour	Critical	TEEL3	2.5E+02 mg/m3	1hour	1hour	Critical	TEEL3
1.1E+03 mg/m3		1hour	Marginal	AEGL2_1hr	5.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
2.9E+02 mg/m3		1hour	Negligible	AEGL1_1hr	3.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
2.9E+02 mg/m3		8hour	Negligible	AEGL1_8hr	Lactonitrile				78-97-7
6.8E+01 mg/m3		14day	Negligible	TLV_TWA_irr	1.5E+02 mg/m3	1hour	1hour	Critical	TEEL3
6.8E-03 mg/m3		1year	Negligible	MRL_inter	1.8E+01 mg/m3	1hour	1hour	Marginal	TEEL2
Kerosene, hydrodesulfurized				64742-81-0	1.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
2.0E+02 mg/m3		8hour	Negligible	TLV_TWA	Lactose, beta-D				5965-66-2
4.9E+01 mg/m3		14day	Negligible	TLV_TWA	2.5E+02 mg/m3	1hour	1hour	Critical	TEEL3
4.9E+01 mg/m3		1year	Negligible	TLVadj	5.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
Ketene				463-51-4	3.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
3.4E+00 mg/m3		1hour	Critical	AEGL3_1hr	Lanthanum				7439-91-0
3.4E+00 mg/m3		1hour	Critical	AEGL3_1hr	2.5E+02 mg/m3	1hour	1hour	Critical	TEEL3
1.1E+00 mg/m3		1hour	Marginal	AEGL2_1hr	5.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
1.1E+00 mg/m3		1hour	Marginal	AEGL2_1hr	3.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
3.3E-01 mg/m3		1hour	Negligible	AEGL1_1hr	Lanthanum (III) nitrate, hexahydrate				10277-43-7
3.3E-01 mg/m3		1hour	Negligible	AEGL1_1hr	1.5E+02 mg/m3	1hour	1hour	Critical	TEEL3
1.5E-01 mg/m3		8hour	Negligible	AEGL1_8hr	3.5E+01 mg/m3	1hour	1hour	Marginal	TEEL2
1.5E-01 mg/m3		8hour	Negligible	AEGL1_8hr	5.0E+00 mg/m3	1hour	1hour	Negligible	TEEL1
2.9E-01 mg/m3		14day	Negligible	TLV_TWA_irr	Lanthanum boride				12008-21-8
1.5E-01 mg/m3		14day	Negligible	AEGL1_8hr*	2.5E+02 mg/m3	1hour	1hour	Critical	TEEL3
2.9E-01 mg/m3		1year	Negligible	TLVirr	5.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
Ketene				463-51-4	3.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
3.4E+00 mg/m3		1hour	Critical	AEGL3_1hr	Lanthanum carbonate				6487-39-4
3.4E+00 mg/m3		1hour	Critical	AEGL3_1hr	2.5E+02 mg/m3	1hour	1hour	Critical	TEEL3
1.1E+00 mg/m3		1hour	Marginal	AEGL2_1hr	5.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
1.1E+00 mg/m3		1hour	Marginal	AEGL2_1hr	3.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
3.3E-01 mg/m3		1hour	Negligible	AEGL1_1hr	Lanthanum chloride				10099-58-8
3.3E-01 mg/m3		1hour	Negligible	AEGL1_1hr	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
1.5E-01 mg/m3		8hour	Negligible	AEGL1_8hr	1.5E+02 mg/m3	1hour	1hour	Marginal	TEEL2
1.5E-01 mg/m3		8hour	Negligible	AEGL1_8hr	2.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
2.9E-01 mg/m3		14day	Negligible	TLV_TWA_irr	Lanthanum fluoride				13709-38-1
1.5E-01 mg/m3		14day	Negligible	AEGL1_8hr*	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
2.9E-01 mg/m3		1year	Negligible	TLVirr	4.3E+01 mg/m3	1hour	1hour	Marginal	TEEL2
Krypton				7439-90-9	2.6E+01 mg/m3	1hour	1hour	Negligible	TEEL1
1.3E+06 mg/m3		1hour	Critical	TEEL3	Lanthanum hydroxide				14507-19-8
7.5E+05 mg/m3		1hour	Marginal	TEEL2	2.5E+00 mg/m3	1hour	1hour	Critical	TEEL3
2.0E+05 mg/m3		1hour	Negligible	TEEL1	2.0E+00 mg/m3	1hour	1hour	Marginal	TEEL2
Kyanite				1302-76-7	7.5E-01 mg/m3	1hour	1hour	Negligible	TEEL1
4.0E+02 mg/m3		1hour	Critical	TEEL3	Lanthanum oxide				1312-81-8
7.5E+01 mg/m3		1hour	Marginal	TEEL2	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
1.5E+01 mg/m3		1hour	Negligible	TEEL1	2.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
Lactic acid				50-21-5	3.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
5.0E+02 mg/m3		1hour	Critical	TEEL3					
1.0E+02 mg/m3		1hour	Marginal	TEEL2					
1.5E+01 mg/m3		1hour	Negligible	TEEL1					

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Lanthanum phosphate				14913-14-5	Lead carbonate				598-63-0
3.0E+00	mg/m3	1hour	Critical	TEEL3	1.3E+02	mg/m3	1hour	Critical	TEEL3
3.0E+00	mg/m3	1hour	Marginal	TEEL2	4.0E+00	mg/m3	1hour	Marginal	TEEL2
7.5E-01	mg/m3	1hour	Negligible	TEEL1	1.9E-01	mg/m3	1hour	Negligible	TEEL1
Laromin C 260				6864-37-5	Lead chloride				7758-95-4
1.5E+02	mg/m3	1hour	Critical	TEEL3	1.3E+02	mg/m3	1hour	Critical	TEEL3
3.5E+01	mg/m3	1hour	Marginal	TEEL2	7.5E+00	mg/m3	1hour	Marginal	TEEL2
5.0E+00	mg/m3	1hour	Negligible	TEEL1	2.0E-01	mg/m3	1hour	Negligible	TEEL1
Laureth 4 [USAN]				9002-92-0	Lead chromate				7758-97-6
4.0E+02	mg/m3	1hour	Critical	TEEL3	9.3E+01	mg/m3	1hour	Critical	TEEL3
3.5E+00	mg/m3	1hour	Marginal	TEEL2	1.0E+00	mg/m3	1hour	Marginal	TEEL2
5.0E-01	mg/m3	1hour	Negligible	TEEL1	1.5E-01	mg/m3	1hour	Negligible	TEEL1
Lauryl sulfate				151-41-7	Lead dioxide				1309-60-0
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.2E-02	mg/m3	8hour	Negligible	TLV_TWA
1.0E+02	mg/m3	1hour	Marginal	TEEL2	2.9E-03	mg/m3	14day	Negligible	TLV_TWA
1.5E+01	mg/m3	1hour	Negligible	TEEL1	2.9E-03	mg/m3	1year	Negligible	TLVadj
Lead (II) arsenite				10031-13-7	Lead fluoride				13814-96-5
1.4E+01	mg/m3	1hour	Critical	TEEL3	1.8E+02	mg/m3	1hour	Critical	TEEL3
1.4E-01	mg/m3	1hour	Marginal	TEEL2	4.6E-01	mg/m3	1hour	Marginal	TEEL2
8.4E-02	mg/m3	1hour	Negligible	TEEL1	2.8E-01	mg/m3	1hour	Negligible	TEEL1
Lead acetate				301-04-2	Lead fluoride				7783-46-2
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.2E+02	mg/m3	1hour	Critical	TEEL3
7.5E+01	mg/m3	1hour	Marginal	TEEL2	1.5E+01	mg/m3	1hour	Marginal	TEEL2
1.0E+01	mg/m3	1hour	Negligible	TEEL1	1.8E-01	mg/m3	1hour	Negligible	TEEL1
Lead acetate (II), trihydrate				6080-56-4	Lead hydroxide				19783-14-3
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.2E+02	mg/m3	1hour	Critical	TEEL3
5.0E+02	mg/m3	1hour	Marginal	TEEL2	3.0E-01	mg/m3	1hour	Marginal	TEEL2
1.3E+02	mg/m3	1hour	Negligible	TEEL1	1.7E-01	mg/m3	1hour	Negligible	TEEL1
Lead acid arsenate				7784-40-9	Lead iodide				10101-63-0
2.3E+01	mg/m3	1hour	Critical	TEEL3	2.2E+02	mg/m3	1hour	Critical	TEEL3
2.3E+01	mg/m3	1hour	Marginal	TEEL2	5.6E-01	mg/m3	1hour	Marginal	TEEL2
1.4E-01	mg/m3	1hour	Negligible	TEEL1	3.3E-01	mg/m3	1hour	Negligible	TEEL1
Lead and compounds (inorganic)				7439-92-1	Lead nitrate				10099-74-8
1.0E+02	mg/m3	1hour	Critical	TEEL3	1.6E+02	mg/m3	1hour	Critical	TEEL3
2.5E-01	mg/m3	1hour	Marginal	TEEL2	4.0E+00	mg/m3	1hour	Marginal	TEEL2
1.5E-01	mg/m3	1hour	Negligible	TEEL1	6.0E-01	mg/m3	1hour	Negligible	TEEL1
5.0E-02	mg/m3	8hour	Negligible	TLV_TWA	Lead oxide				1317-36-8
1.2E-02	mg/m3	14day	Negligible	TLV_TWA	1.1E+02	mg/m3	1hour	Critical	TEEL3
1.2E-02	mg/m3	1year	Negligible	TLVadj	5.4E-02	mg/m3	1hour	Marginal	TEEL2
Lead arsenate				3687-31-8	Lead phosphate				7446-27-7
3.0E+01	mg/m3	1hour	Critical	TEEL3	1.3E+02	mg/m3	1hour	Critical	TEEL3
2.0E+01	mg/m3	1hour	Marginal	TEEL2	3.0E+01	mg/m3	1hour	Marginal	TEEL2
1.8E-01	mg/m3	1hour	Negligible	TEEL1	2.0E-01	mg/m3	1hour	Negligible	TEEL1
Lead bromide				10031-22-8					
1.8E+02	mg/m3	1hour	Critical	TEEL3					
4.4E-01	mg/m3	1hour	Marginal	TEEL2					
2.7E-01	mg/m3	1hour	Negligible	TEEL1					

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Lead subacetate				1335-32-6	Lewisite 3				40334-70-1
5.0E+02	mg/m3	1hour	Critical	TEEL3	7.4E-01	mg/m3	1hour	Critical	TEEL3
5.0E+02	mg/m3	1hour	Marginal	TEEL2	1.2E-01	mg/m3	1hour	Marginal	TEEL2
1.0E+02	mg/m3	1hour	Negligible	TEEL1	1.2E-01	mg/m3	1hour	Negligible	TEEL1
Lead sulfate				7446-14-2	Lewisite oxide				3088-37-7
1.5E+02	mg/m3	1hour	Critical	TEEL3	3.4E-01	mg/m3	1year	Negligible	Munro
3.0E+01	mg/m3	1hour	Marginal	TEEL2	Lignosulfonic acid				8062-15-5
4.0E+00	mg/m3	1hour	Negligible	TEEL1	5.0E+02	mg/m3	1hour	Critical	TEEL3
Lead sulfide				1314-87-0	5.0E+02	mg/m3	1hour	Marginal	TEEL2
1.2E+02	mg/m3	1hour	Critical	TEEL3	1.5E+02	mg/m3	1hour	Negligible	TEEL1
1.2E+02	mg/m3	1hour	Marginal	TEEL2	Limonene, D-				5989-27-5
1.7E-01	mg/m3	1hour	Negligible	TEEL1	2.0E+03	mg/m3	1hour	Critical	TEEL3
Lead tetroxide				1314-41-6	5.0E+02	mg/m3	1hour	Marginal	TEEL2
1.1E+02	mg/m3	1hour	Critical	TEEL3	3.5E+02	mg/m3	1hour	Negligible	TEEL1
2.8E-01	mg/m3	1hour	Marginal	TEEL2	Lindane				58-89-9
1.7E-01	mg/m3	1hour	Negligible	TEEL1	5.0E+01	mg/m3	1hour	Critical	TEEL3
Lead(II) perchlorate hydrate				13453-62-8	5.0E+01	mg/m3	1hour	Marginal	TEEL2
2.2E+02	mg/m3	1hour	Critical	TEEL3	1.5E+00	mg/m3	1hour	Negligible	TEEL1
5.6E-01	mg/m3	1hour	Marginal	TEEL2	5.0E-01	mg/m3	8hour	Negligible	TLV_TWA
3.3E-01	mg/m3	1hour	Negligible	TEEL1	1.2E-01	mg/m3	14day	Negligible	TLV_TWA
Leptophos				21609-90-5	1.2E-01	mg/m3	1year	Negligible	TLVadj
3.0E+01	mg/m3	1hour	Critical	TEEL3	Linseed oil				8001-26-1
3.0E+01	mg/m3	1hour	Marginal	TEEL2	6.0E+01	mg/m3	1hour	Critical	TEEL3
1.5E+01	mg/m3	1hour	Negligible	TEEL1	1.0E+01	mg/m3	1hour	Marginal	TEEL2
Lethane 384				112-56-1	1.5E+00	mg/m3	1hour	Negligible	TEEL1
4.0E+01	mg/m3	1hour	Critical	TEEL3	Lithium				7439-93-2
7.5E+00	mg/m3	1hour	Marginal	TEEL2	4.0E+02	mg/m3	1hour	Critical	TEEL3
1.0E+00	mg/m3	1hour	Negligible	TEEL1	7.5E+01	mg/m3	1hour	Marginal	TEEL2
Lewisite				541-25-3	1.3E+01	mg/m3	1hour	Negligible	TEEL1
4.2E-01	mg/m3	1hour	Critical	FM 3-11.9*	Lithium acetate dihydrate				6108-17-4
1.2E-01	mg/m3	1hour	Marginal	AEGL2_1hr*	5.0E+02	mg/m3	1hour	Critical	TEEL3
3.0E-03	mg/m3	1hour	Negligible	AR 385-61*	2.5E+02	mg/m3	1hour	Marginal	TEEL2
3.0E-03	mg/m3	8hour	Negligible	AR 385-61*	3.5E+01	mg/m3	1hour	Negligible	TEEL1
3.0E-03	mg/m3	10min	Negligible	AR 385-61*	Lithium aluminate				12003-67-7
1.8E-02	mg/m3	8hour	Marginal	AEGL2_8hr*	3.0E+02	mg/m3	1hour	Critical	TEEL3
5.2E-02	mg/m3	8hour	Critical	FM 3-11.9*	6.1E+01	mg/m3	1hour	Marginal	TEEL2
6.5E-01	mg/m3	10min	Marginal	AEGL2_10min	3.7E+01	mg/m3	1hour	Negligible	TEEL1
2.5E+00	mg/m3	10min	Critical	FM 3-11.9*	Lithium aluminum hydride				16853-85-3
7.5E+00	mg/m3	10min	Catastrophic	FM 3-11.9*	3.5E+01	mg/m3	1hour	Critical	TEEL3
1.3E+00	mg/m3	1hour	Catastrophic	FM 3-11.9*	7.5E+00	mg/m3	1hour	Marginal	TEEL2
1.6E-01	mg/m3	8hour	Catastrophic	FM 3-11.9*	2.8E+00	mg/m3	1hour	Negligible	TEEL1
Lewisite 2				40334-69-8	Lithium aluminum oxide				11089-89-7
7.4E-01	mg/m3	1hour	Critical	TEEL3	6.0E+01	mg/m3	1hour	Critical	TEEL3
1.2E-01	mg/m3	1hour	Marginal	TEEL2	1.3E+01	mg/m3	1hour	Marginal	TEEL2
1.2E-01	mg/m3	1hour	Negligible	TEEL1	7.3E+00	mg/m3	1hour	Negligible	TEEL1

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Lithium azide				19597-69-4	Lithium hydroxide				1310-65-2
2.5E+02 mg/m3		1hour	Critical	TEEL3	1.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
5.0E+01 mg/m3		1hour	Marginal	TEEL2	1.0E+00 mg/m3	1hour	1hour	Marginal	TEEL2
3.0E+01 mg/m3		1hour	Negligible	TEEL1	1.5E-01 mg/m3	1hour	1hour	Negligible	TEEL1
Lithium borohydride				16949-15-8	Lithium hydroxide monohydrate				1310-66-3
4.0E+01 mg/m3		1hour	Critical	TEEL3	1.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
1.2E+01 mg/m3		1hour	Marginal	TEEL2	1.0E+00 mg/m3	1hour	1hour	Marginal	TEEL2
1.2E+01 mg/m3		1hour	Negligible	TEEL1	1.5E-01 mg/m3	1hour	1hour	Negligible	TEEL1
Lithium bromide				7550-35-8	Lithium iodide				10377-51-2
5.0E+02 mg/m3		1hour	Critical	TEEL3	2.5E+02 mg/m3	1hour	1hour	Critical	TEEL3
1.5E+01 mg/m3		1hour	Marginal	TEEL2	5.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
2.0E+00 mg/m3		1hour	Negligible	TEEL1	3.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
1.0E+00 mg/m3		14day	Negligible	CEGL	Lithium metaborate				13453-69-5
Lithium carbonate				554-13-2	2.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
2.0E+02 mg/m3		1hour	Critical	TEEL3	4.6E+01 mg/m3	1hour	1hour	Marginal	TEEL2
4.0E+00 mg/m3		1hour	Marginal	TEEL2	2.8E+01 mg/m3	1hour	1hour	Negligible	TEEL1
6.0E-01 mg/m3		1hour	Negligible	TEEL1	Lithium molybdate				13568-40-6
Lithium chloride				7447-41-8	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
6.0E+01 mg/m3		1hour	Critical	TEEL3	9.1E+00 mg/m3	1hour	1hour	Marginal	TEEL2
1.0E+01 mg/m3		1hour	Marginal	TEEL2	9.1E+00 mg/m3	1hour	1hour	Negligible	TEEL1
1.5E+00 mg/m3		1hour	Negligible	TEEL1	Lithium niobium oxide				12031-63-9
Lithium chromate				14307-35-8	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
3.8E+01 mg/m3		1hour	Critical	TEEL3	5.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
7.5E+00 mg/m3		1hour	Marginal	TEEL2	2.0E+02 mg/m3	1hour	1hour	Negligible	TEEL1
1.0E+00 mg/m3		1hour	Negligible	TEEL1	Lithium nitrate				7790-69-4
Lithium deuteride				13587-16-1	5.0E+01 mg/m3	1hour	1hour	Critical	TEEL3
5.0E-01 mg/m3		1hour	Critical	TEEL3	1.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
1.0E-01 mg/m3		1hour	Marginal	TEEL2	1.5E+00 mg/m3	1hour	1hour	Negligible	TEEL1
2.5E-02 mg/m3		1hour	Negligible	TEEL1	Lithium nitride				26134-62-3
Lithium diisopropylamide				4111-54-0	2.5E+02 mg/m3	1hour	1hour	Critical	TEEL3
2.5E+02 mg/m3		1hour	Critical	TEEL3	5.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
5.0E+01 mg/m3		1hour	Marginal	TEEL2	3.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
3.0E+01 mg/m3		1hour	Negligible	TEEL1	Lithium perchlorate				7791-03-9
Lithium fluoride				7789-24-4	6.0E-02 mg/m3	1hour	1hour	Critical	TEEL3
3.4E+02 mg/m3		1hour	Critical	TEEL3	1.0E-02 mg/m3	1hour	1hour	Marginal	TEEL2
1.7E+01 mg/m3		1hour	Marginal	TEEL2	1.5E-03 mg/m3	1hour	1hour	Negligible	TEEL1
1.0E+01 mg/m3		1hour	Negligible	TEEL1	Lithium silicon				68848-64-6
Lithium hydride				7580-67-8	4.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
5.0E-01 mg/m3		1hour	Critical	ERPG3	7.5E+01 mg/m3	1hour	1hour	Marginal	TEEL2
1.0E-01 mg/m3		1hour	Marginal	ERPG2	1.3E+01 mg/m3	1hour	1hour	Negligible	TEEL1
2.5E-02 mg/m3		1hour	Negligible	ERPG1	Lithium stearate				4485-12-5
2.5E-02 mg/m3		8hour	Negligible	TLV_TWA_irr	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
8.6E-03 mg/m3		14day	Negligible	TLV_TWA_irr	5.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
8.6E-03 mg/m3		1year	Negligible	TLVirr	1.5E+02 mg/m3	1hour	1hour	Negligible	TEEL1

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Lithium sulfate				10377-48-7	Magnesium				7439-95-4
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.5E+02	mg/m3	1hour	Critical	TEEL3
3.5E+00	mg/m3	1hour	Marginal	TEEL2	3.0E+01	mg/m3	1hour	Marginal	TEEL2
5.0E-01	mg/m3	1hour	Negligible	TEEL1	4.0E+00	mg/m3	1hour	Negligible	TEEL1
Lithium tetraborate				12007-60-2	Magnesium acetate tetrahydrate				16674-78-5
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.0E+02	mg/m3	1hour	Critical	TEEL3
1.6E+02	mg/m3	1hour	Marginal	TEEL2	2.0E+01	mg/m3	1hour	Marginal	TEEL2
9.4E+01	mg/m3	1hour	Negligible	TEEL1	2.5E+00	mg/m3	1hour	Negligible	TEEL1
Lithium triethylborodeuteride				74540-86-6	Magnesium aluminum phosphide				0-139*
2.5E+02	mg/m3	1hour	Critical	TEEL3	9.0E+00	mg/m3	1hour	Critical	TEEL3
5.0E+01	mg/m3	1hour	Marginal	TEEL2	9.5E+00	mg/m3	1hour	Critical	AEGL3_1hr
3.0E+01	mg/m3	1hour	Negligible	TEEL1	5.0E+00	mg/m3	1hour	Marginal	TEEL2
Lithium triethylborohydride, super-hydride				22560-16-3	5.3E+00	mg/m3	1hour	Marginal	AEGL2_1hr
1.5E+02	mg/m3	1hour	Critical	TEEL3	5.0E+00	mg/m3	1hour	Negligible	TEEL1
3.5E+01	mg/m3	1hour	Marginal	TEEL2	Magnesium aluminum phosphide				z-139
5.0E+00	mg/m3	1hour	Negligible	TEEL1	9.0E+00	mg/m3	1hour	Critical	TEEL3
LPG				68476-85-7	9.5E+00	mg/m3	1hour	Critical	AEGL3_1hr
3.5E+03	mg/m3	1hour	Critical	TEEL3	5.0E+00	mg/m3	1hour	Marginal	TEEL2
3.5E+03	mg/m3	1hour	Marginal	TEEL2	5.3E+00	mg/m3	1hour	Marginal	AEGL2_1hr
3.5E+03	mg/m3	1hour	Negligible	TEEL1	5.0E+00	mg/m3	1hour	Negligible	TEEL1
Lubricating oils, refined used				68476-77-7	Magnesium carbonate basic				39409-82-0
2.5E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
5.0E+01	mg/m3	1hour	Marginal	TEEL2	2.5E+02	mg/m3	1hour	Marginal	TEEL2
3.0E+01	mg/m3	1hour	Negligible	TEEL1	1.5E+02	mg/m3	1hour	Negligible	TEEL1
Lutetium				7439-94-3	Magnesium chloride				7786-30-3
1.5E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
3.5E+01	mg/m3	1hour	Marginal	TEEL2	3.0E+02	mg/m3	1hour	Marginal	TEEL2
5.0E+00	mg/m3	1hour	Negligible	TEEL1	4.0E+01	mg/m3	1hour	Negligible	TEEL1
Lutetium oxide				12032-20-1	Magnesium chloride hexahydrate				7791-18-6
2.5E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
5.0E+01	mg/m3	1hour	Marginal	TEEL2	5.0E+02	mg/m3	1hour	Marginal	TEEL2
3.0E+01	mg/m3	1hour	Negligible	TEEL1	2.5E+02	mg/m3	1hour	Negligible	TEEL1
Magnesite				546-93-0	Magnesium ethoxide				2414-98-4
5.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
2.5E+02	mg/m3	1hour	Critical	TEEL3	2.4E+02	mg/m3	1hour	Marginal	TEEL2
2.0E+02	mg/m3	1hour	Marginal	TEEL2	1.4E+02	mg/m3	1hour	Negligible	TEEL1
5.0E+01	mg/m3	1hour	Marginal	TEEL2	Magnesium fluoride				7783-40-6
4.5E+01	mg/m3	1hour	Negligible	TEEL1	4.1E+02	mg/m3	1hour	Critical	TEEL3
3.0E+01	mg/m3	1hour	Negligible	TEEL1	2.1E+01	mg/m3	1hour	Marginal	TEEL2
Magnesite				7760-50-1	1.2E+01	mg/m3	1hour	Negligible	TEEL1
5.0E+02	mg/m3	1hour	Critical	TEEL3	Magnesium hydroxide				1309-42-8
2.5E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
2.0E+02	mg/m3	1hour	Marginal	TEEL2	5.0E+02	mg/m3	1hour	Marginal	TEEL2
5.0E+01	mg/m3	1hour	Marginal	TEEL2	2.0E+02	mg/m3	1hour	Negligible	TEEL1
4.5E+01	mg/m3	1hour	Negligible	TEEL1					
3.0E+01	mg/m3	1hour	Negligible	TEEL1					

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Magnesium iodate tetrahydrate				7790-32-1	Maleic acid, disodium salt				371-47-1
2.5E+02 mg/m3		1hour	Critical	TEEL3	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
5.0E+01 mg/m3		1hour	Marginal	TEEL2	5.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
3.0E+01 mg/m3		1hour	Negligible	TEEL1	7.5E+01 mg/m3	1hour	1hour	Negligible	TEEL1
Magnesium nitrate				10377-60-3	Maleic anhydride				108-31-6
2.5E+02 mg/m3		1hour	Critical	TEEL3	8.0E+01 mg/m3	1hour	1hour	Critical	ERPG3
5.0E+01 mg/m3		1hour	Marginal	TEEL2	8.0E+00 mg/m3	1hour	1hour	Marginal	ERPG2
3.0E+01 mg/m3		1hour	Negligible	TEEL1	8.0E-01 mg/m3	1hour	1hour	Negligible	ERPG1
Magnesium oxide				1309-48-4	Maleic hydrazide				123-33-1
5.0E+02 mg/m3		1hour	Critical	TEEL3	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
1.5E+02 mg/m3		1hour	Marginal	TEEL2	1.3E+01 mg/m3	1hour	1hour	Marginal	TEEL2
3.0E+01 mg/m3		1hour	Negligible	TEEL1	2.0E+00 mg/m3	1hour	1hour	Negligible	TEEL1
1.0E+01 mg/m3		8hour	Negligible	TLV_TWA_irr	Malic acid				617-48-1
3.4E+00 mg/m3		14day	Negligible	TLV_TWA_irr	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
3.4E+00 mg/m3		1year	Negligible	TLVirr	1.3E+02 mg/m3	1hour	1hour	Marginal	TEEL2
Magnesium Phosphide				12057-74-8	Malonic acid				141-82-2
9.9E+00 mg/m3		1hour	Critical	AEGL3_1hr	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
5.5E+00 mg/m3		1hour	Marginal	AEGL2_1hr	4.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
3.0E+00 mg/m3		1hour	Negligible	TEEL1	6.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
Magnesium silicate				1343-88-0	Malononitrile				109-77-3
5.0E+02 mg/m3		1hour	Critical	TEEL3	2.7E+01 mg/m3	1hour	1hour	Critical	AEGL3_1hr
5.0E+01 mg/m3		1hour	Marginal	TEEL2	1.3E+01 mg/m3	1hour	1hour	Marginal	AEGL2_1hr
3.0E+01 mg/m3		1hour	Negligible	TEEL1	7.5E+00 mg/m3	1hour	1hour	Negligible	TEEL1
Magnesium sulfate				7487-88-9	Mancozeb				8018-01-7
1.3E+02 mg/m3		1hour	Critical	TEEL3	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
1.0E+01 mg/m3		1hour	Marginal	TEEL2	2.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
1.5E+00 mg/m3		1hour	Negligible	TEEL1	3.0E+00 mg/m3	1hour	1hour	Negligible	TEEL1
Magnesium sulfate heptahydrate				10034-99-8	Manganese				7439-96-5
5.0E+02 mg/m3		1hour	Critical	TEEL3	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
1.0E+02 mg/m3		1hour	Marginal	TEEL2	5.0E+00 mg/m3	1hour	1hour	Marginal	TEEL2
1.5E+01 mg/m3		1hour	Negligible	TEEL1	3.0E+00 mg/m3	1hour	1hour	Negligible	TEEL1
Malachite green				569-64-2	Manganese (II) chloride				7773-01-5
3.5E+01 mg/m3		1hour	Critical	TEEL3	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
6.0E+00 mg/m3		1hour	Marginal	TEEL2	1.2E+01 mg/m3	1hour	1hour	Marginal	TEEL2
1.0E+00 mg/m3		1hour	Negligible	TEEL1	6.9E+00 mg/m3	1hour	1hour	Negligible	TEEL1
Malathion				121-75-5	Manganese (II) chloride tetrahydrate				13446-34-9
3.9E+02 mg/m3		1hour	Critical	AEGL3_1hr	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
1.2E+02 mg/m3		1hour	Marginal	AEGL2_1hr	1.8E+02 mg/m3	1hour	1hour	Marginal	TEEL2
1.5E+01 mg/m3		1hour	Negligible	AEGL1_1hr	1.1E+01 mg/m3	1hour	1hour	Negligible	TEEL1
1.5E+01 mg/m3		8hour	Negligible	AEGL1_8hr	Manganese (II) nitrate				10377-66-9
1.4E-01 mg/m3		14day	Negligible	MRLi_acute	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
1.4E-02 mg/m3		1year	Negligible	MRL_inter	1.6E+01 mg/m3	1hour	1hour	Marginal	TEEL2
Maleic acid				110-16-7	Manganese (II) nitrate				10377-66-9
3.0E+02 mg/m3		1hour	Critical	TEEL3	9.8E+00 mg/m3	1hour	1hour	Negligible	TEEL1
6.0E+01 mg/m3		1hour	Marginal	TEEL2					
7.5E+00 mg/m3		1hour	Negligible	TEEL1					

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Manganese (II) sulfate monohydrate				10034-96-5	Manganese(III) oxide				1317-34-6
5.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
1.5E+01	mg/m3	1hour	Marginal	TEEL2	7.2E+01	mg/m3	1hour	Marginal	TEEL2
9.2E+00	mg/m3	1hour	Negligible	TEEL1	4.3E+00	mg/m3	1hour	Negligible	TEEL1
Manganese carbonate				598-62-9	Mastic absolute				61789-92-2
5.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
1.1E+01	mg/m3	1hour	Marginal	TEEL2	1.0E+02	mg/m3	1hour	Marginal	TEEL2
6.3E+00	mg/m3	1hour	Negligible	TEEL1	1.3E+01	mg/m3	1hour	Negligible	TEEL1
Manganese cyclopentadienyl tricarbonyl				12079-65-1	Melamine				108-78-1
1.0E-01	mg/m3	8hour	Negligible	TLV_TWA	5.0E+02	mg/m3	1hour	Critical	TEEL3
2.4E-02	mg/m3	14day	Negligible	TLV_TWA	5.0E+01	mg/m3	1hour	Marginal	TEEL2
2.4E-02	mg/m3	1year	Negligible	TLVadj	3.0E+01	mg/m3	1hour	Negligible	TEEL1
Manganese dioxide				1313-13-9	Menadione				66-71-7
5.0E+02	mg/m3	1hour	Critical	TEEL3	3.0E+01	mg/m3	1hour	Critical	TEEL3
7.9E+01	mg/m3	1hour	Marginal	TEEL2	2.0E+00	mg/m3	1hour	Marginal	TEEL2
4.8E+00	mg/m3	1hour	Negligible	TEEL1	3.0E-01	mg/m3	1hour	Negligible	TEEL1
Manganese hydroxide				18933-05-6	Mephosfolan				950-10-7
5.0E+02	mg/m3	1hour	Critical	TEEL3	9.0E+00	mg/m3	1hour	Critical	TEEL3
8.1E+00	mg/m3	1hour	Marginal	TEEL2	9.0E+00	mg/m3	1hour	Marginal	TEEL2
4.9E+00	mg/m3	1hour	Negligible	TEEL1	5.0E+00	mg/m3	1hour	Negligible	TEEL1
Manganese oxide				1317-35-7	Mercaptobenzothiazole, 2-				149-30-4
5.0E+02	mg/m3	1hour	Critical	TEEL3	4.0E+01	mg/m3	1hour	Critical	TEEL3
5.0E+02	mg/m3	1hour	Critical	TEEL3	4.0E+01	mg/m3	1hour	Marginal	TEEL2
6.9E+01	mg/m3	1hour	Marginal	TEEL2	1.5E+01	mg/m3	1hour	Negligible	TEEL1
6.5E+00	mg/m3	1hour	Marginal	TEEL2	Mercaptoethanol, 2-				60-24-2
4.2E+00	mg/m3	1hour	Negligible	TEEL1	6.0E+02	mg/m3	1hour	Critical	TEEL3
7.5E-01	mg/m3	1hour	Negligible	TEEL1	4.0E+01	mg/m3	1hour	Marginal	TEEL2
Manganese oxide				1344-43-0	Mercaptoethanol, 2-				60-24-2
5.0E+02	mg/m3	1hour	Critical	TEEL3	6.0E+00	mg/m3	1hour	Negligible	TEEL1
5.0E+02	mg/m3	1hour	Critical	TEEL3	Mercuric acetate				1600-27-7
6.9E+01	mg/m3	1hour	Marginal	TEEL2	3.2E+00	mg/m3	1hour	Critical	TEEL3
6.5E+00	mg/m3	1hour	Marginal	TEEL2	3.2E+00	mg/m3	1hour	Marginal	TEEL2
4.2E+00	mg/m3	1hour	Negligible	TEEL1	4.8E-02	mg/m3	1hour	Negligible	TEEL1
7.5E-01	mg/m3	1hour	Negligible	TEEL1	Mercuric chloride				7487-94-7
Manganese sulfate				7785-87-7	Mercuric chloride				7487-94-7
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.4E+01	mg/m3	1hour	Critical	TEEL3
1.4E+01	mg/m3	1hour	Marginal	TEEL2	1.4E+01	mg/m3	1hour	Marginal	TEEL2
8.3E+00	mg/m3	1hour	Negligible	TEEL1	2.0E+00	mg/m3	1hour	Negligible	TEEL1
Manganese sulfide				18820-29-6	Mercuric cyanide				592-04-1
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.3E+01	mg/m3	1hour	Critical	TEEL3
7.9E+00	mg/m3	1hour	Marginal	TEEL2	1.3E+01	mg/m3	1hour	Marginal	TEEL2
9.5E-01	mg/m3	1hour	Negligible	TEEL1	1.5E+00	mg/m3	1hour	Negligible	TEEL1
Manganese(II) nitrate hydrate				15710-66-4	Mercuric iodide				7774-29-0
5.0E+02	mg/m3	1hour	Critical	TEEL3	2.3E+01	mg/m3	1hour	Critical	TEEL3
1.8E+01	mg/m3	1hour	Marginal	TEEL2	2.3E-01	mg/m3	1hour	Marginal	TEEL2
1.1E+01	mg/m3	1hour	Negligible	TEEL1	5.7E-02	mg/m3	1hour	Negligible	TEEL1

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Mercuric nitrate monohydrate				7782-86-7	Mercury(II) nitrate monohydrate				7783-34-8
1.4E+01	mg/m3	1hour	Critical	TEEL3	1.7E+01	mg/m3	1hour	Critical	TEEL3
1.4E-01	mg/m3	1hour	Marginal	TEEL2	1.7E-01	mg/m3	1hour	Marginal	TEEL2
3.5E-02	mg/m3	1hour	Negligible	TEEL1	4.3E-02	mg/m3	1hour	Negligible	TEEL1
Mercuric sulfate				7783-35-9	Mercury, alkyl compounds				Hg alkyl
1.5E+01	mg/m3	1hour	Critical	TEEL3	1.0E-02	mg/m3	8hour	Negligible	TLV_TWA
1.5E-01	mg/m3	1hour	Marginal	TEEL2	2.4E-03	mg/m3	14day	Negligible	TLV_TWA
3.7E-02	mg/m3	1hour	Negligible	TEEL1	2.4E-03	mg/m3	1year	Negligible	TLVadj
Mercuric thiocyanate				592-85-8	Mercury, aryl compounds				Hg aryl
1.6E+01	mg/m3	1hour	Critical	TEEL3	1.0E-01	mg/m3	8hour	Negligible	TLV_TWA
1.6E-01	mg/m3	1hour	Marginal	TEEL2	2.4E-02	mg/m3	14day	Negligible	TLV_TWA
4.0E-02	mg/m3	1hour	Negligible	TEEL1	2.4E-02	mg/m3	1year	Negligible	TLVadj
Mercuric trifluoroacetate				13257-51-7	Mercury, elemental				7439-97-6
4.3E+00	mg/m3	1hour	Critical	TEEL3	8.9E+00	mg/m3	1hour	Critical	AEGL3_1hr
8.5E-02	mg/m3	1hour	Marginal	TEEL2	1.7E+00	mg/m3	1hour	Marginal	AEGL2_1hr
6.4E-02	mg/m3	1hour	Negligible	TEEL1	3.0E-01	mg/m3	1hour	Negligible	TEEL1
Mercuriol				12002-19-6	Mesityl oxide				141-79-7
1.0E+01	mg/m3	1hour	Critical	TEEL3	2.5E-02	mg/m3	8hour	Negligible	TLV_TWA
1.0E-01	mg/m3	1hour	Marginal	TEEL2	1.0E-02	mg/m3	14day	Negligible	CEGL
2.5E-02	mg/m3	1hour	Negligible	TEEL1	2.1E-04	mg/m3	1year	Negligible	HEAST_sub
Mercurous chloride				7546-30-7	Metaphosphoric acid				37267-86-0
1.2E+01	mg/m3	1hour	Critical	TEEL3	5.0E+03	mg/m3	1hour	Critical	TEEL3
1.2E-01	mg/m3	1hour	Marginal	TEEL2	1.0E+02	mg/m3	1hour	Marginal	TEEL2
2.9E-02	mg/m3	1hour	Negligible	TEEL1	1.0E+02	mg/m3	1hour	Negligible	TEEL1
Mercurous nitrate				10415-75-5	Methacrolein diacetate				10476-95-6
1.3E+01	mg/m3	1hour	Critical	TEEL3	4.4E+01	mg/m3	1hour	Critical	TEEL3
1.3E-01	mg/m3	1hour	Marginal	TEEL2	4.4E+01	mg/m3	1hour	Marginal	TEEL2
3.3E-02	mg/m3	1hour	Negligible	TEEL1	2.5E+01	mg/m3	1hour	Negligible	TEEL1
Mercurous oxide				15829-53-5	Methacrylaldehyde				78-85-3
1.0E+01	mg/m3	1hour	Critical	TEEL3	1.3E+01	mg/m3	1hour	Critical	AEGL3_1hr
1.0E-01	mg/m3	1hour	Marginal	TEEL2	8.0E+00	mg/m3	1hour	Marginal	AEGL2_1hr
2.6E-02	mg/m3	1hour	Negligible	TEEL1	5.7E-01	mg/m3	1hour	Negligible	AEGL1_1hr
Mercury (II) oxide				21908-53-2	Methacrylamide				79-39-0
1.1E+01	mg/m3	1hour	Critical	TEEL3	2.0E+02	mg/m3	1hour	Critical	TEEL3
1.1E+00	mg/m3	1hour	Marginal	TEEL2	3.0E-01	mg/m3	1hour	Marginal	TEEL2
1.5E-01	mg/m3	1hour	Negligible	TEEL1	4.0E-02	mg/m3	1hour	Negligible	TEEL1
Mercury nitrate				10045-94-0	Mercury(I) chloride				10112-91-1
1.6E+01	mg/m3	1hour	Critical	TEEL3	1.2E+01	mg/m3	1hour	Critical	TEEL3
1.6E-01	mg/m3	1hour	Marginal	TEEL2	1.2E+00	mg/m3	1hour	Marginal	TEEL2
4.1E-02	mg/m3	1hour	Negligible	TEEL1	1.5E-01	mg/m3	1hour	Negligible	TEEL1

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN		
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis		
Methacrylic acid					79-41-4	Methanesulfonic acid ethyl ester					62-50-0
7.7E+02	mg/m3	1hour	Critical	AEGL3_1hr	1.5E+02	mg/m3	1hour	Critical	TEEL3		
2.1E+02	mg/m3	1hour	Marginal	AEGL2_1hr	1.0E+01	mg/m3	1hour	Marginal	TEEL2		
2.4E+01	mg/m3	1hour	Negligible	AEGL1_1hr	1.5E+00	mg/m3	1hour	Negligible	TEEL1		
2.4E+01	mg/m3	8hour	Negligible	AEGL1_8hr	Methanesulfonyl chloride					124-63-0	
2.4E+01	mg/m3	14day	Negligible	AEGL1_8hr*	2.9E+01	mg/m3	1hour	Critical	AEGL3_1hr		
2.4E+01	mg/m3	1year	Negligible	AEGL1_8hr*	9.8E+00	mg/m3	1hour	Marginal	AEGL2_1hr		
Methacrylic anhydride					760-93-0	1.3E+00	mg/m3	1hour	Negligible	TEEL1	
1.5E+02	mg/m3	1hour	Critical	TEEL3	Methanesulfonyl fluoride					558-25-8	
4.5E+00	mg/m3	1hour	Marginal	TEEL2	1.4E+01	mg/m3	1hour	Critical	TEEL3		
2.5E+00	mg/m3	1hour	Negligible	TEEL1	1.4E+01	mg/m3	1hour	Marginal	TEEL2		
Methacrylonitrile					126-98-7	7.5E+00	mg/m3	1hour	Negligible	TEEL1	
6.9E+01	mg/m3	1hour	Critical	AEGL3_1hr	Methanol					67-56-1	
3.6E+01	mg/m3	1hour	Marginal	AEGL2_1hr	9.3E+03	mg/m3	1hour	Critical	AEGL3_1hr		
2.7E+00	mg/m3	1hour	Negligible	AEGL1_1hr	2.8E+03	mg/m3	1hour	Marginal	AEGL2_1hr		
2.7E+00	mg/m3	8hour	Negligible	AEGL1_8hr	6.9E+02	mg/m3	1hour	Negligible	AEGL1_1hr		
4.8E-03	mg/m3	1year	Negligible	HEAST_sub	3.5E+02	mg/m3	8hour	Negligible	AEGL1_8hr		
Methacryloyl chloride					920-46-7	1.3E+01	mg/m3	14day	Negligible	CEGL	
2.5E+01	mg/m3	1hour	Critical	TEEL3	1.3E+01	mg/m3	1year	Negligible	CEGL*		
6.0E-01	mg/m3	1hour	Marginal	TEEL2	Methidathion					950-37-8	
3.5E-01	mg/m3	1hour	Negligible	TEEL1	4.0E+02	mg/m3	1hour	Critical	TEEL3		
Methamidophos					10265-92-6	2.0E+01	mg/m3	1hour	Marginal	TEEL2	
8.1E+00	mg/m3	1hour	Critical	AEGL3_1hr	3.0E+00	mg/m3	1hour	Negligible	TEEL1		
3.6E+00	mg/m3	1hour	Marginal	AEGL2_1hr	Methiocarb					2032-65-7	
1.9E+00	mg/m3	1hour	Negligible	AEGL1_1hr	1.5E+01	mg/m3	1hour	Critical	TEEL3		
6.1E-01	mg/m3	8hour	Negligible	AEGL1_8hr	1.5E+01	mg/m3	1hour	Marginal	TEEL2		
Methan-d3-ol-d					811-98-3	7.5E+00	mg/m3	1hour	Negligible	TEEL1	
1.0E+04	mg/m3	1hour	Critical	TEEL3	Methomyl					16752-77-5	
3.0E+03	mg/m3	1hour	Marginal	TEEL2	1.7E+01	mg/m3	1hour	Critical	AEGL3_1hr		
7.5E+02	mg/m3	1hour	Negligible	TEEL1	5.7E+00	mg/m3	1hour	Marginal	AEGL2_1hr		
Methane					74-82-8	5.7E+00	mg/m3	1hour	Negligible	AEGL2_1hr*	
1.3E+05	mg/m3	1hour	Critical	TEEL3	2.5E+00	mg/m3	8hour	Negligible	TLV_TWA		
3.0E+03	mg/m3	1hour	Marginal	TEEL2	6.1E-01	mg/m3	14day	Negligible	TLV_TWA		
2.0E+03	mg/m3	1hour	Negligible	TEEL1	6.1E-01	mg/m3	1year	Negligible	TLVadj		
6.6E+02	mg/m3	8hour	Negligible	TLV_TWA	Methoxybenzaldehyde					123-11-5	
6.6E+02	mg/m3	14day	Negligible	TLV_TWA*	5.0E+02	mg/m3	1hour	Critical	TEEL3		
1.6E+02	mg/m3	1year	Negligible	TLVadj	1.5E+00	mg/m3	1hour	Marginal	TEEL2		
Methane-d3					676-80-2	2.0E-01	mg/m3	1hour	Negligible	TEEL1	
4.0E+04	mg/m3	1hour	Critical	TEEL3	Methoxychlor					72-43-5	
4.0E+03	mg/m3	1hour	Marginal	TEEL2	5.0E+02	mg/m3	1hour	Critical	TEEL3		
2.0E+03	mg/m3	1hour	Negligible	TEEL1	2.5E+02	mg/m3	1hour	Marginal	TEEL2		
Methanesulfonic acid					75-75-2	3.0E+01	mg/m3	1hour	Negligible	TEEL1	
4.0E+02	mg/m3	1hour	Critical	TEEL3	1.0E+01	mg/m3	8hour	Negligible	TLV_TWA		
7.5E+01	mg/m3	1hour	Marginal	TEEL2	2.4E+00	mg/m3	14day	Negligible	TLV_TWA		
1.3E+01	mg/m3	1hour	Negligible	TEEL1	2.4E+00	mg/m3	1year	Negligible	TLVadj		

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN					
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis					
Methoxyethanol, 2-					109-86-4	Methyl 2-cyanoacrylate					137-05-3			
6.0E+02	mg/m3	1hour	Critical	TEEL3	6.0E+01	mg/m3	1hour	Critical	TEEL3					
7.5E+00	mg/m3	1hour	Marginal	TEEL2	6.0E+01	mg/m3	1hour	Marginal	TEEL2					
1.0E+00	mg/m3	1hour	Negligible	TEEL1	1.5E+01	mg/m3	1hour	Negligible	TEEL1					
3.1E-01	mg/m3	8hour	Negligible	TLV_TWA	9.1E-01	mg/m3	8hour	Negligible	TLV_TWA_irr					
7.6E-02	mg/m3	14day	Negligible	TLV_TWA	3.1E-01	mg/m3	14day	Negligible	TLV_TWA_irr					
7.6E-02	mg/m3	1year	Negligible	TLV_TWA*	3.1E-01	mg/m3	1year	Negligible	TLVirr					
Methoxyethyl acetate, 2-					110-49-6	Methyl 3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropanecarboxylate					61898-95-1			
1.0E+03	mg/m3	1hour	Critical	TEEL3	2.5E+02	mg/m3	1hour	Critical	TEEL3					
2.5E+01	mg/m3	1hour	Marginal	TEEL2	5.0E+01	mg/m3	1hour	Marginal	TEEL2					
1.5E+00	mg/m3	1hour	Negligible	TEEL1	3.0E+01	mg/m3	1hour	Negligible	TEEL1					
4.8E-01	mg/m3	8hour	Negligible	TLV_TWA	Methyl acetate					79-20-9				
1.2E-01	mg/m3	14day	Negligible	TLV_TWA	7.5E+03	mg/m3	1hour	Critical	TEEL3					
1.2E-01	mg/m3	1year	Negligible	TLVadj	1.5E+03	mg/m3	1hour	Marginal	TEEL2					
Methoxyethyl mercuric acetate					151-38-2	7.5E+02	mg/m3	1hour	Negligible	TEEL1				
3.2E+00	mg/m3	1hour	Critical	TEEL3	6.1E+02	mg/m3	8hour	Negligible	TLV_TWA_irr					
3.2E+00	mg/m3	1hour	Marginal	TEEL2	2.1E+02	mg/m3	14day	Negligible	TLV_TWA_irr					
4.8E-02	mg/m3	1hour	Negligible	TEEL1	2.1E+02	mg/m3	1year	Negligible	TLVirr					
Methoxyethylamine, 2-					109-85-3	Methyl acetylene					74-99-7			
1.5E+02	mg/m3	1hour	Critical	TEEL3	2.5E+03	mg/m3	1hour	Critical	TEEL3					
3.5E+01	mg/m3	1hour	Marginal	TEEL2	2.5E+03	mg/m3	1hour	Marginal	TEEL2					
5.0E+00	mg/m3	1hour	Negligible	TEEL1	2.5E+03	mg/m3	1hour	Negligible	TEEL1					
Methoxyphenol, 4-					150-76-5	1.6E+03	mg/m3	8hour	Negligible	TLV_TWA				
5.0E+02	mg/m3	1hour	Critical	TEEL3	4.0E+02	mg/m3	14day	Negligible	TLV_TWA					
1.0E+02	mg/m3	1hour	Marginal	TEEL2	4.0E+02	mg/m3	1year	Negligible	TLVadj					
1.5E+01	mg/m3	1hour	Negligible	TEEL1	Methyl acetylene-propadiene mixture					59355-75-8				
5.0E+00	mg/m3	8hour	Negligible	TLV_TWA	1.0E+04	mg/m3	1hour	Critical	TEEL3					
1.2E+00	mg/m3	14day	Negligible	TLV_TWA	4.0E+03	mg/m3	1hour	Marginal	TEEL2					
1.2E+00	mg/m3	1year	Negligible	TLVadj	4.0E+03	mg/m3	1hour	Negligible	TEEL1					
Methoxypropylamine, 3-					5332-73-0	1.6E+03	mg/m3	8hour	Negligible	TLV_TWA				
1.5E+02	mg/m3	1hour	Critical	TEEL3	4.0E+02	mg/m3	14day	Negligible	TLV_TWA					
5.0E+01	mg/m3	1hour	Marginal	TEEL2	4.0E+02	mg/m3	1year	Negligible	TLVadj					
5.0E+01	mg/m3	1hour	Negligible	TEEL1	Methyl acrylate					96-33-3				
Methoxytrimethylsilane					1825-61-2	7.5E+02	mg/m3	1hour	Critical	TEEL3				
2.0E+01	mg/m3	1hour	Critical	TEEL3	2.5E+01	mg/m3	1hour	Marginal	TEEL2					
7.5E+00	mg/m3	1hour	Marginal	TEEL2	7.0E+00	mg/m3	1hour	Negligible	TLV_TWA_irr*					
2.0E+00	mg/m3	1hour	Negligible	TEEL1	7.0E+00	mg/m3	8hour	Negligible	TLV_TWA_irr					
Methyl 2-chloroacrylate					80-63-7	2.4E+00	mg/m3	14day	Negligible	TLV_TWA_irr				
3.5E+01	mg/m3	1hour	Critical	TEEL3	2.4E+00	mg/m3	1year	Negligible	TLVirr					
5.0E+00	mg/m3	1hour	Marginal	TEEL2	Methyl alcohol-d					1455-13-6				
7.5E-01	mg/m3	1hour	Negligible	TEEL1	1.0E+04	mg/m3	1hour	Critical	TEEL3					
										2.5E+03	mg/m3	1hour	Marginal	TEEL2
										7.5E+02	mg/m3	1hour	Negligible	TEEL1

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Methyl aniline, N-				100-61-8	Methyl chlorosilane				993-00-0
4.0E+02 mg/m3		1hour	Critical	TEEL3	3.3E+02 mg/m3	1hour	1hour	Critical	AEGL3_1hr
1.0E+01 mg/m3		1hour	Marginal	TEEL2	3.3E+02 mg/m3	1hour	1hour	Critical	TEEL3
7.5E+00 mg/m3		1hour	Negligible	TEEL1	7.3E+01 mg/m3	1hour	1hour	Marginal	AEGL2_1hr
2.2E+00 mg/m3		8hour	Negligible	TLV_TWA	7.3E+01 mg/m3	1hour	1hour	Marginal	TEEL2
5.4E-01 mg/m3		14day	Negligible	TLV_TWA	5.9E+00 mg/m3	1hour	1hour	Negligible	AEGL1_1hr
5.4E-01 mg/m3		1year	Negligible	TLVadj	5.9E+00 mg/m3	1hour	1hour	Negligible	TEEL1
Methyl benzoate				93-58-3	Methyl cyclopentadienyl manganese tricarbonyl				12108-13-3
5.0E+02 mg/m3		1hour	Critical	TEEL3	7.5E+00 mg/m3	1hour	1hour	Critical	TEEL3
2.5E+02 mg/m3		1hour	Marginal	TEEL2	6.0E-01 mg/m3	1hour	1hour	Marginal	TEEL2
3.5E+01 mg/m3		1hour	Negligible	TEEL1	6.0E-01 mg/m3	1hour	1hour	Negligible	TEEL1
Methyl bromide				74-83-9	Methyl demeton				8022-00-2
7.5E+01 mg/m3		10min	Negligible	TEEL1 (fixed)*	5.0E-02 mg/m3	8hour	8hour	Negligible	TLV_TWA
2.6E+02 mg/m3		8hour	Marginal	AEGL2_8h*	1.2E-02 mg/m3	14day	14day	Negligible	TLV_TWA
5.0E+02 mg/m3		8hour	Critical	AEGL3_8h*	1.2E-02 mg/m3	1year	1year	Negligible	TLVadj
3.7E+03 mg/m3		10min	Marginal	AEGL2_10min	Methyl demeton methyl				2587-90-8
1.3E+04 mg/m3		10min	Critical	AEGL3_10min	2.0E+01 mg/m3	1hour	1hour	Critical	TEEL3
Methyl bromoacetate				96-32-2	Methyl dichloroarsine				593-89-5
2.5E+01 mg/m3		1hour	Critical	TEEL3	2.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
5.0E+00 mg/m3		1hour	Marginal	TEEL2	1.3E+01 mg/m3	1hour	1hour	Negligible	TEEL1
7.5E-01 mg/m3		1hour	Negligible	TEEL1	Methyl dichlorosilane				75-54-7
Methyl chloride				74-87-3	Methyl ether				115-10-6
6.2E+03 mg/m3		1hour	Critical	AEGL3_1hr	1.3E+05 mg/m3	1hour	1hour	Critical	TEEL3
1.9E+03 mg/m3		1hour	Marginal	AEGL2_1hr	7.5E+03 mg/m3	1hour	1hour	Marginal	TEEL2
2.0E+02 mg/m3		1hour	Negligible	TEEL1	5.0E+03 mg/m3	1hour	1hour	Negligible	TEEL1
1.0E+02 mg/m3		8hour	Negligible	TLV_TWA	Methyl ethyl ketone				78-93-3
7.1E-01 mg/m3		14day	Negligible	MRLi_acute	1.2E+04 mg/m3	1hour	1hour	Critical	AEGL3_1hr
6.2E-01 mg/m3		1year	Negligible	IRIS_sub	8.0E+03 mg/m3	1hour	1hour	Marginal	AEGL2_1hr
Methyl chlorocarbonate				79-22-1	Methyl ethyl ketone				78-93-3
2.6E+01 mg/m3		1hour	Critical	AEGL3_1hr	5.9E+02 mg/m3	1hour	1hour	Negligible	AEGL1_1hr
8.5E+00 mg/m3		1hour	Marginal	AEGL2_1hr	5.9E+02 mg/m3	8hour	8hour	Negligible	AEGL1_8hr
1.3E+00 mg/m3		1hour	Negligible	TEEL1	2.0E+02 mg/m3	14day	14day	Negligible	TLV_TWA_irr
Methyl chlorosilane				68937-17-7	Methyl ethyl ketone				78-93-3
3.3E+02 mg/m3		1hour	Critical	AEGL3_1hr	6.8E-01 mg/m3	1year	1year	Negligible	HEAST_sub
3.3E+02 mg/m3		1hour	Critical	TEEL3					
7.3E+01 mg/m3		1hour	Marginal	AEGL2_1hr					
7.3E+01 mg/m3		1hour	Marginal	TEEL2					
5.9E+00 mg/m3		1hour	Negligible	AEGL1_1hr					
5.9E+00 mg/m3		1hour	Negligible	TEEL1					
5.9E+00 mg/m3		8hour	Negligible	AEGL1_8hr					

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Methyl ethyl ketone peroxide				1338-23-4	Methyl isoamyl ketone				110-12-3
1.5E+02 mg/m3		1hour	Critical	TEEL3	7.5E+03 mg/m3	1hour	1hour	Critical	TEEL3
1.5E+02 mg/m3		1hour	Marginal	TEEL2	7.5E+03 mg/m3	1hour	1hour	Marginal	TEEL2
2.0E+01 mg/m3		1hour	Negligible	TEEL1	6.0E+02 mg/m3	1hour	1hour	Negligible	TEEL1
Methyl fluoride				593-53-3	2.3E+02 mg/m3	8hour	8hour	Negligible	TLV_TWA_irr
4.5E+02 mg/m3		1hour	Critical	TEEL3	8.0E+01 mg/m3	14day	14day	Negligible	TLV_TWA_irr
2.2E+01 mg/m3		1hour	Marginal	TEEL2	8.0E+01 mg/m3	1year	1year	Negligible	TLVirr
1.3E+01 mg/m3		1hour	Negligible	TEEL1	Methyl isobutyl carbinol				108-11-2
Methyl fluoroacetate				453-18-9	1.0E+02 mg/m3	8hour	8hour	Negligible	TLV_TWA_irr
5.0E+00 mg/m3		1hour	Critical	TEEL3	3.6E+01 mg/m3	14day	14day	Negligible	TLV_TWA_irr
3.5E-01 mg/m3		1hour	Marginal	TEEL2	3.6E+01 mg/m3	1year	1year	Negligible	TLVirr
5.0E-02 mg/m3		1hour	Negligible	TEEL1	Methyl isobutyl ketone				108-10-1
Methyl fluorosulfate				421-20-5	2.0E+03 mg/m3	1hour	1hour	Critical	TEEL3
1.3E+00 mg/m3		1hour	Critical	TEEL3	3.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
2.5E-01 mg/m3		1hour	Marginal	TEEL2	3.0E+02 mg/m3	1hour	1hour	Negligible	TEEL1
3.5E-02 mg/m3		1hour	Negligible	TEEL1	8.2E+01 mg/m3	8hour	8hour	Negligible	TLV_TWA_irr
Methyl formate				107-31-3	2.8E+01 mg/m3	14day	14day	Negligible	TLV_TWA_irr
1.0E+04 mg/m3		1hour	Critical	TEEL3	5.5E-01 mg/m3	1year	1year	Negligible	HEAST_sub
2.0E+03 mg/m3		1hour	Marginal	TEEL2	Methyl Isocyanate				624-83-9
3.5E+02 mg/m3		1hour	Negligible	TEEL1	4.7E-01 mg/m3	1hour	1hour	Critical	AEGL3_1hr*
2.5E+02 mg/m3		8hour	Negligible	TLV_TWA_irr	1.6E-01 mg/m3	1hour	1hour	Marginal	AEGL2_1hr*
8.4E+01 mg/m3		14day	Negligible	TLV_TWA_irr	5.8E-02 mg/m3	1hour	1hour	Negligible	ERPG1*
8.4E+01 mg/m3		1year	Negligible	TLVirr	2.0E-02 mg/m3	8hour	8hour	Negligible	AEGL2_8hr*
Methyl Hydrazine				60-34-4	1.6E-02 mg/m3	14day	14day	Negligible	TLV_TWA_irr
5.1E+00 mg/m3		1hour	Critical	AEGL3_1hr*	1.6E-02 mg/m3	1year	1year	Negligible	TLVirr
1.7E+00 mg/m3		1hour	Marginal	AEGL2_1hr*	2.0E-02 mg/m3	8hour	8hour	Marginal	AEGL2_8hr*
3.5E-01 mg/m3		1hour	Negligible	TEEL1*	5.8E-02 mg/m3	10min	10min	Negligible	ERPG1*
2.0E-02 mg/m3		8hour	Negligible	TLV_TWA_irr*	6.0E-02 mg/m3	8hour	8hour	Critical	AEGL3_8hr*
6.5E-03 mg/m3		14day	Negligible	TLV_TWA_irr	9.3E-01 mg/m3	10min	10min	Marginal	AEGL2_10min
6.5E-03 mg/m3		1year	Negligible	TLVirr	2.8E+00 mg/m3	10min	10min	Critical	AEGL3_10min
2.1E-01 mg/m3		8hour	Marginal	AEGL2_8hr*	Methyl isopropyl ketone				563-80-4
3.5E-01 mg/m3		10min	Negligible	TEEL1*	2.0E+03 mg/m3	1hour	1hour	Critical	TEEL3
6.4E-01 mg/m3		8hour	Critical	AEGL3_8hr*	7.0E+02 mg/m3	1hour	1hour	Marginal	TLV_TWA_irr*
1.0E+01 mg/m3		10min	Marginal	AEGL2_10min	7.0E+02 mg/m3	1hour	1hour	Negligible	TLV_TWA_irr*
3.0E+01 mg/m3		10min	Critical	AEGL3_10min	7.0E+02 mg/m3	8hour	8hour	Negligible	TLV_TWA_irr
Methyl iodide				74-88-4	2.4E+02 mg/m3	14day	14day	Negligible	TLV_TWA_irr
1.7E+03 mg/m3		1hour	Critical	AEGL3_1hr	2.4E+02 mg/m3	1year	1year	Negligible	TLVirr
4.8E+02 mg/m3		1hour	Marginal	AEGL2_1hr	Methyl isothiocyanate				556-61-6
1.3E+02 mg/m3		1hour	Negligible	AEGL1_1hr	2.1E+02 mg/m3	1hour	1hour	Critical	AEGL3_1hr
6.4E+01 mg/m3		8hour	Negligible	AEGL1_8hr	6.9E+01 mg/m3	1hour	1hour	Marginal	AEGL2_1hr
4.0E+00 mg/m3		14day	Negligible	TLV_TWA_irr	2.4E+00 mg/m3	1hour	1hour	Negligible	AEGL1_1hr
4.0E+00 mg/m3		1year	Negligible	TLVirr	2.4E+00 mg/m3	8hour	8hour	Negligible	AEGL1_8hr
Methyl magnesium bromide				75-16-1	2.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
					4.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
					6.0E+00 mg/m3	1hour	1hour	Negligible	TEEL1

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME					CASRN	CHEMICAL NAME					CASRN
MEG	Units	Timeframe	Severity	Basis		MEG	Units	Timeframe	Severity	Basis	
Methyl mercaptan					74-93-1	Methyl phosphonothioic dichloride					676-98-2
1.3E+02	mg/m3	1hour	Critical	AEGL3_1hr		1.5E+02	mg/m3	1hour	Critical	TEEL3	
9.2E+01	mg/m3	1hour	Marginal	AEGL2_1hr		3.0E+01	mg/m3	1hour	Marginal	TEEL2	
9.8E-03	mg/m3	1hour	Negligible	ERPG1		4.0E+00	mg/m3	1hour	Negligible	TEEL1	
9.8E-03	mg/m3	8hour	Negligible	ERPG1*		Methyl phosphonous dichloride					676-83-5
9.8E-03	mg/m3	14day	Negligible	ERPG1*		5.0E+01	mg/m3	1hour	Critical	TEEL3	
9.8E-03	mg/m3	1year	Negligible	ERPG1*		1.0E+01	mg/m3	1hour	Marginal	TEEL2	
Methyl methacrylate					80-62-6	1.5E+00	mg/m3	1hour	Negligible	TEEL1	
2.3E+03	mg/m3	1hour	Critical	AEGL3_1hr		Methyl propyl ketone					107-87-9
4.9E+02	mg/m3	1hour	Marginal	AEGL2_1hr		5.0E+03	mg/m3	1hour	Critical	TEEL3	
7.0E+01	mg/m3	1hour	Negligible	AEGL1_1hr		5.0E+02	mg/m3	1hour	Marginal	TEEL2	
7.0E+01	mg/m3	8hour	Negligible	AEGL1_8hr		5.0E+02	mg/m3	1hour	Negligible	TEEL1	
7.0E+01	mg/m3	14day	Negligible	AEGL1_8hr*		Methyl salicylate					119-36-8
4.8E-01	mg/m3	1year	Negligible	IRIS_chr		7.5E+01	mg/m3	1hour	Critical	TEEL3	
Methyl n-amyl ketone					110-43-0	1.5E+01	mg/m3	1hour	Marginal	TEEL2	
3.5E+03	mg/m3	1hour	Critical	TEEL3		2.5E+00	mg/m3	1hour	Negligible	TEEL1	
6.0E+02	mg/m3	1hour	Marginal	TEEL2		Methyl sulfoxide-d6					2206-27-1
4.0E+02	mg/m3	1hour	Negligible	TEEL1		6.0E+03	mg/m3	1hour	Critical	TEEL3	
2.3E+02	mg/m3	8hour	Negligible	TLV_TWA_irr		7.5E+02	mg/m3	1hour	Marginal	TEEL2	
8.0E+01	mg/m3	14day	Negligible	TLV_TWA_irr		7.5E+02	mg/m3	1hour	Negligible	TEEL1	
8.0E+01	mg/m3	1year	Negligible	TLVirr		Methyl tertiary butyl ether					1634-04-4
Methyl nitrate					598-58-3	1.9E+04	mg/m3	1hour	Critical	AEGL3_1hr	
1.5E+03	mg/m3	1hour	Critical	TEEL3		2.1E+03	mg/m3	1hour	Marginal	AEGL2_1hr	
3.5E+02	mg/m3	1hour	Marginal	TEEL2		1.8E+02	mg/m3	1hour	Negligible	AEGL1_1hr	
5.0E+01	mg/m3	1hour	Negligible	TEEL1		1.8E+02	mg/m3	8hour	Negligible	AEGL1_8hr	
Methyl nonafluorobutyl ether					163702-07-6	4.9E+00	mg/m3	14day	Negligible	MRLi_acute	
1.5E+05	mg/m3	1hour	Critical	AEGL3_1hr		1.7E+00	mg/m3	1year	Negligible	MRL_inter	
8.4E+04	mg/m3	1hour	Marginal	AEGL2_1hr		Methyl thiocyanate					556-64-9
2.6E+04	mg/m3	1hour	Negligible	AEGL1_1hr		7.5E+01	mg/m3	1hour	Critical	TEEL3	
2.6E+04	mg/m3	8hour	Negligible	AEGL1_8hr		7.5E+01	mg/m3	1hour	Marginal	TEEL2	
Methyl orange,sodium salt					547-58-0	4.0E+01	mg/m3	1hour	Negligible	TEEL1	
2.5E+01	mg/m3	1hour	Critical	TEEL3		Methyl trifluoromethanesulfonate					333-27-7
5.0E+00	mg/m3	1hour	Marginal	TEEL2		5.0E+02	mg/m3	1hour	Critical	TEEL3	
7.5E-01	mg/m3	1hour	Negligible	TEEL1		3.6E+01	mg/m3	1hour	Marginal	TEEL2	
Methyl parathion					298-00-0	2.2E+01	mg/m3	1hour	Negligible	TEEL1	
3.5E+00	mg/m3	1hour	Critical	AEGL3_1hr		Methyl vinyl carbinol					598-32-3
1.2E+00	mg/m3	1hour	Marginal	AEGL2_1hr		7.5E+01	mg/m3	1hour	Critical	TEEL3	
6.0E-02	mg/m3	1hour	Negligible	TEEL1		1.5E+01	mg/m3	1hour	Marginal	TEEL2	
2.0E-02	mg/m3	8hour	Negligible	TLV_TWA		2.0E+00	mg/m3	1hour	Negligible	TEEL1	
4.9E-03	mg/m3	14day	Negligible	TLV_TWA		Methyl phencapton					3735-23-7
4.9E-03	mg/m3	1year	Negligible	TLVadj		1.0E+02	mg/m3	1hour	Critical	TEEL3	
Methyl phencapton					3735-23-7	1.1E+01	mg/m3	1hour	Marginal	TEEL2	
1.0E+02	mg/m3	1hour	Critical	TEEL3		6.0E+00	mg/m3	1hour	Negligible	TEEL1	
1.1E+01	mg/m3	1hour	Marginal	TEEL2							
6.0E+00	mg/m3	1hour	Negligible	TEEL1							

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Methyl vinyl ketone				78-94-4	Methylal				109-87-5
6.9E+00	mg/m3	1hour	Critical	AEGL3_1hr	6.0E+03	mg/m3	1hour	Critical	TEEL3
6.9E+00	mg/m3	1hour	Critical	AEGL3_1hr	6.0E+03	mg/m3	1hour	Marginal	TEEL2
3.4E+00	mg/m3	1hour	Marginal	AEGL2_1hr	6.0E+03	mg/m3	1hour	Negligible	TEEL1
3.4E+00	mg/m3	1hour	Marginal	AEGL2_1hr	3.1E+03	mg/m3	8hour	Negligible	TLV_TWA_irr
4.9E-01	mg/m3	1hour	Negligible	AEGL1_1hr	1.1E+03	mg/m3	14day	Negligible	TLV_TWA_irr
4.9E-01	mg/m3	1hour	Negligible	AEGL1_1hr	1.1E+03	mg/m3	1year	Negligible	TLVirr
4.9E-01	mg/m3	8hour	Negligible	AEGL1_8hr	Methylamine				74-89-5
4.9E-01	mg/m3	8hour	Negligible	AEGL1_8hr	4.4E+02	mg/m3	1hour	Critical	AEGL3_1hr*
Methyl vinyl ketone				98-94-4	8.0E+01	mg/m3	1hour	Marginal	AEGL2_1hr*
6.9E+00	mg/m3	1hour	Critical	AEGL3_1hr	1.9E+01	mg/m3	1hour	Negligible	AEGL1_1hr*
6.9E+00	mg/m3	1hour	Critical	AEGL3_1hr	1.9E+01	mg/m3	8hour	Negligible	AEGL1_8hr*
3.4E+00	mg/m3	1hour	Marginal	AEGL2_1hr	2.2E+00	mg/m3	14day	Negligible	TLV_TWA_irr
3.4E+00	mg/m3	1hour	Marginal	AEGL2_1hr	2.2E+00	mg/m3	1year	Negligible	TLVirr
4.9E-01	mg/m3	1hour	Negligible	AEGL1_1hr	Methylamine hydrochloride				593-51-1
4.9E-01	mg/m3	1hour	Negligible	AEGL1_1hr	5.0E+02	mg/m3	1hour	Critical	TEEL3
4.9E-01	mg/m3	8hour	Negligible	AEGL1_8hr	6.0E+01	mg/m3	1hour	Marginal	TEEL2
4.9E-01	mg/m3	8hour	Negligible	AEGL1_8hr	1.0E+01	mg/m3	1hour	Negligible	TEEL1
Methyl-1H-benzotriazole				29385-43-1	Methylaniline, 2-				95-53-4
3.0E+02	mg/m3	1hour	Critical	TEEL3	2.0E+02	mg/m3	1hour	Critical	TEEL3
6.0E+01	mg/m3	1hour	Marginal	TEEL2	2.0E+01	mg/m3	1hour	Marginal	TEEL2
7.5E+00	mg/m3	1hour	Negligible	TEEL1	2.0E+01	mg/m3	1hour	Negligible	TEEL1
Methyl-1-phenyl-2-pyrazolin-5-one, 3-				89-25-8	8.8E+00	mg/m3	8hour	Negligible	TLV_TWA
5.0E+02	mg/m3	1hour	Critical	TEEL3	2.1E+00	mg/m3	14day	Negligible	TLV_TWA
3.0E+02	mg/m3	1hour	Marginal	TEEL2	2.1E+00	mg/m3	1year	Negligible	TLVadj
4.0E+01	mg/m3	1hour	Negligible	TEEL1	Methylaziridine, 1-				1072-44-2
Methyl-1-propen-1-one, 2-				598-26-5	2.0E+02	mg/m3	1hour	Critical	TEEL3
1.0E+01	mg/m3	1hour	Critical	TEEL3	4.0E+00	mg/m3	1hour	Marginal	TEEL2
2.0E+00	mg/m3	1hour	Marginal	TEEL2	4.0E+00	mg/m3	1hour	Negligible	TEEL1
2.5E-01	mg/m3	1hour	Negligible	TEEL1	Methylbutanamide, 3-				541-46-8
Methyl-2-pyrrolidinone, 1-				872-50-4	5.0E+02	mg/m3	1hour	Critical	TEEL3
1.0E+02	mg/m3	1hour	Critical	TEEL3	1.3E+02	mg/m3	1hour	Marginal	TEEL2
1.0E+02	mg/m3	1hour	Marginal	TEEL2	2.0E+01	mg/m3	1hour	Negligible	TEEL1
4.0E+01	mg/m3	1hour	Negligible	TEEL1	Methylbutene				563-46-2
Methyl-5-nitroaniline, 2-				99-55-8	1.0E+06	mg/m3	1hour	Critical	TEEL3
2.5E+02	mg/m3	1hour	Critical	TEEL3	6.0E+05	mg/m3	1hour	Marginal	TEEL2
1.5E+02	mg/m3	1hour	Marginal	TEEL2	1.5E+05	mg/m3	1hour	Negligible	TEEL1
3.0E+00	mg/m3	1hour	Negligible	TEEL1	Methylcellulose				9004-67-5
1.0E+00	mg/m3	8hour	Negligible	TLV_TWA	5.0E+02	mg/m3	1hour	Critical	TEEL3
2.4E-01	mg/m3	14day	Negligible	TLV_TWA	3.5E+02	mg/m3	1hour	Marginal	TEEL2
2.4E-01	mg/m3	1year	Negligible	TLVadj	5.0E+01	mg/m3	1hour	Negligible	TEEL1
Methyl-5-vinylpyridine, 2-				140-76-1	Methylcholanthrene, 3-				56-49-5
4.0E+01	mg/m3	1hour	Critical	TEEL3	7.5E+01	mg/m3	1hour	Critical	TEEL3
1.9E+00	mg/m3	1hour	Marginal	TEEL2	4.0E+00	mg/m3	1hour	Marginal	TEEL2
1.0E+00	mg/m3	1hour	Negligible	TEEL1	6.0E-01	mg/m3	1hour	Negligible	TEEL1

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Methylcyclohexane				108-87-2	Methylene-bis(4-cyclohexylisocyanate)				5124-30-1
5.0E+03	mg/m3	1hour	Critical	TEEL3	2.0E+00	mg/m3	1hour	Critical	TEEL3
5.0E+03	mg/m3	1hour	Marginal	TEEL2	1.0E-01	mg/m3	1hour	Marginal	TEEL2
5.0E+03	mg/m3	1hour	Negligible	TEEL1	5.4E-02	mg/m3	1hour	Negligible	TLV_TWA_irr*
1.6E+03	mg/m3	8hour	Negligible	TLV_TWA_irr	5.4E-02	mg/m3	8hour	Negligible	TLV_TWA_irr
5.5E+02	mg/m3	14day	Negligible	TLV_TWA_irr	1.8E-02	mg/m3	14day	Negligible	TLV_TWA_irr
5.5E+02	mg/m3	1year	Negligible	TLVirr	1.8E-02	mg/m3	1year	Negligible	TLVirr
Methylcyclohexanol				25639-42-3	Methylenebis(isocyanatobenzene), tripropylene glycol, dipropylene glycol po				68092-58-0
2.3E+02	mg/m3	8hour	Negligible	TLV_TWA_irr	2.5E+02	mg/m3	1hour	Critical	TEEL3
8.0E+01	mg/m3	14day	Negligible	TLV_TWA_irr	5.0E+01	mg/m3	1hour	Marginal	TEEL2
8.0E+01	mg/m3	1year	Negligible	TLVirr	3.0E+01	mg/m3	1hour	Negligible	TEEL1
Methylcyclohexanone				1331-22-2	Methylenedianiline, 4,4'-				101-77-9
7.5E+02	mg/m3	1hour	Critical	TEEL3	1.5E+02	mg/m3	1hour	Critical	TEEL3
1.5E+02	mg/m3	1hour	Marginal	TEEL2	4.0E+00	mg/m3	1hour	Marginal	TEEL2
2.5E+01	mg/m3	1hour	Negligible	TEEL1	8.1E-01	mg/m3	1hour	Negligible	TLV_TWA*
Methylcyclohexanone, o-				583-60-8	Methylenedianiline, 4,4'-				101-77-9
2.5E+03	mg/m3	1hour	Critical	TEEL3	8.1E-01	mg/m3	8hour	Negligible	TLV_TWA
5.0E+02	mg/m3	1hour	Marginal	TEEL2	2.0E-01	mg/m3	14day	Negligible	TLV_TWA
3.5E+02	mg/m3	1hour	Negligible	TEEL1	2.0E-01	mg/m3	1year	Negligible	TLVadj
2.3E+02	mg/m3	8hour	Negligible	TLV_TWA_irr	Methylethyl hydroperoxide, 1-				3031-75-2
7.9E+01	mg/m3	14day	Negligible	TLV_TWA_irr	6.0E+01	mg/m3	1hour	Critical	TEEL3
7.9E+01	mg/m3	1year	Negligible	TLVirr	1.3E+01	mg/m3	1hour	Marginal	TEEL2
Methylcyclopentane				96-37-7	Methylfuran, 2-				534-22-5
1.3E+04	mg/m3	1hour	Critical	TEEL3	1.5E+02	mg/m3	1hour	Critical	TEEL3
3.0E+02	mg/m3	1hour	Marginal	TEEL2	1.5E+02	mg/m3	1hour	Marginal	TEEL2
4.0E+01	mg/m3	1hour	Negligible	TEEL1	6.0E+01	mg/m3	1hour	Negligible	TEEL1
Methylene chloride				75-09-2	Methylheptane, 4-				589-53-7
2.4E+04	mg/m3	1hour	Critical	AEGL3_1hr	2.0E+02	mg/m3	1hour	Critical	TEEL3
1.9E+03	mg/m3	1hour	Marginal	AEGL2_1hr	4.0E+01	mg/m3	1hour	Marginal	TEEL2
6.9E+02	mg/m3	1hour	Negligible	AEGL1_1hr	6.0E+00	mg/m3	1hour	Negligible	TEEL1
1.7E+02	mg/m3	8hour	Negligible	TLV_TWA	Methylimidazole				822-36-6
1.4E+00	mg/m3	14day	Negligible	MRLi_acute	3.0E+02	mg/m3	1hour	Critical	TEEL3
7.1E-01	mg/m3	1year	Negligible	MRL_inter	3.0E+02	mg/m3	1hour	Marginal	TEEL2
Methylene diphenyl diisocyanate				101-68-8	Methylimidazole, 1-				616-47-7
2.5E+01	mg/m3	1hour	Critical	ERPG3	5.0E+02	mg/m3	1hour	Critical	TEEL3
2.0E+00	mg/m3	1hour	Marginal	ERPG2	1.3E+02	mg/m3	1hour	Marginal	TEEL2
2.0E-01	mg/m3	1hour	Negligible	ERPG1	1.5E+01	mg/m3	1hour	Negligible	TEEL1
5.1E-02	mg/m3	8hour	Negligible	TLV_TWA	Methylithium				917-54-4
1.3E-02	mg/m3	14day	Negligible	TLV_TWA	1.0E+02	mg/m3	1hour	Critical	TEEL3
1.4E-05	mg/m3	1year	Negligible	HEAST_sub	2.0E+01	mg/m3	1hour	Marginal	TEEL2
Methylene-bis(2-chloroaniline), 4,4'-				101-14-4	Methylmagnesium chloride				676-58-4
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.5E+02	mg/m3	1hour	Critical	TEEL3
5.0E+00	mg/m3	1hour	Marginal	TEEL2	3.5E+01	mg/m3	1hour	Marginal	TEEL2
3.0E-01	mg/m3	1hour	Negligible	TEEL1	5.0E+00	mg/m3	1hour	Negligible	TEEL1
1.1E-01	mg/m3	8hour	Negligible	TLV_TWA					
2.7E-02	mg/m3	14day	Negligible	TLV_TWA					
2.7E-02	mg/m3	1year	Negligible	TLV_TWA*					

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN		
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis		
Methylmercuric dicyanamide					502-39-6	Methylphosphonic dichloride					676-97-1
3.0E+00	mg/m3	1hour	Critical	TEEL3	1.5E+01	mg/m3	1hour	Critical	TEEL3		
3.0E+00	mg/m3	1hour	Marginal	TEEL2	1.4E+00	mg/m3	1hour	Marginal	TEEL2		
4.5E-02	mg/m3	1hour	Negligible	TEEL1	2.0E-01	mg/m3	1hour	Negligible	TEEL1		
Methylmercury					22967-92-6	Methylphosphonic difluoride					676-99-3
2.1E+00	mg/m3	1hour	Critical	TEEL3	1.0E+02	mg/m3	1hour	Critical	TEEL3		
4.3E-02	mg/m3	1hour	Marginal	TEEL2	2.0E+01	mg/m3	1hour	Marginal	TEEL2		
3.2E-02	mg/m3	1hour	Negligible	TEEL1	2.5E+00	mg/m3	1hour	Negligible	TEEL1		
Methylnaphthalene, 1-					90-12-0	Methylphosphonothioic acid-O-ethyl O-[4-(methylthi					2703-13-1
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.0E+01	mg/m3	1hour	Critical	TEEL3		
2.0E+01	mg/m3	1hour	Marginal	TEEL2	1.0E+01	mg/m3	1hour	Marginal	TEEL2		
2.0E+01	mg/m3	1hour	Negligible	TEEL1	6.0E+00	mg/m3	1hour	Negligible	TEEL1		
2.9E+00	mg/m3	8hour	Negligible	TLV_TWA_irr	Methylpropane, 2-					75-28-5	
1.0E+00	mg/m3	14day	Negligible	TLV_TWA_irr	3.5E+04	mg/m3	1hour	Critical	TEEL3		
1.0E+00	mg/m3	1year	Negligible	TLVirr	1.0E+04	mg/m3	1hour	Marginal	TEEL2		
Methylnaphthalene, 2-					91-57-6	Methylpropene, 2-					115-11-7
5.0E+02	mg/m3	1hour	Critical	TEEL3	2.0E+05	mg/m3	1hour	Critical	TEEL3		
3.5E+00	mg/m3	1hour	Marginal	TEEL2	3.0E+03	mg/m3	1hour	Marginal	TEEL2		
3.0E+00	mg/m3	1hour	Negligible	TEEL1	1.5E+03	mg/m3	1hour	Negligible	TEEL1		
2.9E+00	mg/m3	8hour	Negligible	TLV_TWA_irr	5.7E+02	mg/m3	8hour	Negligible	TLV_TWA		
1.0E+00	mg/m3	14day	Negligible	TLV_TWA_irr	1.4E+02	mg/m3	14day	Negligible	TLV_TWA		
1.0E+00	mg/m3	1year	Negligible	TLVirr	1.4E+02	mg/m3	1year	Negligible	TLVadj		
Methylnitrosopiperidine, 3-					13603-07-1	Methylpyridine, 2-					109-06-8
3.0E+01	mg/m3	1hour	Critical	TEEL3	1.3E+03	mg/m3	1hour	Critical	TEEL3		
6.0E+00	mg/m3	1hour	Marginal	TEEL2	2.0E+01	mg/m3	1hour	Marginal	TEEL2		
7.5E-01	mg/m3	1hour	Negligible	TEEL1	2.0E+01	mg/m3	1hour	Negligible	TEEL1		
Methyl-N'-nitro-N-nitrosoguanidine, N-					70-25-7	Methylpyridine, 3-					108-99-6
4.0E+01	mg/m3	1hour	Critical	TEEL3	2.5E+03	mg/m3	1hour	Critical	TEEL3		
2.5E+00	mg/m3	1hour	Marginal	TEEL2	5.0E+02	mg/m3	1hour	Marginal	TEEL2		
3.5E-01	mg/m3	1hour	Negligible	TEEL1	2.0E+01	mg/m3	1hour	Negligible	TEEL1		
Methyl-N-nitroso-1-propanamine, N-					924-46-9	Methylpyrrolidine					120-94-5
1.5E+01	mg/m3	1hour	Critical	TEEL3	7.5E+01	mg/m3	1hour	Critical	TEEL3		
7.5E-01	mg/m3	1hour	Marginal	TEEL2	1.5E+01	mg/m3	1hour	Marginal	TEEL2		
1.3E-01	mg/m3	1hour	Negligible	TEEL1	2.0E+00	mg/m3	1hour	Negligible	TEEL1		
Methylpentane, 2-					107-83-5	Methylstyrene, alpha-					98-83-9
7.5E+03	mg/m3	1hour	Critical	TEEL3	3.5E+03	mg/m3	1hour	Critical	TEEL3		
1.5E+03	mg/m3	1hour	Marginal	TEEL2	5.0E+02	mg/m3	1hour	Marginal	TEEL2		
1.5E+03	mg/m3	1hour	Negligible	TEEL1	5.0E+02	mg/m3	1hour	Negligible	TEEL1		
Methylphenylthiourea, 2-					614-78-8	Methyltetrahydrofuran, 2-					96-47-9
5.0E+01	mg/m3	1hour	Critical	TEEL3	4.8E+01	mg/m3	8hour	Negligible	TLV_TWA_irr		
5.0E+01	mg/m3	1hour	Marginal	TEEL2	1.7E+01	mg/m3	14day	Negligible	TLV_TWA_irr		
3.0E+01	mg/m3	1hour	Negligible	TEEL1	1.7E+01	mg/m3	1year	Negligible	TLVirr		
Methylphosphonic acid					993-13-5	Methyltetrahydrofuran, 2-					96-47-9
1.0E+01	mg/m3	1hour	Critical	TEEL3	2.0E+03	mg/m3	1hour	Critical	TEEL3		
1.0E+01	mg/m3	1hour	Marginal	TEEL2	4.0E+02	mg/m3	1hour	Marginal	TEEL2		
1.0E+01	mg/m3	1hour	Negligible	TEEL1	6.0E+01	mg/m3	1hour	Negligible	TEEL1		
1.6E-02	mg/m3	1year	Negligible	Munro							

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN		
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis		
Methyltetrahydrophthalic anhydride				26590-20-5	Mica				12001-26-2		
5.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3		
2.0E+02	mg/m3	1hour	Marginal	TEEL2	1.5E+01	mg/m3	1hour	Marginal	TEEL2		
3.0E+01	mg/m3	1hour	Negligible	TEEL1	9.0E+00	mg/m3	1hour	Negligible	TEEL1		
Methylthiophenyl dimethyl phosphate, 4-				3254-63-5	3.0E+00 mg/m3				8hour	Negligible	TLV_TWA
7.0E+00	mg/m3	1hour	Critical	TEEL3	7.3E-01 mg/m3				14day	Negligible	TLV_TWA
7.0E+00	mg/m3	1hour	Marginal	TEEL2	7.3E-01 mg/m3				1year	Negligible	TLVadj
4.0E+00	mg/m3	1hour	Negligible	TEEL1	Michler's ketone				90-94-8		
Methyltriacetoxysilane				4253-34-3	4.0E+01 mg/m3				1hour	Critical	TEEL3
5.0E+02	mg/m3	1hour	Critical	TEEL3	2.5E+01 mg/m3				1hour	Marginal	TEEL2
1.5E+02	mg/m3	1hour	Marginal	TEEL2	3.5E+00 mg/m3				1hour	Negligible	TEEL1
2.5E+01	mg/m3	1hour	Negligible	TEEL1	Midrange Aliphatic Hydrocarbon Streams				Mid HC stream		
Methyltrichlorosilane				75-79-6	6.8E-02 mg/m3				1year	Negligible	PPRTV_sub
2.0E+02	mg/m3	1hour	Critical	AEGL3_1hr	Mineral oil, white				8042-47-5		
4.5E+01	mg/m3	1hour	Marginal	AEGL2_1hr	5.0E+02 mg/m3				1hour	Critical	TEEL3
3.7E+00	mg/m3	1hour	Negligible	AEGL1_1hr	5.0E+02 mg/m3				1hour	Marginal	TEEL2
3.7E+00	mg/m3	8hour	Negligible	AEGL1_8hr	1.5E+01 mg/m3				1hour	Negligible	TEEL1
Methyltriethoxysilane				2031-67-6	Mineral spirits				64475-85-0		
4.0E+03	mg/m3	1hour	Critical	TEEL3	7.5E+03 mg/m3				1hour	Critical	TEEL3
7.5E+02	mg/m3	1hour	Marginal	TEEL2	1.5E+03 mg/m3				1hour	Marginal	TEEL2
1.3E+02	mg/m3	1hour	Negligible	TEEL1	2.5E+02 mg/m3				1hour	Negligible	TEEL1
Methyltrimethoxysilane				1185-55-3	Mirex				2385-85-5		
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.0E+02 mg/m3				1hour	Critical	TEEL3
5.0E+02	mg/m3	1hour	Marginal	TEEL2	6.0E-01 mg/m3				1hour	Marginal	TEEL2
1.5E+02	mg/m3	1hour	Negligible	TEEL1	7.5E-02 mg/m3				1hour	Negligible	TEEL1
Methyltrioctylammonium chloride				5137-55-3	Mitomycin C				50-07-7		
1.0E+02	mg/m3	1hour	Critical	TEEL3	2.3E+01 mg/m3				1hour	Critical	TEEL3
2.0E+01	mg/m3	1hour	Marginal	TEEL2	2.3E+01 mg/m3				1hour	Marginal	TEEL2
2.5E+00	mg/m3	1hour	Negligible	TEEL1	1.3E+01 mg/m3				1hour	Negligible	TEEL1
Methylvinylidichlorosilane				124-70-9	Molybdenum				7439-98-7		
2.9E+02	mg/m3	1hour	Critical	AEGL3_1hr	5.0E+02 mg/m3				1hour	Critical	TEEL3
6.3E+01	mg/m3	1hour	Marginal	AEGL2_1hr	5.0E+01 mg/m3				1hour	Marginal	TEEL2
5.2E+00	mg/m3	1hour	Negligible	AEGL1_1hr	3.0E+01 mg/m3				1hour	Negligible	TEEL1
5.2E+00	mg/m3	8hour	Negligible	AEGL1_8hr	5.0E-01 mg/m3				8hour	Negligible	TLV_TWA
Metolcarb				1129-41-5	1.2E-01 mg/m3				14day	Negligible	TLV_TWA
2.0E+02	mg/m3	1hour	Critical	TEEL3	1.2E-01 mg/m3				1year	Negligible	TLVadj
4.8E+00	mg/m3	1hour	Marginal	TEEL2	Molybdenum (IV) oxide				18868-43-4		
3.0E+00	mg/m3	1hour	Negligible	TEEL1	5.0E+02 mg/m3				1hour	Critical	TEEL3
Metribuzin				21087-64-9	3.5E+00 mg/m3				1hour	Marginal	TEEL2
5.0E+00	mg/m3	8hour	Negligible	TLV_TWA	2.0E+00 mg/m3				1hour	Negligible	TEEL1
1.2E+00	mg/m3	14day	Negligible	TLV_TWA	Molybdenum (IV) sulfide				1317-33-5		
1.2E+00	mg/m3	1year	Negligible	TLVadj	5.0E+02 mg/m3				1hour	Critical	TEEL3
Mexacarbate				315-18-4	8.3E+01 mg/m3				1hour	Marginal	TEEL2
1.4E+01	mg/m3	1hour	Critical	TEEL3	5.0E+01 mg/m3				1hour	Negligible	TEEL1
1.4E+01	mg/m3	1hour	Marginal	TEEL2							
7.5E+00	mg/m3	1hour	Negligible	TEEL1							

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Molybdenum carbide				12069-89-5	Monocrotophos				6923-22-4
5.0E+02	mg/m3	1hour	Critical	TEEL3	7.3E-01	mg/m3	1hour	Critical	AEGL3_1hr
5.6E+01	mg/m3	1hour	Marginal	TEEL2	2.4E-01	mg/m3	1hour	Marginal	AEGL2_1hr
3.4E+01	mg/m3	1hour	Negligible	TEEL1	1.5E-01	mg/m3	1hour	Negligible	TEEL1
Molybdenum hexacarbonyl				13939-06-5	Monomethylamine				74-89-5
5.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E-02	mg/m3	8hour	Negligible	TLV_TWA
1.4E+02	mg/m3	1hour	Marginal	TEEL2	1.2E-02	mg/m3	14day	Negligible	TLV_TWA
8.3E+01	mg/m3	1hour	Negligible	TEEL1	1.2E-02	mg/m3	1year	Negligible	TLVadj
Molybdenum orange				12656-85-8	Montmorillonite				1318-93-0
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.9E+01	mg/m3	10min	Negligible	AEGL1_10min
5.0E+02	mg/m3	1hour	Marginal	TEEL2	2.7E+01	mg/m3	8hour	Marginal	AEGL2_8h*
1.5E+02	mg/m3	1hour	Negligible	TEEL1	1.4E+02	mg/m3	8hour	Critical	AEGL3_8h*
Molybdenum pentachloride				10241-05-1	Monosodium citrate				18996-35-5
5.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
5.0E+02	mg/m3	1hour	Marginal	TEEL2	1.0E+02	mg/m3	1hour	Marginal	TEEL2
4.3E+00	mg/m3	1hour	Negligible	TEEL1	1.5E+01	mg/m3	1hour	Negligible	TEEL1
Molybdenum silicide				12136-78-6	Morpholine				110-91-8
5.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+03	mg/m3	1hour	Critical	TEEL3
7.9E+01	mg/m3	1hour	Marginal	TEEL2	1.0E+02	mg/m3	1hour	Marginal	TEEL2
4.8E+01	mg/m3	1hour	Negligible	TEEL1	1.0E+02	mg/m3	1hour	Negligible	TEEL1
Molybdenum trioxide				1313-27-5	Morpholinepropanesulfonic acid, 4-				1132-61-2
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.3E+02	mg/m3	1hour	Critical	TEEL3
7.5E-01	mg/m3	1hour	Marginal	TEEL2	2.5E+01	mg/m3	1hour	Marginal	TEEL2
7.5E-01	mg/m3	1hour	Negligible	TEEL1	4.0E+00	mg/m3	1hour	Negligible	TEEL1
Molybdic acid				7782-91-4	Muscimol				2763-96-4
5.0E+02	mg/m3	1hour	Critical	TEEL3	2.0E+01	mg/m3	1hour	Critical	TEEL3
4.2E+00	mg/m3	1hour	Marginal	TEEL2	1.7E+01	mg/m3	1hour	Marginal	TEEL2
2.5E+00	mg/m3	1hour	Negligible	TEEL1	1.0E+01	mg/m3	1hour	Negligible	TEEL1
Molybdophosphoric acid hydrate				51429-74-4	Mustard gas sulfoxide				5819-08-9
5.0E+02	mg/m3	1hour	Critical	TEEL3	4.0E+01	mg/m3	1hour	Critical	TEEL3
4.0E+00	mg/m3	1hour	Marginal	TEEL2	7.5E+00	mg/m3	1hour	Marginal	TEEL2
2.4E+00	mg/m3	1hour	Negligible	TEEL1	1.3E+00	mg/m3	1hour	Negligible	TEEL1
Molybdophosphoric acid, X-hydrate				12026-57-2	Myoglobins				9008-45-1
5.0E+02	mg/m3	1hour	Critical	TEEL3	2.5E+02	mg/m3	1hour	Critical	TEEL3
4.0E+00	mg/m3	1hour	Marginal	TEEL2	5.0E+01	mg/m3	1hour	Marginal	TEEL2
2.4E+00	mg/m3	1hour	Negligible	TEEL1	3.0E+01	mg/m3	1hour	Negligible	TEEL1
Monoammonium phosphate				7722-76-1					
5.0E+02	mg/m3	1hour	Critical	TEEL3					
3.5E+02	mg/m3	1hour	Marginal	TEEL2					
5.0E+01	mg/m3	1hour	Negligible	TEEL1					
Monochloramine				10599-90-3					
1.0E+01	mg/m3	1hour	Critical	TEEL3					
2.0E+00	mg/m3	1hour	Marginal	TEEL2					
3.5E-01	mg/m3	1hour	Negligible	TEEL1					

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
N-(3-Trimethoxysilylpropyl) ethylenediamine				1760-24-3	Naphtha, petroleum, light straight-run				64741-46-4
5.0E+02	mg/m3	1hour	Critical	TEEL3	4.0E+03	mg/m3	1hour	Critical	TEEL3
5.0E+02	mg/m3	1hour	Marginal	TEEL2	4.0E+03	mg/m3	1hour	Marginal	TEEL2
7.5E+01	mg/m3	1hour	Negligible	TEEL1	1.5E+03	mg/m3	1hour	Negligible	TEEL1
N,n,n-Tributyl-1-butanaminium iodide				311-28-4	Naphthalenamine, 1-				134-32-7
5.0E+02	mg/m3	1hour	Critical	TEEL3	3.5E+02	mg/m3	1hour	Critical	TEEL3
1.5E+02	mg/m3	1hour	Marginal	TEEL2	1.3E+01	mg/m3	1hour	Marginal	TEEL2
2.5E+01	mg/m3	1hour	Negligible	TEEL1	1.5E+00	mg/m3	1hour	Negligible	TEEL1
N,N-Dimethyl-1,3-propanediamine				109-55-7	Naphthalene				91-20-3
7.5E+02	mg/m3	1hour	Critical	TEEL3	1.3E+03	mg/m3	1hour	Critical	TEEL3
2.0E+02	mg/m3	1hour	Marginal	TEEL2	7.5E+01	mg/m3	1hour	Marginal	TEEL2
3.0E+01	mg/m3	1hour	Negligible	TEEL1	7.5E+01	mg/m3	1hour	Negligible	TEEL1
N,N-Dimethyl-1-butanamine				927-62-8	5.2E+01	mg/m3	8hour	Negligible	TLV_TWA_irr
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.8E+01	mg/m3	14day	Negligible	TLV_TWA_irr
5.0E+02	mg/m3	1hour	Marginal	TEEL2	2.1E-03	mg/m3	1year	Negligible	IRIS_chr
5.0E+02	mg/m3	1hour	Negligible	TEEL1	Naphthalene, bis(1-methylethyl)-				38640-62-9
N,N-dimethyl-2-Propanamine				996-35-0	5.0E+02	mg/m3	1hour	Critical	TEEL3
7.5E+01	mg/m3	1hour	Critical	TEEL3	3.0E+02	mg/m3	1hour	Marginal	TEEL2
1.8E+01	mg/m3	1hour	Marginal	TEEL2	4.0E+01	mg/m3	1hour	Negligible	TEEL1
1.1E+01	mg/m3	1hour	Negligible	TEEL1	Naphthenic acid, lead salts				61790-14-5
N,N'-Methylenebisacrylamide				110-26-9	5.0E+02	mg/m3	1hour	Critical	TEEL3
1.5E+02	mg/m3	1hour	Critical	TEEL3	3.0E+01	mg/m3	1hour	Marginal	TEEL2
3.5E+01	mg/m3	1hour	Marginal	TEEL2	4.0E+00	mg/m3	1hour	Negligible	TEEL1
5.0E+00	mg/m3	1hour	Negligible	TEEL1	Naphthoquinone, 1,4-				130-15-4
Nabumetone				42924-53-8	7.5E+01	mg/m3	1hour	Critical	TEEL3
5.0E+02	mg/m3	1hour	Critical	TEEL3	7.5E+01	mg/m3	1hour	Marginal	TEEL2
1.5E+01	mg/m3	1hour	Marginal	TEEL2	2.5E+01	mg/m3	1hour	Negligible	TEEL1
2.5E+00	mg/m3	1hour	Negligible	TEEL1	Naphthylamine, 2-				91-59-8
Nadic methyl anhydride				25134-21-8	3.0E+02	mg/m3	1hour	Critical	TEEL3
7.5E+01	mg/m3	1hour	Critical	TEEL3	3.5E+01	mg/m3	1hour	Marginal	TEEL2
1.5E+01	mg/m3	1hour	Marginal	TEEL2	5.0E+00	mg/m3	1hour	Negligible	TEEL1
2.0E+00	mg/m3	1hour	Negligible	TEEL1	Naptha (petroleum), heavy catalytic cracked				64741-54-4
Naled				300-76-5	5.0E+02	mg/m3	1hour	Critical	TEEL3
1.0E-01	mg/m3	8hour	Negligible	TLV_TWA	3.0E+02	mg/m3	1hour	Marginal	TEEL2
2.4E-02	mg/m3	14day	Negligible	TLV_TWA	4.0E+01	mg/m3	1hour	Negligible	TEEL1
2.4E-02	mg/m3	1year	Negligible	TLVadj	Naphttalene acetamide, 1-				86-86-2
Naphtha				8030-30-6	5.0E+02	mg/m3	1hour	Critical	TEEL3
4.0E+03	mg/m3	1hour	Critical	TEEL3	1.5E+02	mg/m3	1hour	Marginal	TEEL2
4.0E+03	mg/m3	1hour	Marginal	TEEL2	2.0E+01	mg/m3	1hour	Negligible	TEEL1
1.5E+03	mg/m3	1hour	Negligible	TEEL1	n-Butanol-d10				34193-38-9
Naphtha, hydrotreated heavy				64742-48-9	5.0E+03	mg/m3	1hour	Critical	TEEL3
7.5E+03	mg/m3	1hour	Critical	TEEL3	1.5E+02	mg/m3	1hour	Marginal	TEEL2
6.0E+03	mg/m3	1hour	Marginal	TEEL2	6.0E+01	mg/m3	1hour	Negligible	TEEL1
3.5E+03	mg/m3	1hour	Negligible	TEEL1	n-Butyl bromide				109-65-9
					1.0E+04	mg/m3	1hour	Critical	TEEL3
					2.0E+03	mg/m3	1hour	Marginal	TEEL2
					3.0E+02	mg/m3	1hour	Negligible	TEEL1

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Neodecanoic acid				26896-20-8	Nickel (II) bromide				13462-88-9
5.0E+02 mg/m3		1hour	Critical	TEEL3	3.7E+01 mg/m3	1hour	1hour	Critical	TEEL3
3.0E+02 mg/m3		1hour	Marginal	TEEL2	1.9E+00 mg/m3	1hour	1hour	Marginal	TEEL2
4.0E+01 mg/m3		1hour	Negligible	TEEL1	1.1E+00 mg/m3	1hour	1hour	Negligible	TEEL1
Neodecanoic acid, calcium salt (2:1)				27253-33-4	Nickel (II) chloride hexahydrate				7791-20-0
5.0E+02 mg/m3		1hour	Critical	TEEL3	4.1E+01 mg/m3	1hour	1hour	Critical	TEEL3
3.0E+02 mg/m3		1hour	Marginal	TEEL2	4.1E+01 mg/m3	1hour	1hour	Marginal	TEEL2
4.0E+01 mg/m3		1hour	Negligible	TEEL1	1.2E+00 mg/m3	1hour	1hour	Negligible	TEEL1
Neodymium				7440-00-8	Nickel (II) formate				3349-06-2
1.0E-01 mg/m3		1hour	Critical	TEEL3	2.5E+01 mg/m3	1hour	1hour	Critical	TEEL3
2.0E-02 mg/m3		1hour	Marginal	TEEL2	5.0E+00 mg/m3	1hour	1hour	Marginal	TEEL2
2.5E-03 mg/m3		1hour	Negligible	TEEL1	7.5E-01 mg/m3	1hour	1hour	Negligible	TEEL1
Neodymium (III) oxide				1313-97-9	Nickel (II) hydroxide				12054-48-7
5.0E+02 mg/m3		1hour	Critical	TEEL3	1.6E+01 mg/m3	1hour	1hour	Critical	TEEL3
5.0E+01 mg/m3		1hour	Marginal	TEEL2	1.6E+00 mg/m3	1hour	1hour	Marginal	TEEL2
3.0E+01 mg/m3		1hour	Negligible	TEEL1	9.5E-01 mg/m3	1hour	1hour	Negligible	TEEL1
Neodymium bromide				13536-80-6	Nickel (II) hydroxide carbonate hydrate				39430-27-8
5.0E+02 mg/m3		1hour	Critical	TEEL3	2.1E+01 mg/m3	1hour	1hour	Critical	TEEL3
1.0E+02 mg/m3		1hour	Marginal	TEEL2	4.0E+00 mg/m3	1hour	1hour	Marginal	TEEL2
1.5E+01 mg/m3		1hour	Negligible	TEEL1	6.0E-01 mg/m3	1hour	1hour	Negligible	TEEL1
Neodymium fluoride				13709-42-7	Nickel (II) nitrate hexahydrate				13478-00-7
5.0E+02 mg/m3		1hour	Critical	TEEL3	5.0E+01 mg/m3	1hour	1hour	Critical	TEEL3
4.4E+01 mg/m3		1hour	Marginal	TEEL2	5.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
2.7E+01 mg/m3		1hour	Negligible	TEEL1	1.5E+00 mg/m3	1hour	1hour	Negligible	TEEL1
Neodymium nitrate, pentahydrate				14517-29-4	Nickel (II) nitrite				17861-62-0
2.5E+02 mg/m3		1hour	Critical	TEEL3	1.0E+01 mg/m3	1hour	1hour	Critical	TEEL3
5.0E+01 mg/m3		1hour	Marginal	TEEL2	5.0E-01 mg/m3	1hour	1hour	Marginal	TEEL2
3.0E+01 mg/m3		1hour	Negligible	TEEL1	3.0E-01 mg/m3	1hour	1hour	Negligible	TEEL1
Neodymium trichloride				10024-93-8	Nickel (III) hydroxide				12125-56-3
6.0E+01 mg/m3		1hour	Critical	TEEL3	1.9E+01 mg/m3	1hour	1hour	Critical	TEEL3
1.3E+01 mg/m3		1hour	Marginal	TEEL2	1.9E+00 mg/m3	1hour	1hour	Marginal	TEEL2
1.5E+00 mg/m3		1hour	Negligible	TEEL1	1.1E+00 mg/m3	1hour	1hour	Negligible	TEEL1
Neon				7440-01-9	Nickel acetate tetrahydrate				6018-89-9
3.0E+05 mg/m3		1hour	Critical	TEEL3	4.2E+01 mg/m3	1hour	1hour	Critical	TEEL3
1.5E+05 mg/m3		1hour	Marginal	TEEL2	3.2E-01 mg/m3	1hour	1hour	Marginal	TEEL2
5.0E+04 mg/m3		1hour	Negligible	TEEL1	1.9E-01 mg/m3	1hour	1hour	Negligible	TEEL1
N-Ethylmorpholine				100-74-3	Nickel aluminide				12003-78-0
2.4E+01 mg/m3		8hour	Negligible	TLV_TWA_irr	1.4E+01 mg/m3	1hour	1hour	Critical	TEEL3
8.1E+00 mg/m3		14day	Negligible	TLV_TWA_irr	1.4E+00 mg/m3	1hour	1hour	Marginal	TEEL2
8.1E+00 mg/m3		1year	Negligible	TLVirr	8.1E-01 mg/m3	1hour	1hour	Negligible	TEEL1
Nickel				7440-02-0	Nickel ammonium sulfate				15699-18-0
1.5E+00 mg/m3		8hour	Negligible	TLV_TWA	4.9E+01 mg/m3	1hour	1hour	Critical	TEEL3
3.7E-01 mg/m3		14day	Negligible	TLV_TWA	5.0E+00 mg/m3	1hour	1hour	Marginal	TEEL2
3.7E-01 mg/m3		1year	Negligible	TLVadj	4.9E+00 mg/m3	1hour	1hour	Negligible	TEEL1

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Nickel carbonate				3333-67-3	Nickel subsulfide				12035-72-2
2.0E+01 mg/m3		1hour	Critical	TEEL3	1.0E-01 mg/m3	8hour		Negligible	TLV_TWA_irr
2.0E+00 mg/m3		1hour	Marginal	TEEL2	3.4E-02 mg/m3	14day		Negligible	TLV_TWA_irr
1.2E+00 mg/m3		1hour	Negligible	TEEL1	1.0E-02 mg/m3	1year		Negligible	IRIS
Nickel carbonyl				13463-39-3	Nickel sulfamate				13770-89-3
1.1E+00 mg/m3		1hour	Critical	AEGL3_1hr	4.3E+01 mg/m3	1hour		Critical	TEEL3
2.5E-01 mg/m3		1hour	Marginal	AEGL2_1hr	2.1E+00 mg/m3	1hour		Marginal	TEEL2
2.5E-01 mg/m3		1hour	Negligible	TEEL1	1.3E+00 mg/m3	1hour		Negligible	TEEL1
2.5E-01 mg/m3		8hour	Negligible	TEEL1*	Nickel sulfate				7786-81-4
2.5E-01 mg/m3		14day	Negligible	TEEL1*	2.6E+01 mg/m3	1hour		Critical	TEEL3
1.2E-01 mg/m3		1year	Negligible	TLVirr	2.6E-01 mg/m3	1hour		Marginal	TEEL2
Nickel chloride				7718-54-9	2.6E-01 mg/m3	1hour		Negligible	TEEL1
2.2E+01 mg/m3		1hour	Critical	TEEL3	Nickel sulfate hexahydrate				10101-97-0
1.1E+00 mg/m3		1hour	Marginal	TEEL2	4.5E+01 mg/m3	1hour		Critical	TEEL3
6.6E-01 mg/m3		1hour	Negligible	TEEL1	1.0E+01 mg/m3	1hour		Marginal	TEEL2
Nickel compounds				Ni cmpds	1.3E+00 mg/m3	1hour		Negligible	TEEL1
1.0E+02 mg/m3		1hour	Critical	TEEL3	Nickel(2+) stearate				2223-95-2
5.0E+01 mg/m3		1hour	Marginal	TEEL2	1.1E+02 mg/m3	1hour		Critical	TEEL3
4.5E+00 mg/m3		1hour	Negligible	TEEL1	5.3E+01 mg/m3	1hour		Marginal	TEEL2
1.4E-04 mg/m3		1year	Negligible	MRL_inter	3.2E+01 mg/m3	1hour		Negligible	TEEL1
Nickel cyanide				557-19-7	Nickel, (carbonato(2-))tet				12607-70-4
1.9E+01 mg/m3		1hour	Critical	TEEL3	1.7E+01 mg/m3	1hour		Critical	TEEL3
9.4E+00 mg/m3		1hour	Marginal	TEEL2	1.7E+00 mg/m3	1hour		Marginal	TEEL2
1.1E+00 mg/m3		1hour	Negligible	TEEL1	1.0E+00 mg/m3	1hour		Negligible	TEEL1
Nickel fluoride				13940-83-5	Nickel, soluble salts				Ni sol salts
2.9E+01 mg/m3		1hour	Critical	TEEL3	1.0E-01 mg/m3	8hour		Negligible	TLV_TWA
3.0E+00 mg/m3		1hour	Marginal	TEEL2	2.4E-02 mg/m3	14day		Negligible	TLV_TWA
1.7E+00 mg/m3		1hour	Negligible	TEEL1	2.4E-02 mg/m3	1year		Negligible	TLVadj
Nickel insoluble inorganic compounds				Ni insol inorg	Nickelous nitrate				13138-45-9
2.0E-01 mg/m3		8hour	Negligible	TLV_TWA_irr	3.1E+01 mg/m3	1hour		Critical	TEEL3
6.8E-02 mg/m3		14day	Negligible	TLV_TWA_irr	1.3E+01 mg/m3	1hour		Marginal	TEEL2
6.8E-02 mg/m3		1year	Negligible	TLVirr	1.5E+00 mg/m3	1hour		Negligible	TEEL1
Nickel oxalate dihydrate				6018-94-6	Nicotinamide				98-92-0
2.5E+01 mg/m3		1hour	Critical	TEEL3	5.0E+02 mg/m3	1hour		Critical	TEEL3
1.3E+01 mg/m3		1hour	Marginal	TEEL2	1.5E+02 mg/m3	1hour		Marginal	TEEL2
7.5E+00 mg/m3		1hour	Negligible	TEEL1	2.0E+01 mg/m3	1hour		Negligible	TEEL1
Nickel oxide				1313-99-1	Nicotine				54-11-5
1.3E+01 mg/m3		1hour	Critical	TEEL3	5.0E+00 mg/m3	1hour		Critical	TEEL3
1.3E+01 mg/m3		1hour	Marginal	TEEL2	3.5E+00 mg/m3	1hour		Marginal	TEEL2
7.6E-01 mg/m3		1hour	Negligible	TEEL1	1.5E+00 mg/m3	1hour		Negligible	TEEL1
Nickel perchlorate				13637-71-3	5.0E-01 mg/m3	8hour		Negligible	TLV_TWA
6.2E+01 mg/m3		1hour	Critical	TEEL3	1.2E-01 mg/m3	14day		Negligible	TLV_TWA
6.2E+00 mg/m3		1hour	Marginal	TEEL2	1.2E-01 mg/m3	1year		Negligible	TLVadj
3.7E+00 mg/m3		1hour	Negligible	TEEL1	Nicotine sulfatate				65-30-5
Nickel refinery dust				Ni ref dust	9.0E+00 mg/m3	1hour		Critical	TEEL3
2.0E-02 mg/m3		1year	Negligible	IRIS	9.0E+00 mg/m3	1hour		Marginal	TEEL2
					9.0E+00 mg/m3	1hour		Negligible	TEEL1

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Nicotinic acid				59-67-6	Nitric acid, ethyl ester				625-58-1
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.3E+02	mg/m3	1hour	Critical	TEEL3
1.5E+01	mg/m3	1hour	Marginal	TEEL2	2.5E+01	mg/m3	1hour	Marginal	TEEL2
2.5E+00	mg/m3	1hour	Negligible	TEEL1	3.5E+00	mg/m3	1hour	Negligible	TEEL1
Niobium carbide				12069-94-2	Nitric acid, pentyl ester				1002-16-0
2.5E+02	mg/m3	1hour	Critical	TEEL3	1.3E+04	mg/m3	1hour	Critical	TEEL3
5.0E+01	mg/m3	1hour	Marginal	TEEL2	2.5E+03	mg/m3	1hour	Marginal	TEEL2
3.0E+01	mg/m3	1hour	Negligible	TEEL1	4.0E+02	mg/m3	1hour	Negligible	TEEL1
Niobium chloride				10026-12-7	Nitric acid, praseodymium (3+) salt				10361-80-5
5.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
4.0E+00	mg/m3	1hour	Marginal	TEEL2	1.5E+02	mg/m3	1hour	Marginal	TEEL2
6.0E-01	mg/m3	1hour	Negligible	TEEL1	2.0E+01	mg/m3	1hour	Negligible	TEEL1
Niobium pentoxide				1313-96-8	Nitric oxide				10102-43-9
5.0E+02	mg/m3	1hour	Critical	TEEL3	3.7E+00	mg/m3	8hour	Negligible	CEGL*
2.0E+02	mg/m3	1hour	Marginal	TEEL2	3.7E+00	mg/m3	14day	Negligible	CEGL*
3.0E+01	mg/m3	1hour	Negligible	TEEL1	3.7E+00	mg/m3	1year	Negligible	CEGL*
Nitrapyrin				1929-82-4	Nitrioltriacetic acid				139-13-9
4.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
2.0E+01	mg/m3	1hour	Marginal	TEEL2	5.0E+02	mg/m3	1hour	Marginal	TEEL2
2.0E+01	mg/m3	1hour	Negligible	TEEL1	1.0E+02	mg/m3	1hour	Negligible	TEEL1
1.0E+01	mg/m3	8hour	Negligible	TLV_TWA	Nitrioltriacetic acid trisodium salt monohydrate				18662-53-8
2.4E+00	mg/m3	14day	Negligible	TLV_TWA	5.0E+02	mg/m3	1hour	Critical	TEEL3
2.4E+00	mg/m3	1year	Negligible	TLVadj	1.3E+00	mg/m3	1hour	Marginal	TEEL2
Nitrate				14797-55-8	Nitrioltriacetic acid, disodium salt				15467-20-6
2.5E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
5.0E+01	mg/m3	1hour	Marginal	TEEL2	1.3E+02	mg/m3	1hour	Marginal	TEEL2
3.0E+01	mg/m3	1hour	Negligible	TEEL1	1.5E+01	mg/m3	1hour	Negligible	TEEL1
Nitric Acid				7697-37-2	Nitrioltris tri-phosphonic acid				6419-19-8
2.4E+02	mg/m3	1hour	Critical	AEGL3_1hr*	5.0E+02	mg/m3	1hour	Critical	TEEL3
6.2E+01	mg/m3	1hour	Marginal	AEGL2_1hr*	3.5E+01	mg/m3	1hour	Marginal	TEEL2
1.4E+00	mg/m3	1hour	Negligible	AEGL1_1hr*	1.0E+01	mg/m3	1hour	Negligible	TEEL1
1.4E+00	mg/m3	8hour	Negligible	AEGL1_8hr*	Nitroaniline, 2-				88-74-4
1.4E+00	mg/m3	14day	Negligible	AEGL1_8hr*	5.0E+02	mg/m3	1hour	Critical	TEEL3
1.4E+00	mg/m3	1year	Negligible	AEGL1_8hr*	1.3E+02	mg/m3	1hour	Marginal	TEEL2
1.4E+00	mg/m3	10min	Negligible	AEGL1_10min	2.0E+01	mg/m3	1hour	Negligible	TEEL1
7.7E+00	mg/m3	8hour	Marginal	AEGL2_8h*	2.7E-04	mg/m3	1year	Negligible	PPRTV_sub
2.8E+01	mg/m3	8hour	Critical	AEGL3_8h*	Nitroaniline, 3-				99-09-2
1.1E+02	mg/m3	10min	Marginal	AEGL2_10min	2.0E+02	mg/m3	1hour	Critical	TEEL3
4.4E+02	mg/m3	10min	Critical	AEGL3_10min	1.3E+01	mg/m3	1hour	Marginal	TEEL2
Nitric acid, butyl ester				928-45-0	Nitric acid, cerium(4+) salt (4:1)				13093-17-9
2.5E+02	mg/m3	1hour	Critical	TEEL3	2.5E+02	mg/m3	1hour	Critical	TEEL3
5.0E+01	mg/m3	1hour	Marginal	TEEL2	5.0E+01	mg/m3	1hour	Marginal	TEEL2
3.0E+01	mg/m3	1hour	Negligible	TEEL1	3.0E+01	mg/m3	1hour	Negligible	TEEL1

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN	
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis	
Nitroaniline, 4-					100-01-6	Nitrogen				
3.0E+02 mg/m3		1hour	Critical	TEEL3	1.0E+06 mg/m3	1hour	1hour	Critical	TEEL3	
3.0E+02 mg/m3		1hour	Marginal	TEEL2	1.0E+06 mg/m3	1hour	1hour	Marginal	TEEL2	
9.0E+00 mg/m3		1hour	Negligible	TEEL1	7.5E+05 mg/m3	1hour	1hour	Negligible	TEEL1	
3.0E+00 mg/m3		8hour	Negligible	TLV_TWA	Nitrogen chloride					
7.3E-01 mg/m3		14day	Negligible	TLV_TWA	1.0E+02 mg/m3	1hour	1hour	Critical	TEEL3	
7.3E-01 mg/m3		1year	Negligible	TLVadj	1.3E+01 mg/m3	1hour	1hour	Marginal	TEEL2	
Nitrobenzene					98-95-3	1.5E+00 mg/m3	1hour	1hour	Negligible	TEEL1
1.0E+03 mg/m3		1hour	Critical	TEEL3	Nitrogen Dioxide					
1.0E+02 mg/m3		1hour	Marginal	TEEL2	3.8E+01 mg/m3	1hour	1hour	Critical	AEGL3_1hr*	
1.5E+01 mg/m3		1hour	Negligible	TEEL1	2.3E+01 mg/m3	1hour	1hour	Marginal	AEGL2_1hr*	
5.0E+00 mg/m3		8hour	Negligible	TLV_TWA	9.4E-01 mg/m3	1hour	1hour	Negligible	AEGL1_1hr*	
1.2E+00 mg/m3		14day	Negligible	TLV_TWA	9.4E-01 mg/m3	8hour	8hour	Negligible	AEGL1_8hr*	
1.4E-02 mg/m3		1year	Negligible	HEAST_sub	9.4E-01 mg/m3	14day	14day	Negligible	AEGL1_8hr*	
Nitrobenzyl chloride, 4-					100-14-1	9.4E-01 mg/m3	1year	1year	Negligible	AEGL1_8hr*
1.3E+02 mg/m3		1hour	Critical	TEEL3	9.4E-01 mg/m3	10min	10min	Negligible	AEGL1_10min	
2.8E+01 mg/m3		1hour	Marginal	TEEL2	1.3E+01 mg/m3	8hour	8hour	Marginal	AEGL2_8hr*	
1.5E+01 mg/m3		1hour	Negligible	TEEL1	2.1E+01 mg/m3	8hour	8hour	Critical	AEGL3_8hr*	
Nitrocellulose					9004-70-0	3.8E+01 mg/m3	10min	10min	Marginal	AEGL2_10min
5.0E+02 mg/m3		1hour	Critical	TEEL3	6.4E+01 mg/m3	10min	10min	Critical	AEGL3_10min	
4.0E+02 mg/m3		1hour	Marginal	TEEL2	Nitrogen mustard					
6.0E+01 mg/m3		1hour	Negligible	TEEL1	3.7E-01 mg/m3	1hour	1hour	Critical	AEGL3_1hr	
Nitrocyclohexane					1122-60-7	2.2E-02 mg/m3	1hour	1hour	Marginal	AEGL2_1hr
6.0E+01 mg/m3		1hour	Critical	TEEL3	3.0E-03 mg/m3	1hour	1hour	Negligible	TEEL1	
1.5E+00 mg/m3		1hour	Marginal	TEEL2	Nitrogen mustard hydrochloride					
7.5E-01 mg/m3		1hour	Negligible	TEEL1	4.0E+00 mg/m3	1hour	1hour	Critical	TEEL3	
Nitrocyclohexene, 1-					2562-37-0	4.0E+00 mg/m3	1hour	1hour	Marginal	TEEL2
2.0E+02 mg/m3		1hour	Critical	TEEL3	2.5E+00 mg/m3	1hour	1hour	Negligible	TEEL1	
4.0E+01 mg/m3		1hour	Marginal	TEEL2	Nitrogen tetroxide					
5.0E+00 mg/m3		1hour	Negligible	TEEL1	3.8E+01 mg/m3	1hour	1hour	Critical	AEGL3_1hr	
Nitrodiphenyl, 4-					92-93-3	2.3E+01 mg/m3	1hour	1hour	Marginal	AEGL2_1hr
5.0E+02 mg/m3		1hour	Critical	TEEL3	9.4E-01 mg/m3	1hour	1hour	Negligible	AEGL1_1hr	
5.0E+00 mg/m3		1hour	Marginal	TEEL2	9.4E-01 mg/m3	8hour	8hour	Negligible	AEGL1_8hr	
7.5E-01 mg/m3		1hour	Negligible	TEEL1	Nitrogen trifluoride					
Nitrodiphenylamine, 2-					119-75-5	2.5E+03 mg/m3	1hour	1hour	Critical	AEGL3_1hr
5.0E+02 mg/m3		1hour	Critical	TEEL3	1.5E+03 mg/m3	1hour	1hour	Marginal	AEGL2_1hr	
5.0E+02 mg/m3		1hour	Marginal	TEEL2	5.8E+02 mg/m3	1hour	1hour	Negligible	AEGL1_1hr	
1.0E+02 mg/m3		1hour	Negligible	TEEL1	7.3E+01 mg/m3	8hour	8hour	Negligible	AEGL1_8hr	
Nitroethane					79-24-3	7.1E+00 mg/m3	14day	14day	Negligible	TLV_TWA
3.0E+03 mg/m3		1hour	Critical	TEEL3	7.1E+00 mg/m3	1year	1year	Negligible	TLVadj	
6.0E+02 mg/m3		1hour	Marginal	TEEL2	Nitrogen trioxide					
3.1E+02 mg/m3		1hour	Negligible	TLV_TWA_irr*	1.5E+03 mg/m3	1hour	1hour	Critical	TEEL3	
3.1E+02 mg/m3		8hour	Negligible	TLV_TWA_irr	3.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2	
1.1E+02 mg/m3		14day	Negligible	TLV_TWA_irr	4.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1	
1.1E+02 mg/m3		1year	Negligible	TLVirr						

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN		
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis		
Nitroglycerin					55-63-0	Nitropropane, 2-					79-46-9
7.5E+01	mg/m3	1hour	Critical	TEEL3	3.5E+02	mg/m3	1hour	Critical	TEEL3		
2.0E+00	mg/m3	1hour	Marginal	TEEL2	1.5E+02	mg/m3	1hour	Marginal	TEEL2		
4.6E-01	mg/m3	1hour	Negligible	TLV_TWA*	1.0E+02	mg/m3	1hour	Negligible	TEEL1		
4.6E-01	mg/m3	8hour	Negligible	TLV_TWA	3.6E+01	mg/m3	8hour	Negligible	TLV_TWA		
1.1E-01	mg/m3	14day	Negligible	TLV_TWA	8.9E+00	mg/m3	14day	Negligible	TLV_TWA		
1.1E-01	mg/m3	1year	Negligible	TLVadj	1.8E-03	mg/m3	1year	Negligible	HEAST		
Nitromethane					75-52-5	Nitropyrene, 1-					5522-43-0
1.5E+03	mg/m3	1hour	Critical	TEEL3	1.0E+01	mg/m3	1hour	Critical	TEEL3		
1.5E+03	mg/m3	1hour	Marginal	TEEL2	2.0E+00	mg/m3	1hour	Marginal	TEEL2		
1.5E+02	mg/m3	1hour	Negligible	TEEL1	3.0E-01	mg/m3	1hour	Negligible	TEEL1		
5.0E+01	mg/m3	8hour	Negligible	TLV_TWA	Nitropyridine N-oxide, 4-					1124-33-0	
1.2E+01	mg/m3	14day	Negligible	TLV_TWA	8.0E+01	mg/m3	1hour	Critical	TEEL3		
5.3E-07	mg/m3	1year	Negligible	PPRTV	8.0E+01	mg/m3	1hour	Marginal	TEEL2		
Nitromethane d3					13031-32-8	5.0E+01	mg/m3	1hour	Negligible	TEEL1	
2.0E+03	mg/m3	1hour	Critical	TEEL3	Nitrosodiethylamine, N-					55-18-5	
2.5E+02	mg/m3	1hour	Marginal	TEEL2	1.1E-04	mg/m3	1year	Negligible	IRIS		
1.5E+02	mg/m3	1hour	Negligible	TEEL1	Nitrosodimethylamine, N-					62-75-9	
Nitronium Tetrafluoroborate					13826-86-3	1.0E+02	mg/m3	1hour	Critical	TEEL3	
4.4E+02	mg/m3	1hour	Critical	TEEL3	1.9E+01	mg/m3	1hour	Marginal	TEEL2		
2.2E+01	mg/m3	1hour	Marginal	TEEL2	1.0E+01	mg/m3	1hour	Negligible	TEEL1		
1.3E+01	mg/m3	1hour	Negligible	TEEL1	3.4E-04	mg/m3	1year	Negligible	IRIS		
Nitrophenol (mixed isomers)					25154-55-6	Nitroso-di-n-butylamine, N-					924-16-3
7.5E+01	mg/m3	1hour	Critical	TEEL3	3.0E-03	mg/m3	1year	Negligible	IRIS		
1.5E+01	mg/m3	1hour	Marginal	TEEL2	Nitrosodiphenylamine, 4-					156-10-5	
2.5E+00	mg/m3	1hour	Negligible	TEEL1	1.5E+02	mg/m3	1hour	Critical	TEEL3		
Nitrophenol, 2-					88-75-5	2.0E+00	mg/m3	1hour	Marginal	TEEL2	
1.5E+02	mg/m3	1hour	Critical	TEEL3	3.0E-01	mg/m3	1hour	Negligible	TEEL1		
3.0E+01	mg/m3	1hour	Marginal	TEEL2	Nitrosodiphenylamine, N-					86-30-6	
4.0E+00	mg/m3	1hour	Negligible	TEEL1	5.0E+02	mg/m3	1hour	Critical	TEEL3		
3.4E-04	mg/m3	1year	Negligible	PPRTV_sub	1.5E+02	mg/m3	1hour	Marginal	TEEL2		
Nitrophenol, 3-					554-84-7	2.5E+01	mg/m3	1hour	Negligible	TEEL1	
1.5E+02	mg/m3	1hour	Critical	TEEL3	Nitrosodipropylamine, N-					621-64-7	
3.0E+01	mg/m3	1hour	Marginal	TEEL2	2.0E+02	mg/m3	1hour	Critical	TEEL3		
4.0E+00	mg/m3	1hour	Negligible	TEEL1	1.3E+00	mg/m3	1hour	Marginal	TEEL2		
Nitrophenol, 4-					100-02-7	2.0E-01	mg/m3	1hour	Negligible	TEEL1	
7.5E+01	mg/m3	1hour	Critical	TEEL3	Nitrosomorpholine					59-89-2	
1.5E+01	mg/m3	1hour	Marginal	TEEL2	3.0E+01	mg/m3	1hour	Critical	TEEL3		
2.5E+00	mg/m3	1hour	Negligible	TEEL1	7.5E+00	mg/m3	1hour	Marginal	TEEL2		
Nitropropane, 1-					108-03-2	1.3E+00	mg/m3	1hour	Negligible	TEEL1	
3.5E+03	mg/m3	1hour	Critical	TEEL3	Nitroso-N-methylurea, N-					684-93-5	
4.0E+02	mg/m3	1hour	Marginal	TEEL2	5.0E+01	mg/m3	1hour	Critical	TEEL3		
2.5E+02	mg/m3	1hour	Negligible	TEEL1	5.0E+00	mg/m3	1hour	Marginal	TEEL2		
9.1E+01	mg/m3	8hour	Negligible	TLV_TWA_irr	7.5E-01	mg/m3	1hour	Negligible	TEEL1		
3.1E+01	mg/m3	14day	Negligible	TLV_TWA_irr							
3.1E+01	mg/m3	1year	Negligible	TLVirr							

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Nitrosophenol, 4-				104-91-6	Nitrous oxide				10024-97-2
2.0E+02 mg/m3		1hour	Critical	TEEL3	3.5E+04 mg/m3	1hour	1hour	Critical	TEEL3
4.0E+01 mg/m3		1hour	Marginal	TEEL2	1.5E+04 mg/m3	1hour	1hour	Marginal	TEEL2
6.0E+00 mg/m3		1hour	Negligible	TEEL1	2.5E+02 mg/m3	1hour	1hour	Negligible	TEEL1
Nitrosopyrrolidine, N-				930-55-2	N-Methylbutylamine				110-68-9
7.9E-03 mg/m3		1year	Negligible	IRIS	9.0E+01 mg/m3	8hour	8hour	Negligible	TLV_TWA
Nitrosotoluene, o-				611-23-4	N-Methylformamide				123-39-7
5.0E+02 mg/m3		1hour	Critical	TEEL3	1.0E+03 mg/m3	1hour	1hour	Critical	TEEL3
1.5E+02 mg/m3		1hour	Marginal	TEEL2	7.5E+02 mg/m3	1hour	1hour	Marginal	TEEL2
2.5E+01 mg/m3		1hour	Negligible	TEEL1	2.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
Nitrosyl chloride				2696-92-6	N-Methylpyrrole				96-54-8
6.0E+00 mg/m3		1hour	Critical	TEEL3	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
1.3E+00 mg/m3		1hour	Marginal	TEEL2	5.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
2.0E-01 mg/m3		1hour	Negligible	TEEL1	2.5E+02 mg/m3	1hour	1hour	Negligible	TEEL1
Nitrosylsulfuric acid				7782-78-7	n-Nonanoic acid				112-05-0
1.5E+02 mg/m3		1hour	Critical	TEEL3	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
3.5E+01 mg/m3		1hour	Marginal	TEEL2	5.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
5.0E+00 mg/m3		1hour	Negligible	TEEL1	7.5E+01 mg/m3	1hour	1hour	Negligible	TEEL1
Nitrotoluene, m-				99-08-1	n-Octadecane				593-45-3
1.0E+03 mg/m3		1hour	Critical	TEEL3	7.5E+03 mg/m3	1hour	1hour	Critical	TEEL3
5.0E+01 mg/m3		1hour	Marginal	TEEL2	1.5E+03 mg/m3	1hour	1hour	Marginal	TEEL2
3.5E+01 mg/m3		1hour	Negligible	TEEL1	3.5E+02 mg/m3	1hour	1hour	Negligible	TEEL1
1.1E+01 mg/m3		8hour	Negligible	TLV_TWA	Nonacosane				630-03-5
2.7E+00 mg/m3		14day	Negligible	TLV_TWA	2.5E+02 mg/m3	1hour	1hour	Critical	TEEL3
2.7E+00 mg/m3		1year	Negligible	TLVadj	5.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
Nitrotoluene, o-				88-72-2	Nonanal				124-19-6
1.0E+03 mg/m3		1hour	Critical	TEEL3	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
5.0E+01 mg/m3		1hour	Marginal	TEEL2	4.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
3.5E+01 mg/m3		1hour	Negligible	TEEL1	6.0E+00 mg/m3	1hour	1hour	Negligible	TEEL1
1.1E+01 mg/m3		8hour	Negligible	TLV_TWA	Nonane				111-84-2
2.7E+00 mg/m3		14day	Negligible	TLV_TWA	7.5E+03 mg/m3	1hour	1hour	Critical	TEEL3
2.7E+00 mg/m3		1year	Negligible	TLVadj	5.0E+03 mg/m3	1hour	1hour	Marginal	TEEL2
Nitrotoluene, p-				99-99-0	Nonanenitrile				2243-27-8
1.0E+03 mg/m3		1hour	Critical	TEEL3	3.0E+03 mg/m3	1hour	1hour	Negligible	TEEL1
5.0E+02 mg/m3		1hour	Marginal	TEEL2	1.0E+03 mg/m3	8hour	8hour	Negligible	TLV_TWA_irr
3.5E+01 mg/m3		1hour	Negligible	TEEL1	3.6E+02 mg/m3	14day	14day	Negligible	TLV_TWA_irr
1.1E+01 mg/m3		8hour	Negligible	TLV_TWA	1.4E+00 mg/m3	1year	1year	Negligible	PPRTV_sub
2.7E+00 mg/m3		14day	Negligible	TLV_TWA	Nonanenitrile				2243-27-8
2.7E+00 mg/m3		1year	Negligible	TLVadj	7.5E+02 mg/m3	1hour	1hour	Critical	TEEL3
Nitrous acid				7782-77-6	Nonanenitrile				2243-27-8
1.8E+02 mg/m3		1hour	Critical	TEEL3	1.5E+02 mg/m3	1hour	1hour	Marginal	TEEL2
4.6E+01 mg/m3		1hour	Marginal	TEEL2	1.5E+02 mg/m3	1hour	1hour	Negligible	TEEL1
1.0E+00 mg/m3		1hour	Negligible	TEEL1					

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN		
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis		
Nonanone, 2-				821-55-6	Octachloronaphthalene				2234-13-1		
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.0E+00	mg/m3	1hour	Critical	TEEL3		
1.3E+02	mg/m3	1hour	Marginal	TEEL2	3.0E-01	mg/m3	1hour	Marginal	TEEL2		
1.5E+01	mg/m3	1hour	Negligible	TEEL1	3.0E-01	mg/m3	1hour	Negligible	TEEL1		
Nonyl alcohol				143-08-8	1.0E-01 mg/m3				8hour	Negligible	TLV_TWA
5.0E+02	mg/m3	1hour	Critical	TEEL3	2.4E-02 mg/m3				14day	Negligible	TLV_TWA
5.0E+02	mg/m3	1hour	Marginal	TEEL2	2.4E-02 mg/m3				1year	Negligible	TLVadj
7.5E+01	mg/m3	1hour	Negligible	TEEL1	Octacosane				630-02-4		
Nonyl phenol (mixed isomers)				25154-52-3	7.5E+03 mg/m3				1hour	Critical	TEEL3
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.5E+03 mg/m3				1hour	Marginal	TEEL2
1.3E+02	mg/m3	1hour	Marginal	TEEL2	3.5E+02 mg/m3				1hour	Negligible	TEEL1
2.0E+01	mg/m3	1hour	Negligible	TEEL1	Octadecanoic acid				57-11-4		
Nonyl phenol, 4- (branched)				84852-15-3	5.0E+02 mg/m3				1hour	Critical	TEEL3
5.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02 mg/m3				1hour	Marginal	TEEL2
1.0E+02	mg/m3	1hour	Marginal	TEEL2	1.5E+02 mg/m3				1hour	Negligible	TEEL1
1.5E+01	mg/m3	1hour	Negligible	TEEL1	Octadecanol, 1-				112-92-5		
Nonylphenol ethoxylate				127087-87-0	7.5E+03 mg/m3				1hour	Critical	TEEL3
5.0E+02	mg/m3	1hour	Critical	TEEL3	6.0E+02 mg/m3				1hour	Marginal	TEEL2
2.0E+02	mg/m3	1hour	Marginal	TEEL2	7.5E+01 mg/m3				1hour	Negligible	TEEL1
3.0E+01	mg/m3	1hour	Negligible	TEEL1	Octadecyl methacrylate				32360-05-7		
Nonylphenol, 4-				104-40-5	2.5E+02 mg/m3				1hour	Critical	TEEL3
5.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+01 mg/m3				1hour	Marginal	TEEL2
1.3E+02	mg/m3	1hour	Marginal	TEEL2	3.0E+01 mg/m3				1hour	Negligible	TEEL1
2.0E+01	mg/m3	1hour	Negligible	TEEL1	Octadecyltrichlorosilane				112-04-9		
Nonylphenoxypolyethoxyethanol				68412-54-4	5.2E+02 mg/m3				1hour	Critical	AEGL3_1hr
2.5E+02	mg/m3	1hour	Critical	TEEL3	1.2E+02 mg/m3				1hour	Marginal	AEGL2_1hr
5.0E+01	mg/m3	1hour	Marginal	TEEL2	9.5E+00 mg/m3				1hour	Negligible	AEGL1_1hr
3.0E+01	mg/m3	1hour	Negligible	TEEL1	9.5E+00 mg/m3				8hour	Negligible	AEGL1_8hr
Nonyltrichlorosilane				5283-67-0	Octafluorocyclobutane				115-25-3		
3.5E+02	mg/m3	1hour	Critical	AEGL3_1hr	2.5E+06 mg/m3				1hour	Critical	TEEL3
7.8E+01	mg/m3	1hour	Marginal	AEGL2_1hr	2.5E+06 mg/m3				1hour	Marginal	TEEL2
6.4E+00	mg/m3	1hour	Negligible	AEGL1_1hr	6.0E+05 mg/m3				1hour	Negligible	TEEL1
6.4E+00	mg/m3	8hour	Negligible	AEGL1_8hr	Octamethylcyclotetrasiloxane				556-67-2		
Norbormide				991-42-4	4.0E+03 mg/m3				1hour	Critical	TEEL3
3.8E+00	mg/m3	1hour	Critical	TEEL3	3.0E+03 mg/m3				1hour	Marginal	TEEL2
3.8E+00	mg/m3	1hour	Marginal	TEEL2	4.0E+02 mg/m3				1hour	Negligible	TEEL1
2.0E+00	mg/m3	1hour	Negligible	TEEL1	Octamethylpyrophosphoramidate				152-16-9		
N-Vinylformamide				13162-05-5	3.5E+00 mg/m3				1hour	Critical	TEEL3
5.0E+02	mg/m3	1hour	Critical	TEEL3	8.0E-01 mg/m3				1hour	Marginal	TEEL2
1.0E+02	mg/m3	1hour	Marginal	TEEL2	5.0E-01 mg/m3				1hour	Negligible	TEEL1
1.5E+01	mg/m3	1hour	Negligible	TEEL1	Octanal, 1-				124-13-0		
					5.0E+02 mg/m3				1hour	Critical	TEEL3
					5.0E+02 mg/m3				1hour	Marginal	TEEL2
					6.0E+01 mg/m3				1hour	Negligible	TEEL1

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME					CASRN	CHEMICAL NAME					CASRN
MEG	Units	Timeframe	Severity	Basis		MEG	Units	Timeframe	Severity	Basis	
Octane					111-65-9	Octyltrichlorosilane					5283-66-9
4.0E+03	mg/m3	1hour	Critical	TEEL3		3.3E+02	mg/m3	1hour	Critical	AEGL3_1hr	
1.5E+03	mg/m3	1hour	Marginal	TEEL2		7.4E+01	mg/m3	1hour	Marginal	AEGL2_1hr	
1.4E+03	mg/m3	1hour	Negligible	TLV_TWA_irr [†]		6.1E+00	mg/m3	1hour	Negligible	AEGL1_1hr	
1.4E+03	mg/m3	8hour	Negligible	TLV_TWA_irr		6.1E+00	mg/m3	8hour	Negligible	AEGL1_8hr	
4.8E+02	mg/m3	14day	Negligible	TLV_TWA_irr		Oil gas					z-0035
4.8E+02	mg/m3	1year	Negligible	TLVirr		1.3E+04	mg/m3	1hour	Critical	TEEL3	
Octanedione, 2,5-					3214-41-3	3.5E+03	mg/m3	1hour	Marginal	TEEL2	
5.0E+02	mg/m3	1hour	Critical	TEEL3		5.0E+02	mg/m3	1hour	Negligible	TEEL1	
5.0E+02	mg/m3	1hour	Marginal	TEEL2		Oil mist, mineral					8012-95-1
6.0E+01	mg/m3	1hour	Negligible	TEEL1		5.0E+02	mg/m3	1hour	Critical	TEEL3	
Octanenitrile					124-12-9	2.5E+01	mg/m3	1hour	Marginal	TEEL2	
7.5E+02	mg/m3	1hour	Critical	TEEL3		1.0E+01	mg/m3	1hour	Negligible	TEEL1	
1.5E+02	mg/m3	1hour	Marginal	TEEL2		5.0E+00	mg/m3	8hour	Negligible	TLV_TWA	
2.0E+01	mg/m3	1hour	Negligible	TEEL1		1.2E+00	mg/m3	14day	Negligible	TLV_TWA	
Octanethiol, 1-					111-88-6	1.2E+00	mg/m3	1year	Negligible	TLVadj	
7.5E+02	mg/m3	1hour	Critical	TEEL3		Oleum					8014-95-7
3.0E+00	mg/m3	1hour	Marginal	TEEL2		1.6E+02	mg/m3	1hour	Critical	AEGL3_1hr	
4.0E-01	mg/m3	1hour	Negligible	TEEL1		6.3E+01	mg/m3	1hour	Marginal	AEGL2_1hr	
Octanoic acid					124-07-2	2.0E-01	mg/m3	1hour	Negligible	AEGL1_1hr	
5.0E+02	mg/m3	1hour	Critical	TEEL3		2.0E-01	mg/m3	8hour	Negligible	AEGL1_8hr	
5.0E+02	mg/m3	1hour	Marginal	TEEL2		Orthoarsenic acid					7778-39-4
1.3E+02	mg/m3	1hour	Negligible	TEEL1		9.5E+00	mg/m3	1hour	Critical	TEEL3	
Octanone, 2-					111-13-7	3.0E+00	mg/m3	1hour	Marginal	TEEL2	
5.0E+02	mg/m3	1hour	Critical	TEEL3		4.0E-01	mg/m3	1hour	Negligible	TEEL1	
5.0E+02	mg/m3	1hour	Marginal	TEEL2		Orthoformic acid, trimethyl ester					149-73-5
2.0E+02	mg/m3	1hour	Negligible	TEEL1		4.0E+01	mg/m3	1hour	Critical	TEEL3	
Octaphenylcyclotetrasiloxane					546-56-5	7.5E+00	mg/m3	1hour	Marginal	TEEL2	
5.0E+02	mg/m3	1hour	Critical	TEEL3		1.3E+00	mg/m3	1hour	Negligible	TEEL1	
4.0E+02	mg/m3	1hour	Marginal	TEEL2		Osmium					7440-04-2
6.0E+01	mg/m3	1hour	Negligible	TEEL1		3.0E+01	mg/m3	1hour	Critical	TEEL3	
Octene, 1-					111-66-0	6.0E+00	mg/m3	1hour	Marginal	TEEL2	
9.2E+03	mg/m3	1hour	Critical	ERPG3		7.5E-01	mg/m3	1hour	Negligible	TEEL1	
3.7E+03	mg/m3	1hour	Marginal	ERPG2		Osmium tetroxide					20816-12-0
1.8E+02	mg/m3	1hour	Negligible	ERPG1		4.2E+01	mg/m3	1hour	Critical	AEGL3_1hr	
Octyl alcohol					111-87-5	8.7E-02	mg/m3	1hour	Marginal	AEGL2_1hr	
3.5E+02	mg/m3	1hour	Critical	TEEL3		6.0E-03	mg/m3	1hour	Negligible	TEEL1	
5.0E+01	mg/m3	1hour	Marginal	TEEL2		2.1E-03	mg/m3	8hour	Negligible	TLV_TWA_irr	
5.0E+01	mg/m3	1hour	Negligible	TEEL1		7.1E-04	mg/m3	14day	Negligible	TLV_TWA_irr	
Octyl(phenyl)-N,N-diisobutylcarbamoylmethylphosphi					83242-95-9	7.1E-04	mg/m3	1year	Negligible	TLVirr	
2.5E+02	mg/m3	1hour	Critical	TEEL3		Otto fuel					106602-80-6
5.0E+01	mg/m3	1hour	Marginal	TEEL2		9.0E+01	mg/m3	1hour	Critical	TEEL3	
3.0E+01	mg/m3	1hour	Negligible	TEEL1		7.0E+00	mg/m3	1hour	Marginal	TEEL2	
						1.2E+00	mg/m3	1hour	Negligible	TEEL1	

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Ouabain				630-60-4	Oxydianiline				101-80-4
1.3E+01 mg/m3		1hour	Critical	TEEL3	3.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
8.3E+00 mg/m3		1hour	Marginal	TEEL2	1.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
5.0E+00 mg/m3		1hour	Negligible	TEEL1	1.5E+00 mg/m3	1hour	1hour	Negligible	TEEL1
Oxalic acid				144-62-7	Oxydiphenoxarsine, 10,10'				58-36-6
5.0E+02 mg/m3		1hour	Critical	TEEL3	1.4E+01 mg/m3	1hour	1hour	Critical	TEEL3
4.0E+01 mg/m3		1hour	Marginal	TEEL2	1.4E+01 mg/m3	1hour	1hour	Marginal	TEEL2
2.0E+00 mg/m3		1hour	Negligible	TEEL1	2.0E+00 mg/m3	1hour	1hour	Negligible	TEEL1
1.0E+00 mg/m3		8hour	Negligible	TLV_TWA_irr	Oxydisulfoton				2497-07-6
3.4E-01 mg/m3		14day	Negligible	TLV_TWA_irr	3.5E+00 mg/m3	1hour	1hour	Critical	TEEL3
3.4E-01 mg/m3		1year	Negligible	TLVirr	3.5E+00 mg/m3	1hour	1hour	Marginal	TEEL2
Oxalic acid dihydrate				6153-56-6	2.0E+00 mg/m3	1hour	1hour	Negligible	TEEL1
5.0E+02 mg/m3		1hour	Critical	TEEL3	Oxygen difluoride				7783-41-7
1.0E+02 mg/m3		1hour	Marginal	TEEL2	5.5E+00 mg/m3	1hour	1hour	Critical	AEGL3_1hr
2.0E+00 mg/m3		1hour	Negligible	TEEL1	1.8E+00 mg/m3	1hour	1hour	Marginal	AEGL2_1hr
Oxalyl chlorine				79-37-8	2.5E-01 mg/m3	1hour	1hour	Negligible	TEEL1
1.0E+03 mg/m3		1hour	Critical	TEEL3	Ozone				10028-15-6
2.0E+02 mg/m3		1hour	Marginal	TEEL2	1.0E+01 mg/m3	1hour	1hour	Critical	TEEL3
3.0E+01 mg/m3		1hour	Negligible	TEEL1	2.0E+00 mg/m3	1hour	1hour	Marginal	TEEL2
Oxamide				471-46-5	4.0E-01 mg/m3	1hour	1hour	Negligible	TLV-TWA
2.0E+02 mg/m3		1hour	Critical	TEEL3	3.9E-01 mg/m3	8hour	8hour	Negligible	TLV_TWA_irr
4.0E+01 mg/m3		1hour	Marginal	TEEL2	3.9E-02 mg/m3	14day	14day	Negligible	CEGL
5.0E+00 mg/m3		1hour	Negligible	TEEL1	3.9E-02 mg/m3	1year	1year	Negligible	CEGL
Oxamyl				23135-22-0	Palladium				7440-05-3
5.3E+00 mg/m3		1hour	Critical	AEGL3_1hr	2.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
1.8E+00 mg/m3		1hour	Marginal	AEGL2_1hr	4.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
1.2E+00 mg/m3		1hour	Negligible	AEGL1_1hr	6.0E+00 mg/m3	1hour	1hour	Negligible	TEEL1
3.2E-01 mg/m3		8hour	Negligible	AEGL1_8hr	Palladium chloride				7647-10-1
Oxathiane, 1,4-				15980-15-1	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
1.5E+03 mg/m3		1hour	Critical	TEEL3	3.0E+00 mg/m3	1hour	1hour	Marginal	TEEL2
3.5E+02 mg/m3		1hour	Marginal	TEEL2	4.0E-01 mg/m3	1hour	1hour	Negligible	TEEL1
5.0E+01 mg/m3		1hour	Negligible	TEEL1	Palladium hydroxide				12135-22-7
Oxone, monopersulfate compound				37222-66-5	7.5E+01 mg/m3	1hour	1hour	Critical	TEEL3
2.5E+02 mg/m3		1hour	Critical	TEEL3	2.5E+00 mg/m3	1hour	1hour	Marginal	TEEL2
5.0E+01 mg/m3		1hour	Marginal	TEEL2	3.0E-01 mg/m3	1hour	1hour	Negligible	TEEL1
3.0E+01 mg/m3		1hour	Negligible	TEEL1	Paraffin liquid				8020-83-5
Oxybis(benzenesulfonyl hydrazide), 4,4'-				80-51-3	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
1.0E-01 mg/m3		8hour	Negligible	TLV_TWA_irr	5.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
3.4E-02 mg/m3		14day	Negligible	TLV_TWA_irr	1.5E+01 mg/m3	1hour	1hour	Negligible	TEEL1
3.4E-02 mg/m3		1year	Negligible	TLVirr	Paraffin wax fume				8002-74-2
Oxydiacetic acid				110-99-6	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
2.0E+02 mg/m3		1hour	Critical	TEEL3	1.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
4.0E+01 mg/m3		1hour	Marginal	TEEL2	1.5E+01 mg/m3	1hour	1hour	Negligible	TEEL1
6.0E+00 mg/m3		1hour	Negligible	TEEL1	2.0E+00 mg/m3	8hour	8hour	Negligible	TLV_TWA_irr
					6.8E-01 mg/m3	14day	14day	Negligible	TLV_TWA_irr
					6.8E-01 mg/m3	1year	1year	Negligible	TLVirr

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Paraffins, petroleum, normal C5-C20				64771-72-8	Particulate matter < 10 µm				PM10
5.0E+04 mg/m3		1hour	Critical	TEEL3	6.0E-01 mg/m3	24hour		Critical	RD-230 Sec. 4
1.0E+04 mg/m3		1hour	Marginal	TEEL2	4.2E-01 mg/m3	24hour		Marginal	RD-230 Sec. 4
6.0E+03 mg/m3		1hour	Negligible	TEEL1	2.5E-01 mg/m3	24hour		Negligible	RD-230 Sec. 4
Paraformaldehyde				30525-89-4	Particulate matter < 2.5 µm				PM2.5
1.0E+02 mg/m3		1hour	Critical	TEEL3	5.0E-01 mg/m3	24hour		Critical	RD-230 Sec. 4
7.5E+01 mg/m3		1hour	Marginal	TEEL2	2.5E-01 mg/m3	24hour		Marginal	RD-230 Sec. 4
1.3E+01 mg/m3		1hour	Negligible	TEEL1	6.5E-02 mg/m3	24hour		Negligible	RD-230 Sec. 4
Paraldehyde				123-63-7	1.5E-02 mg/m3	1year		Negligible	RD-230 Sec. 4
5.0E+02 mg/m3		1hour	Critical	TEEL3	6.5E-02 mg/m3	1year		Marginal	RD-230 Sec. 4
3.0E+02 mg/m3		1hour	Marginal	TEEL2	Pentaborane				
4.0E+01 mg/m3		1hour	Negligible	TEEL1	1.8E+00 mg/m3	1hour		Critical	19624-22-7 AEGL3_1hr
Paraquat				4685-14-7	3.6E-01 mg/m3	1hour		Marginal	AEGL2_1hr
1.5E+02 mg/m3		1hour	Critical	TEEL3	4.0E-02 mg/m3	1hour		Negligible	TEEL1
1.3E+01 mg/m3		1hour	Marginal	TEEL2	1.3E-02 mg/m3	8hour		Negligible	TLV_TWA
1.5E+00 mg/m3		1hour	Negligible	TEEL1	3.2E-03 mg/m3	14day		Negligible	TLV_TWA
1.0E-01 mg/m3		8hour	Negligible	TLV_TWA_irr	3.2E-03 mg/m3	1year		Negligible	TLVadj
3.4E-02 mg/m3		14day	Negligible	TLV_TWA_irr	Pentachlorobenzene				
3.4E-02 mg/m3		1year	Negligible	TLVirr	4.0E+02 mg/m3	1hour		Critical	608-93-5 TEEL3
Paraquat dichloride				1910-42-5	1.5E+02 mg/m3	1hour		Marginal	TEEL2
1.0E+00 mg/m3		1hour	Critical	TEEL3	2.5E+01 mg/m3	1hour		Negligible	TEEL1
5.0E-01 mg/m3		1hour	Marginal	TEEL2	Pentachloroethane				
5.0E-01 mg/m3		1hour	Negligible	TEEL1	5.0E+02 mg/m3	1hour		Critical	76-01-7 TEEL3
Paraquat methosulfate				2074-50-2	5.0E+02 mg/m3	1hour		Marginal	TEEL2
4.0E+01 mg/m3		1hour	Critical	TEEL3	1.3E+02 mg/m3	1hour		Negligible	TEEL1
1.5E+01 mg/m3		1hour	Marginal	TEEL2	Pentachloronaphthalene				
2.0E+00 mg/m3		1hour	Negligible	TEEL1	5.0E-01 mg/m3	8hour		Negligible	1321-64-8 TLV_TWA
Parathion				56-38-2	1.2E-01 mg/m3	14day		Negligible	TLV_TWA
2.0E+00 mg/m3		1hour	Critical	AEGL3_1hr*	1.2E-01 mg/m3	1year		Negligible	TLVadj
1.5E+00 mg/m3		1hour	Marginal	AEGL2_1hr*	Pentachloronitrobenzene				
3.0E-01 mg/m3		1hour	Negligible	TEEL1(old)*	5.0E+02 mg/m3	1hour		Critical	82-68-8 TEEL3
5.0E-02 mg/m3		8hour	Negligible	TLV_TWA*	3.0E+02 mg/m3	1hour		Marginal	TEEL2
1.2E-02 mg/m3		14day	Negligible	TLV_TWA	1.5E+00 mg/m3	1hour		Negligible	TEEL1
1.2E-02 mg/m3		1year	Negligible	TLVadj	5.0E-01 mg/m3	8hour		Negligible	TLV_TWA
3.0E-01 mg/m3		10min	Negligible	TEEL1(old)*	1.2E-01 mg/m3	14day		Negligible	TLV_TWA
4.8E-01 mg/m3		8hour	Marginal	AEGL2_8h*	1.2E-01 mg/m3	1year		Negligible	TLVadj
6.3E-01 mg/m3		8hour	Critical	AEGL3_8h*	Pentachlorophenol				
2.8E+00 mg/m3		10min	Marginal	AEGL2_10min	2.5E+00 mg/m3	1hour		Critical	87-86-5 TEEL3
3.6E+00 mg/m3		10min	Critical	AEGL3_10min	2.5E+00 mg/m3	1hour		Marginal	TEEL2
Paris green				12002-03-8	2.5E+00 mg/m3	1hour		Negligible	TEEL1
2.2E+01 mg/m3		1hour	Critical	TEEL3	5.0E-01 mg/m3	8hour		Negligible	TLV_TWA
2.2E+01 mg/m3		1hour	Marginal	TEEL2	1.2E-01 mg/m3	14day		Negligible	TLV_TWA
3.4E+00 mg/m3		1hour	Negligible	TEEL1	1.2E-01 mg/m3	1year		Negligible	TLVadj
Particulate material, unspecified				PNOS	Pentadecane				629-62-9
2.5E+02 mg/m3		1hour	Critical	TEEL3	3.0E+03 mg/m3	1hour		Critical	TEEL3
5.0E+01 mg/m3		1hour	Marginal	TEEL2	6.0E+02 mg/m3	1hour		Marginal	TEEL2
3.0E+01 mg/m3		1hour	Negligible	TEEL1	7.5E+01 mg/m3	1hour		Negligible	TEEL1

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Pentadecanoic acid				1002-84-2	Pentanol, 3-				584-02-1
4.0E+01	mg/m3	1hour	Critical	TEEL3	1.5E+03	mg/m3	1hour	Critical	TEEL3
7.5E+00	mg/m3	1hour	Marginal	TEEL2	4.0E+02	mg/m3	1hour	Marginal	TEEL2
1.3E+00	mg/m3	1hour	Negligible	TEEL1	4.0E+02	mg/m3	1hour	Negligible	TEEL1
Pentadecylamine				2570-26-5	Pentatriacontane				630-07-9
1.0E+02	mg/m3	1hour	Critical	TEEL3	2.5E+02	mg/m3	1hour	Critical	TEEL3
2.0E+00	mg/m3	1hour	Marginal	TEEL2	5.0E+01	mg/m3	1hour	Marginal	TEEL2
3.0E-01	mg/m3	1hour	Negligible	TEEL1	3.0E+01	mg/m3	1hour	Negligible	TEEL1
Pentaerythritol				115-77-5	Pentene, 1-				109-67-1
5.0E+02	mg/m3	1hour	Critical	TEEL3	2.0E+05	mg/m3	1hour	Critical	TEEL3
5.0E+01	mg/m3	1hour	Marginal	TEEL2	1.5E+04	mg/m3	1hour	Marginal	TEEL2
3.0E+01	mg/m3	1hour	Negligible	TEEL1	2.5E+03	mg/m3	1hour	Negligible	TEEL1
1.0E+01	mg/m3	8hour	Negligible	TLV_TWA_irr	Pentobarbital sodium				57-33-0
3.4E+00	mg/m3	14day	Negligible	TLV_TWA_irr	5.0E+01	mg/m3	1hour	Critical	TEEL3
3.4E+00	mg/m3	1year	Negligible	TLVirr	3.5E+00	mg/m3	1hour	Marginal	TEEL2
Pentaerythritol tetra(3-mercaptopropionate)				95823-35-1	5.0E-01	mg/m3	1hour	Negligible	TEEL1
2.5E+02	mg/m3	1hour	Critical	TEEL3	Peptone				73049-73-7
5.0E+01	mg/m3	1hour	Marginal	TEEL2	2.5E+02	mg/m3	1hour	Critical	TEEL3
3.0E+01	mg/m3	1hour	Negligible	TEEL1	5.0E+01	mg/m3	1hour	Marginal	TEEL2
Pentaerythritol tetranitrate				78-11-5	3.0E+01	mg/m3	1hour	Negligible	TEEL1
5.0E+02	mg/m3	1hour	Critical	TEEL3	Peracetic acid				79-21-0
3.5E-01	mg/m3	1hour	Marginal	TEEL2	1.5E+01	mg/m3	1hour	Critical	AEGL3_1hr
5.0E-02	mg/m3	1hour	Negligible	TEEL1	1.6E+00	mg/m3	1hour	Marginal	AEGL2_1hr
Pentafluorobenzoic acid				602-94-8	5.3E-01	mg/m3	1hour	Negligible	AEGL1_1hr
7.5E+01	mg/m3	1hour	Critical	TEEL3	5.3E-01	mg/m3	8hour	Negligible	AEGL1_8hr
1.5E+01	mg/m3	1hour	Marginal	TEEL2	Perchloric acid				7601-90-3
2.0E+00	mg/m3	1hour	Negligible	TEEL1	5.0E+02	mg/m3	1hour	Critical	TEEL3
Pentane, n-				109-66-0	1.0E+02	mg/m3	1hour	Marginal	TEEL2
4.0E+03	mg/m3	1hour	Critical	TEEL3	1.3E+01	mg/m3	1hour	Negligible	TEEL1
1.8E+03	mg/m3	1hour	Marginal	TLV_TWA_irr [†]	Perchloroethylene				127-18-4
1.8E+03	mg/m3	1hour	Negligible	TLV_TWA_irr [†]	8.1E+03	mg/m3	1hour	Critical	AEGL3_1hr
1.8E+03	mg/m3	8hour	Negligible	TLV_TWA_irr	1.6E+03	mg/m3	1hour	Marginal	AEGL2_1hr
6.1E+02	mg/m3	14day	Negligible	TLV_TWA_irr	2.4E+02	mg/m3	1hour	Negligible	AEGL1_1hr
6.8E+00	mg/m3	1year	Negligible	PPRTV_sub	2.4E+02	mg/m3	8hour	Negligible	AEGL1_8hr
Pentanedione, 2,4-				123-54-6	9.3E-01	mg/m3	14day	Negligible	MRLi_acute
4.0E+02	mg/m3	1hour	Critical	TEEL3	1.9E-01	mg/m3	1year	Negligible	MRL_chr
4.0E+02	mg/m3	1hour	Marginal	TEEL2	Perchloromethyl mercaptan				594-42-3
2.0E+02	mg/m3	1hour	Negligible	TEEL1	6.8E+00	mg/m3	1hour	Critical	AEGL3_1hr
Pentanenitrile				110-59-8	2.3E+00	mg/m3	1hour	Marginal	AEGL2_1hr
7.5E+01	mg/m3	1hour	Critical	TEEL3	9.9E-02	mg/m3	1hour	Negligible	AEGL1_1hr
7.5E+01	mg/m3	1hour	Marginal	TEEL2	9.9E-02	mg/m3	8hour	Negligible	AEGL1_8hr
1.5E+01	mg/m3	1hour	Negligible	TEEL1	9.9E-02	mg/m3	14day	Negligible	AEGL1_8hr*
Pentanol, 2-				6032-29-7	9.9E-02	mg/m3	1year	Negligible	AEGL1_8hr*
1.3E+03	mg/m3	1hour	Critical	TEEL3					
3.5E+02	mg/m3	1hour	Marginal	TEEL2					
3.5E+02	mg/m3	1hour	Negligible	TEEL1					

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Perchloryl fluoride				7616-94-6	Peroxydicarbonic acid, disodium salt				3313-92-6
5.0E+01 mg/m3		1hour	Critical	AEGL3_1hr	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
1.7E+01 mg/m3		1hour	Marginal	AEGL2_1hr	1.5E+02 mg/m3	1hour	1hour	Marginal	TEEL2
6.3E+00 mg/m3		1hour	Negligible	AEGL1_1hr	2.5E+01 mg/m3	1hour	1hour	Negligible	TEEL1
2.5E+00 mg/m3		8hour	Negligible	AEGL1_8hr	Persulfate, potassium				7727-21-1
2.5E+00 mg/m3		14day	Negligible	AEGL1_8hr*	3.5E+02 mg/m3	1hour	1hour	Critical	TEEL3
Percoll				65455-52-9	6.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
2.5E+02 mg/m3		1hour	Critical	TEEL3	1.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
5.0E+01 mg/m3		1hour	Marginal	TEEL2	Persulfates				persulfate
3.0E+01 mg/m3		1hour	Negligible	TEEL1	1.0E-01 mg/m3	8hour	8hour	Negligible	TLV_TWA_irr
Perfluoro compounds				86508-42-1	3.4E-02 mg/m3	14day	14day	Negligible	TLV_TWA_irr
3.5E+05 mg/m3		1hour	Critical	TEEL3	3.4E-02 mg/m3	1year	1year	Negligible	TLVirr
6.0E+04 mg/m3		1hour	Marginal	TEEL2	Petalite				1302-66-5
7.5E+03 mg/m3		1hour	Negligible	TEEL1	2.5E+02 mg/m3	1hour	1hour	Critical	TEEL3
Perfluoro-2-butyltetrahydrofuran				335-36-4	5.7E+01 mg/m3	1hour	1hour	Marginal	TEEL2
3.4E+02 mg/m3		1hour	Critical	TEEL3	3.4E+01 mg/m3	1hour	1hour	Negligible	TEEL1
1.7E+01 mg/m3		1hour	Marginal	TEEL2	Petrolatum				8009-03-8
1.0E+01 mg/m3		1hour	Negligible	TEEL1	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
Perfluorobutyl ethylene				19430-93-4	3.5E+02 mg/m3	1hour	1hour	Marginal	TEEL2
1.0E+03 mg/m3		8hour	Negligible	TLV_TWA	5.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
2.5E+02 mg/m3		14day	Negligible	TLV_TWA	Petroleum				8002-05-9
2.5E+02 mg/m3		1year	Negligible	TLVadj	4.0E+03 mg/m3	1hour	1hour	Critical	TEEL3
Perfluoroisobutylene				382-21-8	1.5E+03 mg/m3	1hour	1hour	Marginal	TEEL2
2.7E+00 mg/m3		1hour	Critical	AEGL3_1hr	3.5E+02 mg/m3	1hour	1hour	Negligible	TEEL1
9.0E-01 mg/m3		1hour	Marginal	AEGL2_1hr	Petroleum coke, calcined				64743-05-1
1.0E-01 mg/m3		1hour	Negligible	TEEL1	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
Perfluorooctanic acid				335-67-1	5.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
7.5E+01 mg/m3		1hour	Critical	TEEL3	3.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
7.5E+01 mg/m3		1hour	Marginal	TEEL2	Petroleum distillates, clay-treated light naphthen				64742-45-6
1.3E+01 mg/m3		1hour	Negligible	TEEL1	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
Perfluorophenanthrene				306-91-2	4.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
3.4E+02 mg/m3		1hour	Critical	TEEL3	6.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
1.7E+01 mg/m3		1hour	Marginal	TEEL2	Petroleum distillates, hydrotreated middle				64742-46-7
1.0E+01 mg/m3		1hour	Negligible	TEEL1	3.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
Perfluoropolyalkylether				60164-51-4	6.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
5.0E+02 mg/m3		1hour	Critical	TEEL3	7.5E+00 mg/m3	1hour	1hour	Negligible	TEEL1
5.0E+02 mg/m3		1hour	Marginal	TEEL2	Petroleum distillates, low boiling				68477-31-6
2.5E+02 mg/m3		1hour	Negligible	TEEL1	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
Periodic acid				10450-60-9	5.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
2.6E+01 mg/m3		1hour	Critical	TEEL3	3.5E+02 mg/m3	1hour	1hour	Negligible	TEEL1
1.8E+00 mg/m3		1hour	Marginal	TEEL2	Petroleum ether				8032-32-4
1.8E+00 mg/m3		1hour	Negligible	TEEL1	4.0E+03 mg/m3	1hour	1hour	Critical	TEEL3
Perlite				93763-70-3	1.5E+03 mg/m3	1hour	1hour	Marginal	TEEL2
5.0E+02 mg/m3		1hour	Critical	TEEL3	3.5E+02 mg/m3	1hour	1hour	Negligible	TEEL1
7.5E+01 mg/m3		1hour	Marginal	TEEL2					
4.5E+01 mg/m3		1hour	Negligible	TEEL1					

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN	
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis	
Petroleum sulfonates					61789-85-3	Phenolphthalein				
2.5E+02 mg/m3		1hour	Critical	TEEL3	4.0E+02 mg/m3	1hour	1hour	Critical	TEEL3	
5.0E+01 mg/m3		1hour	Marginal	TEEL2	1.5E+01 mg/m3	1hour	1hour	Marginal	TEEL2	
3.0E+01 mg/m3		1hour	Negligible	TEEL1	2.5E+00 mg/m3	1hour	1hour	Negligible	TEEL1	
p-Fluoroaniline					371-40-4	Phenothiazine				
1.5E+02 mg/m3		1hour	Critical	TEEL3	5.0E+00 mg/m3	8hour	8hour	Negligible	TLV_TWA_irr	
3.5E+01 mg/m3		1hour	Marginal	TEEL2	1.7E+00 mg/m3	14day	14day	Negligible	TLV_TWA_irr	
5.0E+00 mg/m3		1hour	Negligible	TEEL1	1.7E+00 mg/m3	1year	1year	Negligible	TLVirr	
Phenacetin					62-44-2	Phenyl chloroformate				
6.0E+01 mg/m3		1hour	Critical	TEEL3	3.7E+00 mg/m3	1hour	1hour	Critical	AEGL3_1hr	
1.0E+01 mg/m3		1hour	Marginal	TEEL2	1.2E+00 mg/m3	1hour	1hour	Marginal	AEGL2_1hr	
1.5E+00 mg/m3		1hour	Negligible	TEEL1	1.5E-01 mg/m3	1hour	1hour	Negligible	TEEL1	
Phenaglycodol					79-93-6	Phenyl dichloroarsine				
3.5E+02 mg/m3		1hour	Critical	TEEL3	1.8E-01 mg/m3	1hour	1hour	Critical	AEGL3_1hr	
7.5E+01 mg/m3		1hour	Marginal	TEEL2	6.1E-02 mg/m3	1hour	1hour	Marginal	AEGL2_1hr	
1.0E+01 mg/m3		1hour	Negligible	TEEL1	6.1E-02 mg/m3	1hour	1hour	Negligible	TEEL1	
Phenanthrene					85-01-8	Phenyl ether vapor				
2.0E+01 mg/m3		1hour	Critical	TEEL3	6.0E+02 mg/m3	1hour	1hour	Critical	TEEL3	
2.0E+01 mg/m3		1hour	Marginal	TEEL2	1.3E+02 mg/m3	1hour	1hour	Marginal	TEEL2	
6.0E+00 mg/m3		1hour	Negligible	TEEL1	1.3E+01 mg/m3	1hour	1hour	Negligible	TEEL1	
Phenanthroline ferrous sulfate, 1,10-					14634-91-4	Phenyl glycidyl ether				
2.5E+02 mg/m3		1hour	Critical	TEEL3	6.1E-01 mg/m3	8hour	8hour	Negligible	TLV_TWA_irr	
5.0E+01 mg/m3		1hour	Marginal	TEEL2	2.1E-01 mg/m3	14day	14day	Negligible	TLV_TWA_irr	
3.0E+01 mg/m3		1hour	Negligible	TEEL1	2.1E-01 mg/m3	1year	1year	Negligible	TLVirr	
Phenol					108-95-2	Phenyl isocyanate.				
7.7E+02 mg/m3		1hour	Critical	ERPG3	1.2E+00 mg/m3	1hour	1hour	Critical	AEGL3_1hr	
8.9E+01 mg/m3		1hour	Marginal	AEGL2_1hr	7.3E-01 mg/m3	1hour	1hour	Marginal	AEGL2_1hr	
5.8E+01 mg/m3		1hour	Negligible	AEGL1_1hr	9.7E-02 mg/m3	1hour	1hour	Negligible	AEGL1_1hr	
2.4E+01 mg/m3		8hour	Negligible	AEGL1_8hr	9.7E-02 mg/m3	8hour	8hour	Negligible	AEGL1_8hr	
6.6E+00 mg/m3		14day	Negligible	TLV_TWA_irr	Phenyl isopropanol					
6.6E+00 mg/m3		1year	Negligible	TLVirr	617-94-7					
Phenol red, sodium salt					34487-61-1	Phenyl mercaptan				
5.0E+02 mg/m3		1hour	Critical	TEEL3	7.2E+00 mg/m3	1hour	1hour	Critical	AEGL3_1hr	
1.5E+02 mg/m3		1hour	Marginal	TEEL2	2.4E+00 mg/m3	1hour	1hour	Marginal	AEGL2_1hr	
2.5E+01 mg/m3		1hour	Negligible	TEEL1	4.5E-01 mg/m3	1hour	1hour	Negligible	TLV_TWA*	
Phenol, 2,6-bis(1,1-dimethylethyl)-4-ethyl-					4130-42-1	Phenyl methyl ether				
4.0E+02 mg/m3		1hour	Critical	TEEL3	4.5E-01 mg/m3	8hour	8hour	Negligible	TLV_TWA	
7.5E+01 mg/m3		1hour	Marginal	TEEL2	1.1E-01 mg/m3	14day	14day	Negligible	TLV_TWA	
1.3E+01 mg/m3		1hour	Negligible	TEEL1	1.1E-01 mg/m3	1year	1year	Negligible	TLVadj	
Phenol, polymer with formaldehyde, oxiranylmethyl ether					28064-14-4	Phenyl sepharose				
5.0E+02 mg/m3		1hour	Critical	TEEL3	69106-59-8					
3.5E+02 mg/m3		1hour	Marginal	TEEL2	2.5E+02 mg/m3	1hour	1hour	Critical	TEEL3	
5.0E+01 mg/m3		1hour	Negligible	TEEL1	5.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2	
					3.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1	

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Phenyl-1,2-propanedione, 1-				579-07-7	Phenylenediamine, p-				106-50-3
2.5E+02 mg/m3		1hour	Critical	TEEL3	2.5E+01 mg/m3	1hour	Critical	TEEL3	
5.0E+01 mg/m3		1hour	Marginal	TEEL2	4.0E+00 mg/m3	1hour	Marginal	TEEL2	
7.5E+00 mg/m3		1hour	Negligible	TEEL1	6.0E-01 mg/m3	1hour	Negligible	TEEL1	
Phenylacetylene				536-74-3	1.0E-01 mg/m3	8hour	Negligible	TLV_TWA	
5.0E+02 mg/m3		1hour	Critical	TEEL3	2.4E-02 mg/m3	14day	Negligible	TLV_TWA	
5.0E+02 mg/m3		1hour	Marginal	TEEL2	2.4E-02 mg/m3	1year	Negligible	TLVadj	
1.0E+02 mg/m3		1hour	Negligible	TEEL1	Phenylhydrazine				100-63-0
Phenylazophenylamine, p-				60-09-3	6.0E+01 mg/m3	1hour	Critical	TEEL3	
7.5E+01 mg/m3		1hour	Critical	TEEL3	2.0E+00 mg/m3	1hour	Marginal	TEEL2	
1.3E+01 mg/m3		1hour	Marginal	TEEL2	1.3E+00 mg/m3	1hour	Negligible	TEEL1	
2.0E+00 mg/m3		1hour	Negligible	TEEL1	4.4E-01 mg/m3	8hour	Negligible	TLV_TWA	
Phenylborinic acid				98-80-6	1.1E-01 mg/m3	14day	Negligible	TLV_TWA	
3.0E+02 mg/m3		1hour	Critical	TEEL3	1.1E-01 mg/m3	1year	Negligible	TLVadj	
6.0E+01 mg/m3		1hour	Marginal	TEEL2	Phenylhydrazine hydrochloride				59-88-1
7.5E+00 mg/m3		1hour	Negligible	TEEL1	2.5E+02 mg/m3	1hour	Critical	TEEL3	
Phenylcyclohexane				827-52-1	2.5E+02 mg/m3	1hour	Marginal	TEEL2	
5.0E+02 mg/m3		1hour	Critical	TEEL3	1.5E+02 mg/m3	1hour	Negligible	TEEL1	
5.0E+02 mg/m3		1hour	Marginal	TEEL2	Phenylmagnesium bromide				100-58-3
1.3E+02 mg/m3		1hour	Negligible	TEEL1	1.5E+02 mg/m3	1hour	Critical	TEEL3	
Phenylene diisocyanate, 1,4-				104-49-4	3.5E+01 mg/m3	1hour	Marginal	TEEL2	
3.5E+01 mg/m3		1hour	Critical	TEEL3	5.0E+00 mg/m3	1hour	Negligible	TEEL1	
3.5E+01 mg/m3		1hour	Marginal	TEEL2	Phenylmercuric acetate				62-38-4
1.0E+01 mg/m3		1hour	Negligible	TEEL1	1.7E+01 mg/m3	1hour	Critical	TEEL3	
Phenylenediamine dihydrochloride, 1,2-				615-28-1	1.7E+01 mg/m3	1hour	Marginal	TEEL2	
1.3E+02 mg/m3		1hour	Critical	TEEL3	1.7E+01 mg/m3	1hour	Negligible	TEEL1	
1.3E+02 mg/m3		1hour	Marginal	TEEL2	Phenylphenol, 2-				90-43-7
3.0E+01 mg/m3		1hour	Negligible	TEEL1	5.0E+02 mg/m3	1hour	Critical	TEEL3	
Phenylenediamine dihydrochloride, 1,4-				624-18-0	5.0E+02 mg/m3	1hour	Marginal	TEEL2	
6.0E+01 mg/m3		1hour	Critical	TEEL3	7.5E+01 mg/m3	1hour	Negligible	TEEL1	
1.3E+01 mg/m3		1hour	Marginal	TEEL2	Phenylphenol, o-				132-27-4
1.5E+00 mg/m3		1hour	Negligible	TEEL1	3.0E+02 mg/m3	1hour	Critical	TEEL3	
Phenylenediamine, m-				108-45-2	6.0E+01 mg/m3	1hour	Marginal	TEEL2	
1.3E+02 mg/m3		1hour	Critical	TEEL3	7.5E+00 mg/m3	1hour	Negligible	TEEL1	
1.0E+01 mg/m3		1hour	Marginal	TEEL2	Phenylphosphine				638-21-1
3.0E-01 mg/m3		1hour	Negligible	TEEL1	7.5E+01 mg/m3	1hour	Critical	TEEL3	
1.0E-01 mg/m3		8hour	Negligible	TLV_TWA_irr	2.0E-01 mg/m3	1hour	Marginal	TEEL2	
3.4E-02 mg/m3		14day	Negligible	TLV_TWA_irr	1.3E-01 mg/m3	1hour	Negligible	TEEL1	
3.4E-02 mg/m3		1year	Negligible	TLVirr	Phenylpropanolamine hydrochloride				154-41-6
Phenylenediamine, o-				95-54-5	5.0E+02 mg/m3	1hour	Critical	TEEL3	
5.0E+02 mg/m3		1hour	Critical	TEEL3	1.3E+00 mg/m3	1hour	Marginal	TEEL2	
2.0E+02 mg/m3		1hour	Marginal	TEEL2	1.5E-01 mg/m3	1hour	Negligible	TEEL1	
3.0E-01 mg/m3		1hour	Negligible	TEEL1	Phenylsilatrane				2097-19-0
1.0E-01 mg/m3		8hour	Negligible	TLV_TWA_irr	1.0E+00 mg/m3	1hour	Critical	TEEL3	
3.4E-02 mg/m3		14day	Negligible	TLV_TWA_irr	1.0E+00 mg/m3	1hour	Marginal	TEEL2	
3.4E-02 mg/m3		1year	Negligible	TLVirr	6.0E-01 mg/m3	1hour	Negligible	TEEL1	

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Phenylthiourea				103-85-5	Phosgene				75-44-5
3.0E+00	mg/m ³	1hour	Critical	TEEL3	3.0E+00	mg/m ³	1hour	Critical	AEGL3_1hr*
3.0E+00	mg/m ³	1hour	Marginal	TEEL2	1.2E+00	mg/m ³	1hour	Marginal	AEGL2_1hr*
1.5E+00	mg/m ³	1hour	Negligible	TEEL1	4.0E-01	mg/m ³	1hour	Negligible	TEEL1*
Phenyltriethoxysilane				780-69-8	Phosgene oxime				1794-86-1
5.0E+02	mg/m ³	1hour	Critical	TEEL3	1.6E-01	mg/m ³	8hour	Negligible	AEGL2_8hr*
2.5E+02	mg/m ³	1hour	Marginal	TEEL2	4.0E-02	mg/m ³	14day	Negligible	CEGL
3.5E+01	mg/m ³	1hour	Negligible	TEEL1	6.2E-04	mg/m ³	1year	Negligible	IRIS_sub
Phenyltrimethoxysilane				2996-92-1	Phosmet				732-11-6
1.5E+02	mg/m ³	1hour	Critical	TEEL3	1.6E-01	mg/m ³	8hour	Marginal	AEGL2_8hr*
3.0E+01	mg/m ³	1hour	Marginal	TEEL2	3.4E-01	mg/m ³	8hour	Critical	AEGL3_8hr*
4.0E+00	mg/m ³	1hour	Negligible	TEEL1	4.0E-01	mg/m ³	10min	Negligible	TEEL1*
Phenylxylyl ethane				40766-31-2	Phosphamidon				13171-21-6
5.0E+02	mg/m ³	1hour	Critical	TEEL3	9.0E-01	mg/m ³	1hour	Critical	AEGL3_1hr
7.5E+01	mg/m ³	1hour	Marginal	TEEL2	3.0E-01	mg/m ³	1hour	Marginal	AEGL2_1hr
1.3E+01	mg/m ³	1hour	Negligible	TEEL1	1.5E-01	mg/m ³	1hour	Negligible	TEEL1
Phenylxylylethane				6196-95-8	Phosphine				7803-51-2
2.5E+02	mg/m ³	1hour	Critical	TEEL3	5.0E+00	mg/m ³	1hour	Critical	AEGL3_1hr
5.0E+01	mg/m ³	1hour	Marginal	TEEL2	2.8E+00	mg/m ³	1hour	Marginal	AEGL2_1hr
3.0E+01	mg/m ³	1hour	Negligible	TEEL1	1.3E+00	mg/m ³	1hour	Negligible	TEEL1
Phloroglucinol dihydrate				6099-90-7	Phosphonic acid				13598-36-2
4.0E+02	mg/m ³	1hour	Critical	TEEL3	5.0E+02	mg/m ³	1hour	Critical	TEEL3
7.5E+01	mg/m ³	1hour	Marginal	TEEL2	4.2E+00	mg/m ³	1hour	Marginal	TEEL2
1.3E+01	mg/m ³	1hour	Negligible	TEEL1	2.5E+00	mg/m ³	1hour	Negligible	TEEL1
Phorate				298-02-2	Phosphoric acid				7664-38-2
1.2E-01	mg/m ³	1hour	Critical	AEGL3_1hr	5.0E+02	mg/m ³	1hour	Critical	TEEL3
4.0E-02	mg/m ³	1hour	Marginal	AEGL2_1hr	5.0E+02	mg/m ³	1hour	Marginal	TEEL2
4.0E-02	mg/m ³	1hour	Negligible	AEGL2_1hr*	3.0E+00	mg/m ³	1hour	Negligible	TEEL1
4.0E-02	mg/m ³	8hour	Negligible	AEGL2_1hr*	1.0E+00	mg/m ³	8hour	Negligible	TLV_TWA_irr
1.2E-02	mg/m ³	14day	Negligible	TLV_TWA	3.4E-01	mg/m ³	14day	Negligible	TLV_TWA_irr
1.2E-02	mg/m ³	1year	Negligible	TLVadj	6.8E-02	mg/m ³	1year	Negligible	IRIS_sub
Phosacetim				4104-14-7	Phosfolan				947-02-4
3.7E+00	mg/m ³	1hour	Critical	TEEL3	9.0E+00	mg/m ³	1hour	Critical	TEEL3
3.7E+00	mg/m ³	1hour	Marginal	TEEL2	9.0E+00	mg/m ³	1hour	Marginal	TEEL2
2.0E+00	mg/m ³	1hour	Negligible	TEEL1	5.0E+00	mg/m ³	1hour	Negligible	TEEL1
Phosdrin				7786-34-7	Phosphomolybdic acid				11104-88-4
3.7E+01	mg/m ³	1hour	Critical	TEEL3	5.0E+02	mg/m ³	1hour	Critical	TEEL3
4.0E+00	mg/m ³	1hour	Marginal	TEEL2	4.2E+00	mg/m ³	1hour	Marginal	TEEL2
3.0E-01	mg/m ³	1hour	Negligible	TEEL1	2.5E+00	mg/m ³	1hour	Negligible	TEEL1
1.0E-02	mg/m ³	8hour	Negligible	TLV_TWA	Phosphonic acid				13598-36-2
2.4E-03	mg/m ³	14day	Negligible	TLV_TWA	5.0E+02	mg/m ³	1hour	Critical	TEEL3
2.4E-03	mg/m ³	1year	Negligible	TLVadj	1.3E-01	mg/m ³	1hour	Marginal	TEEL2
Phosfolan				947-02-4	Phosphoric acid				7664-38-2
9.0E+00	mg/m ³	1hour	Critical	TEEL3	5.0E+02	mg/m ³	1hour	Critical	TEEL3
9.0E+00	mg/m ³	1hour	Marginal	TEEL2	5.0E+02	mg/m ³	1hour	Marginal	TEEL2
5.0E+00	mg/m ³	1hour	Negligible	TEEL1	3.0E+00	mg/m ³	1hour	Negligible	TEEL1
					Phosphoric acid				7664-38-2
					5.0E+02	mg/m ³	1hour	Critical	TEEL3
					5.0E+02	mg/m ³	1hour	Marginal	TEEL2
					3.0E+00	mg/m ³	1hour	Negligible	TEEL1
					1.0E+00	mg/m ³	8hour	Negligible	TLV_TWA_irr
					3.4E-01	mg/m ³	14day	Negligible	TLV_TWA_irr
					6.8E-02	mg/m ³	1year	Negligible	IRIS_sub

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Phosphoric acid, sodium salt				7632-05-5	Phosphorus oxychloride				10025-87-3
7.5E+01 mg/m ³		1hour	Critical	TEEL3	1.7E+00 mg/m ³	8hour	Critical	AEGL3_8h*	
1.5E+01 mg/m ³		1hour	Marginal	TEEL2	3.0E+00 mg/m ³	10min	Negligible	TEEL1*	
2.5E+00 mg/m ³		1hour	Negligible	TEEL1	3.0E+00 mg/m ³	10min	Marginal	TEEL2*	
Phosphorous acid				10294-56-1	Phosphorus pentachloride				10026-13-8
5.0E+02 mg/m ³		1hour	Critical	TEEL3	7.0E+01 mg/m ³	1hour	Critical	TEEL3	
2.0E+02 mg/m ³		1hour	Marginal	TEEL2	2.0E+01 mg/m ³	1hour	Marginal	TEEL2	
3.0E+00 mg/m ³		1hour	Negligible	TEEL1	3.0E+00 mg/m ³	1hour	Negligible	TEEL1	
Phosphorous Oxychloride				10025-87-3	Phosphorus pentasulfide				1314-80-3
5.3E+00 mg/m ³		1hour	Critical	AEGL3_1hr*	2.5E+02 mg/m ³	1hour	Critical	TEEL3	
3.0E+00 mg/m ³		1hour	Marginal	TEEL2*	5.0E+01 mg/m ³	1hour	Marginal	TEEL2	
3.0E+00 mg/m ³		1hour	Negligible	TEEL1*	3.0E+00 mg/m ³	1hour	Negligible	TEEL1	
6.0E-01 mg/m ³		8hour	Negligible	TLV_TWA_irr*	1.0E+00 mg/m ³	8hour	Negligible	TLV_TWA_irr	
2.1E-01 mg/m ³		14day	Negligible	TLV_TWA_irr	3.4E-01 mg/m ³	14day	Negligible	TLV_TWA_irr	
2.1E-01 mg/m ³		1year	Negligible	TLVirr	3.4E-01 mg/m ³	1year	Negligible	TLVirr	
Phosphorous pentafluoride				7647-19-0	Phosphorus pentoxide				1314-56-3
3.0E+02 mg/m ³		1hour	Critical	TEEL3	5.0E+01 mg/m ³	1hour	Critical	ERPG3	
1.5E+01 mg/m ³		1hour	Marginal	TEEL2	1.0E+01 mg/m ³	1hour	Marginal	ERPG2	
1.0E+01 mg/m ³		1hour	Negligible	TEEL1	1.0E+00 mg/m ³	1hour	Negligible	ERPG1	
Phosphorous Trichloride				7719-12-2	Phosphorus trichloride				7719-12-2
3.2E+01 mg/m ³		1hour	Critical	AEGL3_1hr*	1.9E+00 mg/m ³	10min	Negligible	AEGL1_10min	
1.1E+01 mg/m ³		1hour	Marginal	AEGL2_1hr*	4.7E+00 mg/m ³	8hour	Marginal	AEGL2_8h*	
1.9E+00 mg/m ³		1hour	Negligible	AEGL1_1hr*	1.0E+01 mg/m ³	8hour	Critical	AEGL3_8h*	
1.9E+00 mg/m ³		8hour	Negligible	AEGL1_8hr*	1.4E+01 mg/m ³	10min	Marginal	AEGL2_10min	
3.8E-01 mg/m ³		14day	Negligible	TLV_TWA_irr	3.9E+01 mg/m ³	10min	Critical	AEGL3_10min	
3.8E-01 mg/m ³		1year	Negligible	TLVirr	Phosphorus trioxide				1314-24-5
Phosphorous trifluoride				7783-55-3	Phosphorus, white				12185-10-3
4.0E+02 mg/m ³		1hour	Critical	TEEL3	6.0E-01 mg/m ³	1hour	Critical	TEEL3	
2.0E+01 mg/m ³		1hour	Marginal	TEEL2	6.0E-01 mg/m ³	1hour	Marginal	TEEL2	
1.0E+01 mg/m ³		1hour	Negligible	TEEL1	2.0E-01 mg/m ³	1hour	Negligible	TEEL1	
Phosphorus				7723-14-0	Phthalic acid, m-				121-91-5
4.7E+01 mg/m ³		1hour	Critical	AEGL3_1hr	5.0E+02 mg/m ³	1hour	Critical	TEEL3	
1.1E+01 mg/m ³		1hour	Marginal	AEGL2_1hr	5.0E+01 mg/m ³	1hour	Marginal	TEEL2	
3.7E+00 mg/m ³		1hour	Negligible	AEGL1_1hr	3.0E+01 mg/m ³	1hour	Negligible	TEEL1	
4.7E-01 mg/m ³		8hour	Negligible	AEGL1_8hr	Phthalic acid, o-				88-99-3
Phosphorus (red)				0-142*	Phthalic acid, o-				88-99-3
5.0E+00 mg/m ³		1hour	Critical	TEEL3	5.0E+02 mg/m ³	1hour	Critical	TEEL3	
3.0E+00 mg/m ³		1hour	Marginal	TEEL2	5.0E-01 mg/m ³	1hour	Marginal	TEEL2	
1.5E-01 mg/m ³		1hour	Negligible	TEEL1	6.0E-02 mg/m ³	1hour	Negligible	TEEL1	
Phosphorus (yellow)				0-143*	Phthalic acid, o-				88-99-3
1.0E-01 mg/m ³		8hour	Negligible	TLV_TWA	5.0E+02 mg/m ³	1hour	Critical	TEEL3	
2.4E-02 mg/m ³		14day	Negligible	TLV_TWA	5.0E-01 mg/m ³	1hour	Marginal	TEEL2	
2.4E-02 mg/m ³		1year	Negligible	TLVadj	6.0E-02 mg/m ³	1hour	Negligible	TEEL1	

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Phthalic acid, p-				100-21-0	Picric acid				88-89-1
5.0E+02 mg/m3		1hour	Critical	TEEL3	7.5E+01 mg/m3	1hour	1hour	Critical	TEEL3
5.0E+02 mg/m3		1hour	Marginal	TEEL2	1.5E+01 mg/m3	1hour	1hour	Marginal	TEEL2
1.3E+02 mg/m3		1hour	Negligible	TEEL1	3.0E-01 mg/m3	1hour	1hour	Negligible	TEEL1
1.0E+01 mg/m3		8hour	Negligible	TLV_TWA	1.0E-01 mg/m3	8hour	8hour	Negligible	TLV_TWA_irr
2.4E+00 mg/m3		14day	Negligible	TLV_TWA	3.4E-02 mg/m3	14day	14day	Negligible	TLV_TWA_irr
2.4E+00 mg/m3		1year	Negligible	TLVadj	3.4E-02 mg/m3	1year	1year	Negligible	TLVirr
Phthalic anhydride				85-44-9	Picrotoxin				124-87-8
6.0E+01 mg/m3		1hour	Critical	TEEL3	1.5E+01 mg/m3	1hour	1hour	Critical	TEEL3
4.0E+01 mg/m3		1hour	Marginal	TEEL2	1.5E+01 mg/m3	1hour	1hour	Marginal	TEEL2
1.2E+01 mg/m3		1hour	Negligible	TEEL1	7.5E+00 mg/m3	1hour	1hour	Negligible	TEEL1
6.1E+00 mg/m3		8hour	Negligible	TLV_TWA_irr	Pigment green 36				14302-13-7
2.1E+00 mg/m3		14day	Negligible	TLV_TWA_irr	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
8.2E-02 mg/m3		1year	Negligible	HEAST_sub	3.5E+02 mg/m3	1hour	1hour	Marginal	TEEL2
Phthalodinitrile, m-				626-17-5	5.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
5.0E+00 mg/m3		8hour	Negligible	TLV_TWA_irr	Pigment yellow 14				5468-75-7
1.7E+00 mg/m3		14day	Negligible	TLV_TWA_irr	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
1.7E+00 mg/m3		1year	Negligible	TLVirr	4.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
Phthaloyl dichloride				88-95-9	6.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
7.5E+01 mg/m3		1hour	Critical	TEEL3	Pinacolone				75-97-8
1.5E+01 mg/m3		1hour	Marginal	TEEL2	4.0E+03 mg/m3	1hour	1hour	Critical	TEEL3
2.5E+00 mg/m3		1hour	Negligible	TEEL1	7.5E+02 mg/m3	1hour	1hour	Marginal	TEEL2
Phylomedusin				26145-48-2	2.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
2.5E+02 mg/m3		1hour	Critical	TEEL3	Pinacolyl alcohol				464-07-3
5.0E+01 mg/m3		1hour	Marginal	TEEL2	3.5E+03 mg/m3	1hour	1hour	Critical	TEEL3
3.0E+01 mg/m3		1hour	Negligible	TEEL1	3.5E+03 mg/m3	1hour	1hour	Marginal	TEEL2
Physostigmine				57-47-6	3.0E+03 mg/m3	1hour	1hour	Negligible	TEEL1
4.5E+00 mg/m3		1hour	Critical	TEEL3	Pindone				83-26-1
4.5E+00 mg/m3		1hour	Marginal	TEEL2	1.0E-01 mg/m3	8hour	8hour	Negligible	TLV_TWA
2.5E+00 mg/m3		1hour	Negligible	TEEL1	2.4E-02 mg/m3	14day	14day	Negligible	TLV_TWA
Physostigmine, salicylate (1:1)				57-64-7	2.4E-02 mg/m3	1year	1year	Negligible	TLVadj
2.5E+00 mg/m3		1hour	Critical	TEEL3	Pinene, alpha-				80-56-8
2.5E+00 mg/m3		1hour	Marginal	TEEL2	1.5E-02 mg/m3	1hour	1hour	Critical	TEEL3
1.5E+00 mg/m3		1hour	Negligible	TEEL1	3.5E-03 mg/m3	1hour	1hour	Marginal	TEEL2
Picloram				1918-02-1	5.0E-04 mg/m3	1hour	1hour	Negligible	TEEL1
1.0E+01 mg/m3		8hour	Negligible	TLV_TWA	2.0E+01 mg/m3	8hour	8hour	Negligible	TLV_TWA
2.4E+00 mg/m3		14day	Negligible	TLV_TWA	4.9E+00 mg/m3	14day	14day	Negligible	TLV_TWA
2.4E+00 mg/m3		1year	Negligible	TLVadj	4.9E+00 mg/m3	1year	1year	Negligible	TLVadj
Picolinic acid				98-98-6	Piperazine				110-85-0
1.5E+02 mg/m3		1hour	Critical	TEEL3	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
1.5E+02 mg/m3		1hour	Marginal	TEEL2	4.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
3.5E+01 mg/m3		1hour	Negligible	TEEL1	6.0E+00 mg/m3	1hour	1hour	Negligible	TEEL1
					Piperazine dihydrochloride				142-64-3
					5.0E+00 mg/m3	8hour	8hour	Negligible	TLV_TWA_irr
					1.7E+00 mg/m3	14day	14day	Negligible	TLV_TWA_irr
					1.7E+00 mg/m3	1year	1year	Negligible	TLVirr

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Piperidine				110-89-4	Poly(ethylene glycol methyl ether)				9004-74-4
3.8E+02 mg/m3		1hour	Critical	AEGL3_1hr	5.0E+02 mg/m3	1hour	Critical	TEEL3	
1.1E+02 mg/m3		1hour	Marginal	AEGL2_1hr	5.0E+02 mg/m3	1hour	Marginal	TEEL2	
2.3E+01 mg/m3		1hour	Negligible	AEGL1_1hr	2.5E+02 mg/m3	1hour	Negligible	TEEL1	
5.9E+00 mg/m3		8hour	Negligible	AEGL1_8hr	Poly(ethylene glycol)diacrylate				26570-48-9
Piperonyl butoxide				51-03-6	1.5E+02 mg/m3	1hour	Critical	TEEL3	
5.0E+02 mg/m3		1hour	Critical	TEEL3	3.5E+01 mg/m3	1hour	Marginal	TEEL2	
5.0E+02 mg/m3		1hour	Marginal	TEEL2	5.0E+00 mg/m3	1hour	Negligible	TEEL1	
3.0E+02 mg/m3		1hour	Negligible	TEEL1	Poly(oxyethylene)(2) stearyl ether				9005-00-9
Pirimifos-ethyl				23505-41-1	5.0E+02 mg/m3	1hour	Critical	TEEL3	
6.0E+01 mg/m3		1hour	Critical	TEEL3	1.5E+02 mg/m3	1hour	Marginal	TEEL2	
2.5E+01 mg/m3		1hour	Marginal	TEEL2	2.0E+01 mg/m3	1hour	Negligible	TEEL1	
1.5E+01 mg/m3		1hour	Negligible	TEEL1	Poly(sodium 4-styrenesulfonate)				25704-18-1
Pivalic anhydride				1538-75-6	5.0E+02 mg/m3	1hour	Critical	TEEL3	
2.5E+02 mg/m3		1hour	Critical	TEEL3	5.0E+02 mg/m3	1hour	Marginal	TEEL2	
5.0E+01 mg/m3		1hour	Marginal	TEEL2	5.0E+02 mg/m3	1hour	Negligible	TEEL1	
3.0E+01 mg/m3		1hour	Negligible	TEEL1	Poly(Styrene-co-divinylbenzene)				69011-14-9
Platinum (II) cyanide				592-06-3	2.5E+02 mg/m3	1hour	Critical	TEEL3	
5.1E+00 mg/m3		1hour	Critical	TEEL3	5.0E+01 mg/m3	1hour	Marginal	TEEL2	
1.3E-02 mg/m3		1hour	Marginal	TEEL2	3.0E+01 mg/m3	1hour	Negligible	TEEL1	
7.6E-03 mg/m3		1hour	Negligible	TEEL1	Polyacrylic acid				9003-01-4
Platinum, metal				7440-06-4	5.0E+02 mg/m3	1hour	Critical	TEEL3	
4.0E+00 mg/m3		1hour	Critical	TEEL3	2.0E+02 mg/m3	1hour	Marginal	TEEL2	
4.0E+00 mg/m3		1hour	Marginal	TEEL2	3.0E+01 mg/m3	1hour	Negligible	TEEL1	
3.0E+00 mg/m3		1hour	Negligible	TEEL1	Polyamide 6				25038-54-4
1.0E+00 mg/m3		8hour	Negligible	TLV_TWA_irr	5.0E+02 mg/m3	1hour	Critical	TEEL3	
3.4E-01 mg/m3		14day	Negligible	TLV_TWA_irr	2.0E+02 mg/m3	1hour	Marginal	TEEL2	
3.4E-01 mg/m3		1year	Negligible	TLVirr	3.0E+01 mg/m3	1hour	Negligible	TEEL1	
Platinum, soluble salts				Pt sol salts	Polychlorinated biphenyls				1336-36-3
2.0E-03 mg/m3		8hour	Negligible	TLV_TWA_irr	5.0E+00 mg/m3	1hour	Critical	TEEL3	
6.8E-04 mg/m3		14day	Negligible	TLV_TWA_irr	5.0E+00 mg/m3	1hour	Marginal	TEEL2	
6.8E-04 mg/m3		1year	Negligible	TLVirr	3.0E+00 mg/m3	1hour	Negligible	TEEL1	
Poloxanlene				9003-11-6	4.2E-02 mg/m3	1year	Negligible	IRIS	
5.0E+02 mg/m3		1hour	Critical	TEEL3	Polyether polyol ester				X-212*
2.0E+02 mg/m3		1hour	Marginal	TEEL2	5.0E+02 mg/m3	1hour	Critical	TEEL3	
3.0E+01 mg/m3		1hour	Negligible	TEEL1	3.5E+02 mg/m3	1hour	Marginal	TEEL2	
Poly(dimethylsiloxane), ethoxylated, dihydroxy terminated				68037-63-8	5.0E+01 mg/m3	1hour	Negligible	TEEL1	
5.0E+02 mg/m3		1hour	Critical	TEEL3	Polyethylbenzene residue				68987-42-8
5.0E+02 mg/m3		1hour	Marginal	TEEL2	7.5E+02 mg/m3	1hour	Critical	TEEL3	
2.5E+02 mg/m3		1hour	Negligible	TEEL1	1.5E+02 mg/m3	1hour	Marginal	ERPG2	
Poly(dimethylsiloxane), hydride terminated				70900-21-9	2.0E+01 mg/m3	1hour	Negligible	TEEL1	
2.5E+02 mg/m3		1hour	Critical	TEEL3	Polyethylene				9002-88-4
5.0E+01 mg/m3		1hour	Marginal	TEEL2	5.0E+02 mg/m3	1hour	Critical	TEEL3	
3.0E+01 mg/m3		1hour	Negligible	TEEL1	3.0E+01 mg/m3	1hour	Marginal	TEEL2	
					4.0E+00 mg/m3	1hour	Negligible	TEEL1	

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Polyethylene glycol				25322-68-3	Polymethylhydrosiloxane				63148-57-2
5.0E+02	mg/m3	1hour	Critical	TEEL3	2.5E+02	mg/m3	1hour	Critical	TEEL3
5.0E+02	mg/m3	1hour	Marginal	TEEL2	5.0E+01	mg/m3	1hour	Marginal	TEEL2
6.0E+01	mg/m3	1hour	Negligible	TEEL1	3.0E+01	mg/m3	1hour	Negligible	TEEL1
Polyethylene glycol 20M				37225-26-6	Polyoxyethylene (20) sorbitan monolaurate				9005-64-5
5.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
5.0E+02	mg/m3	1hour	Marginal	TEEL2	6.0E+01	mg/m3	1hour	Marginal	TEEL2
5.0E+02	mg/m3	1hour	Negligible	TEEL1	7.5E+00	mg/m3	1hour	Negligible	TEEL1
Polyethylene glycol dimethacrylate				25852-47-5	Polyoxyethylene monoocetylphenyl ether				9036-19-5
2.5E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
5.0E+01	mg/m3	1hour	Marginal	TEEL2	3.5E+02	mg/m3	1hour	Marginal	TEEL2
3.0E+01	mg/m3	1hour	Negligible	TEEL1	5.0E+01	mg/m3	1hour	Negligible	TEEL1
Polyethylene glycol mono-4-nonylphenyl ether N-2				26027-38-3	Polyoxyethylene sorbitan monopalmitate				9005-66-7
6.0E+01	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
6.0E-01	mg/m3	1hour	Marginal	TEEL2	2.5E+02	mg/m3	1hour	Marginal	TEEL2
7.5E-02	mg/m3	1hour	Negligible	TEEL1	4.0E+01	mg/m3	1hour	Negligible	TEEL1
Polyethyleneimine				9002-98-6	Polyoxyethylene(4)lauryl ether				5274-68-0
5.0E+02	mg/m3	1hour	Critical	TEEL3	2.5E+02	mg/m3	1hour	Critical	TEEL3
1.0E+02	mg/m3	1hour	Marginal	TEEL2	5.0E+01	mg/m3	1hour	Marginal	TEEL2
1.5E+01	mg/m3	1hour	Negligible	TEEL1	3.0E+01	mg/m3	1hour	Negligible	TEEL1
Polyglycol 15-200: (Calthane NF and ND "B")				9082-00-2	Polyoxypropylene polyamine				39423-51-3
5.0E+02	mg/m3	1hour	Critical	TEEL3	2.5E+02	mg/m3	1hour	Critical	TEEL3
5.0E+02	mg/m3	1hour	Marginal	TEEL2	5.0E+01	mg/m3	1hour	Marginal	TEEL2
1.3E+02	mg/m3	1hour	Negligible	TEEL1	3.0E+01	mg/m3	1hour	Negligible	TEEL1
Polyisocyanate prepolymer mixture				0-309*	Polyphosphoric acid				8017-16-1
6.0E+01	mg/m3	1hour	Critical	TEEL3	2.0E+02	mg/m3	1hour	Critical	TEEL3
1.3E+01	mg/m3	1hour	Marginal	TEEL2	4.0E+01	mg/m3	1hour	Marginal	TEEL2
1.5E+00	mg/m3	1hour	Negligible	TEEL1	5.0E+00	mg/m3	1hour	Negligible	TEEL1
Polymaleic acid				26099-09-2	Polypropylene				9003-07-0
2.5E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
5.0E+01	mg/m3	1hour	Marginal	TEEL2	2.5E+02	mg/m3	1hour	Marginal	TEEL2
3.0E+01	mg/m3	1hour	Negligible	TEEL1	4.0E+01	mg/m3	1hour	Negligible	TEEL1
Polymeric MDI				9016-87-9	Polypropylene glycol				25322-69-4
2.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
4.0E+01	mg/m3	1hour	Marginal	TEEL2	2.0E+02	mg/m3	1hour	Marginal	TEEL2
6.0E+00	mg/m3	1hour	Negligible	TEEL1	3.0E+01	mg/m3	1hour	Negligible	TEEL1
Polymerized linseed oil				67746-08-1	Polypropylene glycol, (chloromethyl)oxirane polymer				9072-62-2
5.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
1.5E+02	mg/m3	1hour	Marginal	TEEL2	1.5E+02	mg/m3	1hour	Marginal	TEEL2
2.5E+01	mg/m3	1hour	Negligible	TEEL1	2.5E+01	mg/m3	1hour	Negligible	TEEL1
Polymethyl methacrylate				9011-14-7	Polyquaternium-7				26590-05-6
5.0E+02	mg/m3	1hour	Critical	TEEL3	2.5E+02	mg/m3	1hour	Critical	TEEL3
1.0E+02	mg/m3	1hour	Marginal	TEEL2	5.0E+01	mg/m3	1hour	Marginal	TEEL2
1.5E+01	mg/m3	1hour	Negligible	TEEL1	3.0E+01	mg/m3	1hour	Negligible	TEEL1

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Polysorbate 85				9005-70-3	Potassium				7440-09-7
5.0E+02	mg/m3	1hour	Critical	TEEL3	3.0E+02	mg/m3	1hour	Critical	TEEL3
5.0E+02	mg/m3	1hour	Marginal	TEEL2	1.5E+00	mg/m3	1hour	Marginal	TEEL2
2.5E+02	mg/m3	1hour	Negligible	TEEL1	2.0E-01	mg/m3	1hour	Negligible	TEEL1
Polysulfone resin				25135-51-7	Potassium acetate				127-08-2
2.5E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
5.0E+01	mg/m3	1hour	Marginal	TEEL2	2.5E+02	mg/m3	1hour	Marginal	TEEL2
3.0E+01	mg/m3	1hour	Negligible	TEEL1	4.0E+01	mg/m3	1hour	Negligible	TEEL1
Polytetrafluoroethylene				9002-84-0	Potassium acid fluoride				7789-29-9
3.5E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
6.0E+01	mg/m3	1hour	Marginal	TEEL2	2.6E+01	mg/m3	1hour	Marginal	TEEL2
1.0E+01	mg/m3	1hour	Negligible	TEEL1	1.5E+01	mg/m3	1hour	Negligible	TEEL1
Polytetramethylene glycol, polypropylene glycol, toluene diisocyanate polym				65636-36-4	Potassium antimonate				29638-69-5
2.5E+02	mg/m3	1hour	Critical	TEEL3	1.1E+02	mg/m3	1hour	Critical	TEEL3
5.0E+01	mg/m3	1hour	Marginal	TEEL2	5.3E+00	mg/m3	1hour	Marginal	TEEL2
3.0E+01	mg/m3	1hour	Negligible	TEEL1	3.1E+00	mg/m3	1hour	Negligible	TEEL1
Polyurethane foam				9009-54-5	Potassium arsenate				7784-41-0
2.5E+01	mg/m3	1hour	Critical	TEEL3	1.2E+01	mg/m3	1hour	Critical	TEEL3
5.0E+00	mg/m3	1hour	Marginal	TEEL2	2.5E+00	mg/m3	1hour	Marginal	TEEL2
6.0E-01	mg/m3	1hour	Negligible	TEEL1	3.5E-01	mg/m3	1hour	Negligible	TEEL1
Polyvinyl alcohol				9002-89-5	Potassium arsenite				10124-50-2
5.0E+02	mg/m3	1hour	Critical	TEEL3	2.7E+01	mg/m3	1hour	Critical	TEEL3
5.0E+02	mg/m3	1hour	Marginal	TEEL2	9.7E+00	mg/m3	1hour	Critical	TEEL3
1.3E+02	mg/m3	1hour	Negligible	TEEL1	1.4E+01	mg/m3	1hour	Marginal	TEEL2
Polyvinyl chloride				9002-86-2	Potassium arsenite				13464-35-2
2.0E+02	mg/m3	1hour	Critical	TEEL3	6.0E+00	mg/m3	1hour	Marginal	TEEL2
4.0E+01	mg/m3	1hour	Marginal	TEEL2	2.0E+00	mg/m3	1hour	Negligible	TEEL1
3.0E+00	mg/m3	1hour	Negligible	TEEL1	5.9E-02	mg/m3	1hour	Negligible	TEEL1
1.0E+00	mg/m3	8hour	Negligible	TLV_TWA	Potassium arsenite				13464-35-2
2.4E-01	mg/m3	14day	Negligible	TLV_TWA	2.7E+01	mg/m3	1hour	Critical	TEEL3
2.4E-01	mg/m3	1year	Negligible	TLVadj	9.7E+00	mg/m3	1hour	Critical	TEEL3
Polyvinylpyrrolidone K-30				9003-39-8	Potassium arsenite				13464-35-2
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.4E+01	mg/m3	1hour	Marginal	TEEL2
5.0E+02	mg/m3	1hour	Marginal	TEEL2	6.0E+00	mg/m3	1hour	Marginal	TEEL2
3.0E+02	mg/m3	1hour	Negligible	TEEL1	2.0E+00	mg/m3	1hour	Negligible	TEEL1
Polyvinylpyrrolidone-iodine complex				25655-41-8	Potassium arsenite				13464-35-2
5.0E+02	mg/m3	1hour	Critical	TEEL3	5.9E-02	mg/m3	1hour	Negligible	TEEL1
4.0E+02	mg/m3	1hour	Marginal	TEEL2	Potassium bicarbonate				298-14-6
5.0E+01	mg/m3	1hour	Negligible	TEEL1	5.0E+02	mg/m3	1hour	Critical	TEEL3
Portland cement				65997-15-1	Potassium bi-iodate				13455-24-8
1.0E+00	mg/m3	8hour	Negligible	TLV_TWA_irr	6.0E+01	mg/m3	1hour	Marginal	TEEL2
3.4E-01	mg/m3	14day	Negligible	TLV_TWA_irr	3.5E+01	mg/m3	1hour	Negligible	TEEL1
3.4E-01	mg/m3	1year	Negligible	TLVirr	Potassium bi-iodate				13455-24-8
					4.0E+02	mg/m3	1hour	Critical	TEEL3
					7.5E+01	mg/m3	1hour	Marginal	TEEL2
					1.3E+01	mg/m3	1hour	Negligible	TEEL1
					Potassium bisulfate				7646-93-7
					5.0E+02	mg/m3	1hour	Critical	TEEL3
					2.0E+02	mg/m3	1hour	Marginal	TEEL2
					3.0E+01	mg/m3	1hour	Negligible	TEEL1

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Potassium bromate				7758-01-2	Potassium ferricyanide				13746-66-2
6.0E+01	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
6.0E+01	mg/m3	1hour	Marginal	TEEL2	3.0E+01	mg/m3	1hour	Marginal	TEEL2
3.0E-01	mg/m3	1hour	Negligible	TEEL1	1.8E+01	mg/m3	1hour	Negligible	TEEL1
Potassium bromide				7758-02-3	Potassium ferrocyanide				13943-58-3
5.0E+02	mg/m3	1hour	Critical	TEEL3	5.9E+01	mg/m3	1hour	Critical	TEEL3
2.5E+02	mg/m3	1hour	Marginal	TEEL2	5.9E+01	mg/m3	1hour	Marginal	TEEL2
4.0E+01	mg/m3	1hour	Negligible	TEEL1	3.5E+01	mg/m3	1hour	Negligible	TEEL1
Potassium carbonate				584-08-7	Potassium fluoride				7789-23-3
5.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
1.5E+02	mg/m3	1hour	Marginal	TEEL2	3.8E+01	mg/m3	1hour	Marginal	TEEL2
2.0E+01	mg/m3	1hour	Negligible	TEEL1	2.3E+01	mg/m3	1hour	Negligible	TEEL1
Potassium chlorate				3811-04-9	Potassium fluoride dihydrate				13455-21-5
3.5E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
3.0E+02	mg/m3	1hour	Marginal	TEEL2	6.2E+01	mg/m3	1hour	Marginal	TEEL2
4.0E+01	mg/m3	1hour	Negligible	TEEL1	3.7E+01	mg/m3	1hour	Negligible	TEEL1
Potassium chloride				7447-40-7	Potassium formate				590-29-4
1.5E+01	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
1.5E+01	mg/m3	1hour	Marginal	TEEL2	5.0E+02	mg/m3	1hour	Marginal	TEEL2
5.0E+00	mg/m3	1hour	Negligible	TEEL1	6.0E+01	mg/m3	1hour	Negligible	TEEL1
Potassium chromate (VI)				7789-00-6	Potassium glycolate				1932-50-9
5.6E+01	mg/m3	1hour	Critical	TEEL3	3.5E+03	mg/m3	1hour	Critical	TEEL3
6.0E+00	mg/m3	1hour	Marginal	TEEL2	6.0E+02	mg/m3	1hour	Marginal	TEEL2
7.5E-01	mg/m3	1hour	Negligible	TEEL1	7.5E+01	mg/m3	1hour	Negligible	TEEL1
Potassium citrate				866-84-2	Potassium gold cyanide				554-07-4
1.5E+02	mg/m3	1hour	Critical	TEEL3	1.4E+02	mg/m3	1hour	Critical	TEEL3
3.0E+01	mg/m3	1hour	Marginal	TEEL2	1.4E+02	mg/m3	1hour	Marginal	TEEL2
4.0E+00	mg/m3	1hour	Negligible	TEEL1	8.3E+01	mg/m3	1hour	Negligible	TEEL1
Potassium citrate, monohydrate				6100-05-6	Potassium hexacyanoferate (II) trihydrate				14459-95-1
2.5E+02	mg/m3	1hour	Critical	TEEL3	6.8E+01	mg/m3	1hour	Critical	TEEL3
5.0E+01	mg/m3	1hour	Marginal	TEEL2	6.8E+01	mg/m3	1hour	Marginal	TEEL2
3.0E+01	mg/m3	1hour	Negligible	TEEL1	4.1E+01	mg/m3	1hour	Negligible	TEEL1
Potassium cyanide				151-50-8	Potassium hexafluorosilicate				16871-90-2
4.0E+01	mg/m3	1hour	Critical	AEGL3_1hr	6.0E+01	mg/m3	1hour	Critical	TEEL3
1.9E+01	mg/m3	1hour	Marginal	AEGL2_1hr	7.5E+00	mg/m3	1hour	Marginal	TEEL2
5.3E+00	mg/m3	1hour	Negligible	AEGL1_1hr	1.3E+00	mg/m3	1hour	Negligible	TEEL1
2.7E+00	mg/m3	8hour	Negligible	AEGL1_8hr	Potassium hexahydroxoantimonate (V)				12208-13-8
Potassium dichromate				7778-50-9	1.1E+02	mg/m3	1hour	Critical	TEEL3
4.2E+01	mg/m3	1hour	Critical	TEEL3	5.4E+00	mg/m3	1hour	Marginal	TEEL2
1.0E+01	mg/m3	1hour	Marginal	TEEL2	3.2E+00	mg/m3	1hour	Negligible	TEEL1
1.5E+00	mg/m3	1hour	Negligible	TEEL1	Potassium hydride				7693-26-7
Potassium dideuterium phosphate				13761-79-0	1.5E+02	mg/m3	1hour	Critical	TEEL3
1.5E-02	mg/m3	1hour	Critical	TEEL3	3.5E+01	mg/m3	1hour	Marginal	TEEL2
7.5E-03	mg/m3	1hour	Marginal	TEEL2	5.0E+00	mg/m3	1hour	Negligible	TEEL1
4.0E-03	mg/m3	1hour	Negligible	TEEL1					

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Potassium hydroxide				1310-58-3	Potassium perchlorate				7778-74-7
1.3E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
2.0E+00	mg/m3	1hour	Marginal	TEEL2	5.0E+02	mg/m3	1hour	Marginal	TEEL2
3.0E-01	mg/m3	1hour	Negligible	TEEL1	4.0E+02	mg/m3	1hour	Negligible	TEEL1
Potassium iodate				7758-05-6	Potassium periodate				7790-21-8
6.0E+01	mg/m3	1hour	Critical	TEEL3	1.0E+02	mg/m3	1hour	Critical	TEEL3
6.0E+01	mg/m3	1hour	Marginal	TEEL2	2.0E+01	mg/m3	1hour	Marginal	TEEL2
6.0E+01	mg/m3	1hour	Negligible	TEEL1	3.0E+00	mg/m3	1hour	Negligible	TEEL1
Potassium iodide				7681-11-0	Potassium permanganate				7722-64-7
3.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
6.0E+00	mg/m3	1hour	Marginal	TEEL2	1.4E+01	mg/m3	1hour	Marginal	TEEL2
7.5E-01	mg/m3	1hour	Negligible	TEEL1	8.6E+00	mg/m3	1hour	Negligible	TEEL1
Potassium metaborate				13709-94-9	Potassium phosphate dibasic trihydrate				16788-57-1
5.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
2.5E+02	mg/m3	1hour	Marginal	TEEL2	5.0E+02	mg/m3	1hour	Marginal	TEEL2
3.5E+01	mg/m3	1hour	Negligible	TEEL1	5.0E+02	mg/m3	1hour	Negligible	TEEL1
Potassium molybdate				13446-49-6	Potassium phosphate, dibasic				7758-11-4
5.0E+02	mg/m3	1hour	Critical	TEEL3	2.5E+02	mg/m3	1hour	Critical	TEEL3
6.2E+00	mg/m3	1hour	Marginal	TEEL2	5.0E+01	mg/m3	1hour	Marginal	TEEL2
3.7E+00	mg/m3	1hour	Negligible	TEEL1	3.0E+01	mg/m3	1hour	Negligible	TEEL1
Potassium niobate				12030-85-2	Potassium phosphate, monobasic				7778-77-0
5.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
2.5E+02	mg/m3	1hour	Marginal	TEEL2	5.0E+01	mg/m3	1hour	Marginal	TEEL2
3.5E+01	mg/m3	1hour	Negligible	TEEL1	3.0E+01	mg/m3	1hour	Negligible	TEEL1
Potassium nitrate				7757-79-1	Potassium phosphate, tribasic				7778-53-2
5.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
2.5E+01	mg/m3	1hour	Marginal	TEEL2	5.0E+01	mg/m3	1hour	Marginal	TEEL2
3.5E+00	mg/m3	1hour	Negligible	TEEL1	3.0E+01	mg/m3	1hour	Negligible	TEEL1
Potassium nitrite				7758-09-0	Potassium Phosphide				20770-41-6
5.0E+02	mg/m3	1hour	Critical	TEEL3	2.2E+01	mg/m3	1hour	Critical	AEGL3_1hr
7.5E-01	mg/m3	1hour	Marginal	TEEL2	1.2E+01	mg/m3	1hour	Marginal	AEGL2_1hr
1.0E-01	mg/m3	1hour	Negligible	TEEL1	7.5E+00	mg/m3	1hour	Negligible	TEEL1
Potassium oxalate				583-52-8	Potassium polysilicate				1312-76-1
5.0E+02	mg/m3	1hour	Critical	TEEL3	2.5E+02	mg/m3	1hour	Critical	TEEL3
1.5E+02	mg/m3	1hour	Marginal	TEEL2	5.0E+01	mg/m3	1hour	Marginal	TEEL2
2.5E+01	mg/m3	1hour	Negligible	TEEL1	3.0E+01	mg/m3	1hour	Negligible	TEEL1
Potassium oxalate monohydrate				6487-48-5	Potassium pyrophosphate				7320-34-5
5.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
1.5E+02	mg/m3	1hour	Marginal	TEEL2	5.0E+02	mg/m3	1hour	Marginal	TEEL2
2.5E+01	mg/m3	1hour	Negligible	TEEL1	3.5E+02	mg/m3	1hour	Negligible	TEEL1
Potassium oxide				12136-45-7	Potassium pyrosulfate				7790-62-7
1.3E+02	mg/m3	1hour	Critical	TEEL3	2.5E+02	mg/m3	1hour	Critical	TEEL3
2.0E+00	mg/m3	1hour	Marginal	TEEL2	5.0E+01	mg/m3	1hour	Marginal	TEEL2
3.0E-01	mg/m3	1hour	Negligible	TEEL1	3.0E+01	mg/m3	1hour	Negligible	TEEL1

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Potassium pyrosulfite				16731-55-8	Potassium tetraphenyl boron				3244-41-5
5.0E+02	mg/m3	1hour	Critical	TEEL3	2.5E+01	mg/m3	1hour	Critical	TEEL3
4.0E+02	mg/m3	1hour	Marginal	TEEL2	5.0E+00	mg/m3	1hour	Marginal	TEEL2
6.0E+01	mg/m3	1hour	Negligible	TEEL1	3.0E+00	mg/m3	1hour	Negligible	TEEL1
Potassium selenate				7790-59-2	Potassium thiocyanate				333-20-0
2.8E+00	mg/m3	1hour	Critical	TEEL3	6.0E+01	mg/m3	1hour	Critical	TEEL3
2.8E+00	mg/m3	1hour	Marginal	TEEL2	6.0E+01	mg/m3	1hour	Marginal	TEEL2
1.7E+00	mg/m3	1hour	Negligible	TEEL1	3.5E+01	mg/m3	1hour	Negligible	TEEL1
Potassium selenite				10431-47-7	Potassium tungstate				7790-60-5
2.6E+00	mg/m3	1hour	Critical	TEEL3	5.3E+00	mg/m3	1hour	Critical	TEEL3
2.6E+00	mg/m3	1hour	Marginal	TEEL2	5.3E+00	mg/m3	1hour	Marginal	TEEL2
1.6E+00	mg/m3	1hour	Negligible	TEEL1	5.3E+00	mg/m3	1hour	Negligible	TEEL1
Potassium silicate				10006-28-7	Praseodymium (stable)				7440-10-0
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.5E+02	mg/m3	1hour	Critical	TEEL3
1.3E+02	mg/m3	1hour	Marginal	TEEL2	3.5E+01	mg/m3	1hour	Marginal	TEEL2
1.5E+01	mg/m3	1hour	Negligible	TEEL1	5.0E+00	mg/m3	1hour	Negligible	TEEL1
Potassium silver cyanide				506-61-6	Praseodymium oxide				11113-81-8
1.8E+01	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
1.8E+01	mg/m3	1hour	Marginal	TEEL2	1.5E+02	mg/m3	1hour	Marginal	TEEL2
2.5E+00	mg/m3	1hour	Negligible	TEEL1	2.5E+01	mg/m3	1hour	Negligible	TEEL1
Potassium stannate trihydrate				12142-33-5	Praseodymium(III,IV) oxide				12037-29-5
1.3E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
1.3E+01	mg/m3	1hour	Marginal	TEEL2	4.0E+02	mg/m3	1hour	Marginal	TEEL2
7.5E+00	mg/m3	1hour	Negligible	TEEL1	6.0E+01	mg/m3	1hour	Negligible	TEEL1
Potassium sulfate				7778-80-5	Promecarb				2631-37-0
5.0E+02	mg/m3	1hour	Critical	TEEL3	2.5E+01	mg/m3	1hour	Critical	TEEL3
4.0E+01	mg/m3	1hour	Marginal	TEEL2	1.6E+01	mg/m3	1hour	Marginal	TEEL2
6.0E+00	mg/m3	1hour	Negligible	TEEL1	1.0E+01	mg/m3	1hour	Negligible	TEEL1
Potassium sulfite				10117-38-1	Propanamine, 1-				107-10-8
5.0E+02	mg/m3	1hour	Critical	TEEL3	6.0E+02	mg/m3	1hour	Critical	TEEL3
1.5E+02	mg/m3	1hour	Marginal	TEEL2	6.0E+02	mg/m3	1hour	Marginal	TEEL2
2.5E+01	mg/m3	1hour	Negligible	TEEL1	1.3E+02	mg/m3	1hour	Negligible	TEEL1
Potassium tellurite				7790-58-1	Propane				74-98-6
5.0E+01	mg/m3	1hour	Critical	TEEL3	6.0E+04	mg/m3	1hour	Critical	AEGL3_1hr
3.5E+00	mg/m3	1hour	Marginal	TEEL2	3.1E+04	mg/m3	1hour	Marginal	AEGL2_1hr
6.0E-01	mg/m3	1hour	Negligible	TEEL1	9.9E+03	mg/m3	1hour	Negligible	AEGL1_1hr
Potassium tert-butoxide				865-47-4	Propane				74-98-6
1.5E+02	mg/m3	1hour	Critical	TEEL3	9.9E+03	mg/m3	8hour	Negligible	AEGL1_8hr
3.5E+01	mg/m3	1hour	Marginal	TEEL2	4.4E+02	mg/m3	14day	Negligible	TLV_TWA
5.0E+00	mg/m3	1hour	Negligible	TEEL1	4.4E+02	mg/m3	1year	Negligible	TLVadj
Potassium tetrafluoroborate(1-)				14075-53-7	Propane sultone				1120-71-4
4.1E+02	mg/m3	1hour	Critical	TEEL3	2.0E+01	mg/m3	1hour	Critical	TEEL3
2.1E+02	mg/m3	1hour	Marginal	TEEL2	7.5E+00	mg/m3	1hour	Marginal	TEEL2
1.2E+02	mg/m3	1hour	Negligible	TEEL1	1.3E+00	mg/m3	1hour	Negligible	TEEL1
					Propanediamine, 1,2-				78-90-0
					5.0E+02	mg/m3	1hour	Critical	TEEL3
					2.0E+02	mg/m3	1hour	Marginal	TEEL2
					2.5E+01	mg/m3	1hour	Negligible	TEEL1

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Propanediamine, 1,3-				109-76-2	Propionic acid				79-09-4
1.3E+02	mg/m3	1hour	Critical	TEEL3	1.0E+03	mg/m3	1hour	Critical	TEEL3
1.3E+01	mg/m3	1hour	Marginal	TEEL2	4.0E+01	mg/m3	1hour	Marginal	TEEL2
1.5E+00	mg/m3	1hour	Negligible	TEEL1	4.0E+01	mg/m3	1hour	Negligible	TEEL1
Propanethiol, 1-				107-03-9	3.0E+01 mg/m3 8hour Negligible TLV_TWA_irr				
2.5E+03	mg/m3	1hour	Critical	TEEL3	1.0E+01 mg/m3 14day Negligible TLV_TWA_irr				
1.5E+00	mg/m3	1hour	Marginal	TEEL2	1.0E+01 mg/m3 1year Negligible TLVirr				
2.0E-01	mg/m3	1hour	Negligible	TEEL1	Propionic acid, sodium salt				137-40-6
Propanol, ((1-methyl-1,2-ethanediy)bis(oxy))bis-				24800-44-0	5.0E+02 mg/m3 1hour Critical TEEL3				
1.3E+03	mg/m3	1hour	Critical	TEEL3	3.5E+02 mg/m3 1hour Marginal TEEL2				
2.5E+02	mg/m3	1hour	Marginal	TEEL2	5.0E+01 mg/m3 1hour Negligible TEEL1				
3.5E+01	mg/m3	1hour	Negligible	TEEL1	Propionic anhydride				123-62-6
Propanol, 1(or 2)-propoxy-				30136-13-1	5.0E+02 mg/m3 1hour Critical TEEL3				
1.3E+03	mg/m3	1hour	Critical	TEEL3	2.0E+02 mg/m3 1hour Marginal TEEL2				
2.5E+02	mg/m3	1hour	Marginal	TEEL2	3.0E+01 mg/m3 1hour Negligible TEEL1				
3.5E+01	mg/m3	1hour	Negligible	TEEL1	Propionitrile				107-12-0
Propargyl alcohol				107-19-7	8.3E+01 mg/m3 1hour Critical AEGL3_1hr				
1.7E+02	mg/m3	1hour	Critical	AEGL3_1hr	1.6E+01 mg/m3 1hour Marginal AEGL2_1hr				
3.7E+01	mg/m3	1hour	Marginal	AEGL2_1hr	1.3E+01 mg/m3 1hour Negligible TEEL1				
5.7E+00	mg/m3	1hour	Negligible	AEGL1_1hr	Propionyl chloride				79-03-8
5.7E+00	mg/m3	8hour	Negligible	AEGL1_8hr	3.0E+01 mg/m3 1hour Critical TEEL3				
7.9E-01	mg/m3	14day	Negligible	TLV_TWA_irr	6.0E+00 mg/m3 1hour Marginal TEEL2				
7.9E-01	mg/m3	1year	Negligible	TLVirr	7.5E-01 mg/m3 1hour Negligible TEEL1				
Propargyl bromide				106-96-7	Propyl acetate, n-				109-60-4
2.0E+01	mg/m3	1hour	Critical	TEEL3	6.0E+03 mg/m3 1hour Critical TEEL3				
3.0E-02	mg/m3	1hour	Marginal	TEEL2	1.0E+03 mg/m3 1hour Marginal TEEL2				
3.0E-02	mg/m3	1hour	Negligible	TEEL1	1.0E+03 mg/m3 1hour Negligible TEEL1				
Propiolactone, beta-				57-57-8	8.4E+02 mg/m3 8hour Negligible TLV_TWA_irr				
4.0E+01	mg/m3	1hour	Critical	TEEL3	2.9E+02 mg/m3 14day Negligible TLV_TWA_irr				
1.5E+01	mg/m3	1hour	Marginal	TEEL2	2.9E+02 mg/m3 1year Negligible TLVirr				
1.5E+00	mg/m3	1hour	Negligible	TEEL1	Propyl alcohol, n-				71-23-8
1.5E+00	mg/m3	8hour	Negligible	TLV_TWA_irr	2.0E+03 mg/m3 1hour Critical TEEL3				
5.0E-01	mg/m3	14day	Negligible	TLV_TWA_irr	6.0E+02 mg/m3 1hour Marginal TEEL2				
5.0E-01	mg/m3	1year	Negligible	TLVirr	6.0E+02 mg/m3 1hour Negligible TEEL1				
Propionaldehyde				123-38-6	2.5E+02 mg/m3 8hour Negligible TLV_TWA_irr				
2.0E+03	mg/m3	1hour	Critical	AEGL3_1hr	8.4E+01 mg/m3 14day Negligible TLV_TWA_irr				
6.2E+02	mg/m3	1hour	Marginal	AEGL2_1hr	8.4E+01 mg/m3 1year Negligible TLVirr				
1.1E+02	mg/m3	1hour	Negligible	AEGL1_1hr	Propyl chlorocarbonate				109-61-5
1.1E+02	mg/m3	8hour	Negligible	AEGL1_8hr	5.5E+01 mg/m3 1hour Critical AEGL3_1hr				
1.6E+01	mg/m3	14day	Negligible	TLV_TWA_irr	1.9E+01 mg/m3 1hour Marginal AEGL2_1hr				
5.5E-02	mg/m3	1year	Negligible	IRIS_sub	1.0E+01 mg/m3 1hour Negligible TEEL1				

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Propyl nitrate, n-				627-13-4	Propylene glycol monomethyl ether				107-98-2
2.0E+03 mg/m3		1hour	Critical	TEEL3	2.5E+03 mg/m3	1hour	Critical	TEEL3	
4.0E+02 mg/m3		1hour	Marginal	TEEL2	1.0E+03 mg/m3	1hour	Marginal	TEEL2	
1.5E+02 mg/m3		1hour	Negligible	TEEL1	5.0E+02 mg/m3	1hour	Negligible	TEEL1	
1.1E+02 mg/m3		8hour	Negligible	TLV_TWA	3.7E+02 mg/m3	8hour	Negligible	TLV_TWA_irr	
2.6E+01 mg/m3		14day	Negligible	TLV_TWA	1.3E+02 mg/m3	14day	Negligible	TLV_TWA_irr	
2.6E+01 mg/m3		1year	Negligible	TLVadj	1.4E+01 mg/m3	1year	Negligible	IRIS_sub	
Propyl-1-butanamine, N-				20193-21-9	Propylene glycol monomethyl ether acetate				108-65-6
5.0E+02 mg/m3		1hour	Critical	TEEL3	2.7E+04 mg/m3	1hour	Critical	TEEL3	
3.5E+02 mg/m3		1hour	Marginal	TEEL2	5.4E+03 mg/m3	1hour	Marginal	TEEL2	
5.0E+01 mg/m3		1hour	Negligible	TEEL1	2.7E+02 mg/m3	1hour	Negligible	TEEL1	
Propylbenzene, n-				103-65-1	Propylene glycol mono-n-butyl ether				10215-33-5
1.5E+04 mg/m3		1hour	Critical	TEEL3	2.5E+03 mg/m3	1hour	Critical	TEEL3	
3.0E+03 mg/m3		1hour	Marginal	TEEL2	1.5E+03 mg/m3	1hour	Marginal	TEEL2	
4.0E+02 mg/m3		1hour	Negligible	TEEL1	2.5E+02 mg/m3	1hour	Negligible	TEEL1	
Propylene				115-07-1	Propylene Oxide				75-56-9
3.5E+04 mg/m3		1hour	Critical	TEEL3	2.1E+03 mg/m3	1hour	Critical	AEGL3_1hr*	
4.0E+03 mg/m3		1hour	Marginal	TEEL2	6.9E+02 mg/m3	1hour	Marginal	AEGL2_1hr*	
2.5E+03 mg/m3		1hour	Negligible	TEEL1	1.7E+02 mg/m3	1hour	Negligible	AEGL1_1hr*	
8.6E+02 mg/m3		8hour	Negligible	TLV_TWA_irr	1.7E+02 mg/m3	8hour	Negligible	AEGL1_8hr*	
2.9E+02 mg/m3		14day	Negligible	TLV_TWA_irr	1.6E+00 mg/m3	14day	Negligible	TLV_TWA_irr	
2.9E+02 mg/m3		1year	Negligible	TLVirr	2.1E-02 mg/m3	1year	Negligible	HEAST_sub	
Propylene carbonate, 1,2-				108-32-7	Propylenechlorohydrin				78-89-7
1.3E+01 mg/m3		1hour	Critical	TEEL3	3.9E+00 mg/m3	8hour	Negligible	TLV_TWA	
2.5E+00 mg/m3		1hour	Marginal	TEEL2	9.5E-01 mg/m3	14day	Negligible	TLV_TWA	
3.5E-01 mg/m3		1hour	Negligible	TEEL1	9.5E-01 mg/m3	1year	Negligible	TLVadj	
Propylene chlorohydrin				127-00-4	Propylene glycol				57-55-6
3.9E+00 mg/m3		8hour	Negligible	TLV_TWA	5.0E+02 mg/m3	1hour	Critical	TEEL3	
9.5E-01 mg/m3		14day	Negligible	TLV_TWA	1.0E+01 mg/m3	1hour	Marginal	TEEL2	
9.5E-01 mg/m3		1year	Negligible	TLVadj	1.0E+01 mg/m3	1hour	Negligible	TEEL1	
Propylene glycol dinitrate				6423-43-4	Propyleneimine				75-55-8
8.8E+01 mg/m3		1hour	Critical	AEGL3_1hr	5.4E+01 mg/m3	1hour	Critical	AEGL3_1hr	
6.8E+00 mg/m3		1hour	Marginal	AEGL2_1hr	2.8E+01 mg/m3	1hour	Marginal	AEGL2_1hr	
1.2E+00 mg/m3		1hour	Negligible	AEGL1_1hr	7.5E-01 mg/m3	1hour	Negligible	TEEL1	
2.0E-01 mg/m3		8hour	Negligible	AEGL1_8hr	4.7E-01 mg/m3	8hour	Negligible	TLV_TWA_irr	
2.7E-02 mg/m3		14day	Negligible	CEGL	1.6E-01 mg/m3	14day	Negligible	TLV_TWA_irr	
1.9E-04 mg/m3		1year	Negligible	MRL_inter	1.6E-01 mg/m3	1year	Negligible	TLVirr	
Propylene glycol monoacrylate				999-61-1	Propyltrichlorosilane				141-57-1
2.7E+00 mg/m3		8hour	Negligible	TLV_TWA_irr	1.6E+02 mg/m3	1hour	Critical	AEGL3_1hr	
9.1E-01 mg/m3		14day	Negligible	TLV_TWA_irr	3.5E+01 mg/m3	1hour	Marginal	AEGL2_1hr	
9.1E-01 mg/m3		1year	Negligible	TLVirr	2.9E+00 mg/m3	1hour	Negligible	AEGL1_1hr	
					Prothoate				2275-18-5
					2.9E+00 mg/m3	8hour	Negligible	AEGL1_8hr	
					Prothoate				2275-18-5
					7.5E+00 mg/m3	1hour	Critical	TEEL3	
					1.7E+00 mg/m3	1hour	Marginal	TEEL2	
					1.0E+00 mg/m3	1hour	Negligible	TEEL1	

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME					CASRN	CHEMICAL NAME					CASRN
MEG	Units	Timeframe	Severity	Basis		MEG	Units	Timeframe	Severity	Basis	
P-Tert-butyl benzoic acid					98-73-7	Pyriminil					53558-25-1
2.0E+02 mg/m3		1hour	Critical	TEEL3		2.0E+01 mg/m3	1hour	1hour	Critical	TEEL3	
5.0E+01 mg/m3		1hour	Marginal	TEEL2		6.2E+00 mg/m3	1hour	1hour	Marginal	TEEL2	
6.0E+00 mg/m3		1hour	Negligible	TEEL1		3.5E+00 mg/m3	1hour	1hour	Negligible	TEEL1	
P-Tert-butylphenol					98-54-4	Pyrogallic acid					87-66-1
5.0E+02 mg/m3		1hour	Critical	TEEL3		2.5E+01 mg/m3	1hour	1hour	Critical	TEEL3	
7.5E-01 mg/m3		1hour	Marginal	TEEL2		1.5E+01 mg/m3	1hour	1hour	Marginal	TEEL2	
5.0E-01 mg/m3		1hour	Negligible	TEEL1		2.5E+00 mg/m3	1hour	1hour	Negligible	TEEL1	
p-Thiocresol					106-45-6	Pyromellitic acid					89-05-4
7.5E+01 mg/m3		1hour	Critical	TEEL3		1.3E+02 mg/m3	1hour	1hour	Critical	TEEL3	
1.5E+01 mg/m3		1hour	Marginal	TEEL2		2.5E+01 mg/m3	1hour	1hour	Marginal	TEEL2	
2.5E+00 mg/m3		1hour	Negligible	TEEL1		3.5E+00 mg/m3	1hour	1hour	Negligible	TEEL1	
P-Toluenesulfonamide					70-55-3	Pyrrole					109-97-7
1.0E+02 mg/m3		1hour	Critical	TEEL3		1.0E+01 mg/m3	1hour	1hour	Critical	TEEL3	
2.0E+01 mg/m3		1hour	Marginal	TEEL2		2.0E+00 mg/m3	1hour	1hour	Marginal	TEEL2	
3.0E+00 mg/m3		1hour	Negligible	TEEL1		3.0E-01 mg/m3	1hour	1hour	Negligible	TEEL1	
P-Toluenesulfonic acid, methyl ester					80-48-8	Pyrrolidine					123-75-1
1.5E+02 mg/m3		1hour	Critical	TEEL3		5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3	
1.5E+01 mg/m3		1hour	Marginal	TEEL2		1.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2	
2.5E+00 mg/m3		1hour	Negligible	TEEL1		1.5E+01 mg/m3	1hour	1hour	Negligible	TEEL1	
Pyrene					129-00-0	Pyrrolidinone, 2-					616-45-5
1.5E+01 mg/m3		1hour	Critical	TEEL3		1.5E+02 mg/m3	1hour	1hour	Critical	TEEL3	
1.5E+01 mg/m3		1hour	Marginal	TEEL2		6.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2	
2.5E+00 mg/m3		1hour	Negligible	TEEL1		1.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1	
Pyrethrin I					121-21-1	Quaternary ammonium compounds, coco alkylbis(hydroxyethyl)methyl, chlorides					70750-47-9
1.0E+02 mg/m3		1hour	Critical	TEEL3		1.5E+02 mg/m3	1hour	1hour	Critical	TEEL3	
2.5E+01 mg/m3		1hour	Marginal	TEEL2		3.5E+01 mg/m3	1hour	1hour	Marginal	TEEL2	
1.0E+01 mg/m3		1hour	Negligible	TEEL1		5.0E+00 mg/m3	1hour	1hour	Negligible	TEEL1	
Pyrethrins and Rotenone mixture					0-581*	Quaternary ammonium compounds, coco alkylbis(hydroxyethyl)methyl, nitrates (salts)					71487-00-8
2.0E+02 mg/m3		1hour	Critical	TEEL3		1.5E+02 mg/m3	1hour	1hour	Critical	TEEL3	
6.0E+01 mg/m3		1hour	Marginal	TEEL2		3.5E+01 mg/m3	1hour	1hour	Marginal	TEEL2	
1.0E+01 mg/m3		1hour	Negligible	TEEL1		5.0E+00 mg/m3	1hour	1hour	Negligible	TEEL1	
Pyrethrum					8003-34-7	Quinhydrone					106-34-3
5.0E+00 mg/m3	8hour		Negligible	TLV_TWA		3.0E+01 mg/m3	1hour	1hour	Critical	TEEL3	
1.2E+00 mg/m3	14day		Negligible	TLV_TWA		6.0E+00 mg/m3	1hour	1hour	Marginal	TEEL2	
1.2E+00 mg/m3	1year		Negligible	TLVadj		7.5E-01 mg/m3	1hour	1hour	Negligible	TEEL1	
Pyridine					110-86-1	Quinoline					91-22-5
3.0E+03 mg/m3		1hour	Critical	TEEL3		1.5E+02 mg/m3	1hour	1hour	Critical	TEEL3	
1.5E+01 mg/m3		1hour	Marginal	TEEL2		2.5E+01 mg/m3	1hour	1hour	Marginal	TEEL2	
1.0E+01 mg/m3		1hour	Negligible	TEEL1		3.5E+00 mg/m3	1hour	1hour	Negligible	TEEL1	
2.9E+00 mg/m3	8hour		Negligible	TLV_TWA_irr		Quinolinol, 8-					148-24-3
9.8E-01 mg/m3	14day		Negligible	TLV_TWA_irr		5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3	
9.8E-01 mg/m3	1year		Negligible	TLVirr		5.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2	
Pyridine-D5					7291-22-7	Quinolinol, 8-					148-24-3
3.5E+03 mg/m3		1hour	Critical	TEEL3		7.5E+00 mg/m3	1hour	1hour	Negligible	TEEL1	
1.5E+01 mg/m3		1hour	Marginal	TEEL2							
1.0E+01 mg/m3		1hour	Negligible	TEEL1							

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Quinone				106-51-4	Rhodium (III) oxide				12036-35-0
1.0E+02 mg/m3		1hour	Critical	TEEL3	1.2E+02 mg/m3	1hour	Critical	TEEL3	
2.0E+01 mg/m3		1hour	Marginal	TEEL2	6.2E+00 mg/m3	1hour	Marginal	TEEL2	
1.3E+00 mg/m3		1hour	Negligible	TEEL1	3.7E+00 mg/m3	1hour	Negligible	TEEL1	
4.4E-01 mg/m3		8hour	Negligible	TLV_TWA_irr	Rhodium (IV) oxide				12137-27-8
1.5E-01 mg/m3		14day	Negligible	TLV_TWA_irr	2.6E+00 mg/m3	1hour	Critical	TEEL3	
1.5E-01 mg/m3		1year	Negligible	TLVirr	5.0E-01 mg/m3	1hour	Marginal	TEEL2	
RDX				121-82-4	7.5E-02 mg/m3	1hour	Negligible	TEEL1	
4.0E+01 mg/m3		1hour	Critical	TEEL3	Rhodium hydroxide				21656-02-0
4.0E+01 mg/m3		1hour	Marginal	TEEL2	3.0E+00 mg/m3	1hour	Critical	TEEL3	
3.0E+00 mg/m3		1hour	Negligible	TEEL1	6.0E-01 mg/m3	1hour	Marginal	TEEL2	
5.0E-01 mg/m3		8hour	Negligible	TLV_TWA_irr	7.5E-02 mg/m3	1hour	Negligible	TEEL1	
1.7E-01 mg/m3		14day	Negligible	TLV_TWA_irr	Rhodium soluble compounds				RH sol
1.7E-01 mg/m3		1year	Negligible	TLVirr	1.0E-02 mg/m3	8hour	Negligible	TLV_TWA_irr	
Refractory ceramic fibers				ref ceramic fiber	3.4E-03 mg/m3	14day	Negligible	TLV_TWA_irr	
2.1E-02 f/cc		1year	Negligible	MRL_chr	3.4E-03 mg/m3	1year	Negligible	TLVirr	
Resorcinol				108-46-3	Riboflavine				83-88-5
7.5E+01 mg/m3		1hour	Critical	TEEL3	5.0E+02 mg/m3	1hour	Critical	TEEL3	
7.5E+01 mg/m3		1hour	Marginal	TEEL2	1.5E+02 mg/m3	1hour	Marginal	TEEL2	
7.5E+01 mg/m3		1hour	Negligible	TEEL1	2.5E+01 mg/m3	1hour	Negligible	TEEL1	
4.5E+01 mg/m3		8hour	Negligible	TLV_TWA_irr	Ricin				9009-86-3
1.5E+01 mg/m3		14day	Negligible	TLV_TWA_irr	4.8E-03 mg/m3	1hour	Critical	AEGL3_1hr	
1.5E+01 mg/m3		1year	Negligible	TLVirr	Ronnel				299-84-3
Rexyn				69011-49-0	5.0E+00 mg/m3	8hour	Negligible	TLV_TWA	
2.5E+02 mg/m3		1hour	Critical	TEEL3	1.2E+00 mg/m3	14day	Negligible	TLV_TWA	
5.0E+01 mg/m3		1hour	Marginal	TEEL2	1.2E+00 mg/m3	1year	Negligible	TLVadj	
3.0E+01 mg/m3		1hour	Negligible	TEEL1	Rotenone				83-79-4
Rhenium (VII) oxide				1314-68-7	1.3E+02 mg/m3	1hour	Critical	TEEL3	
3.0E+01 mg/m3		1hour	Critical	TEEL3	2.5E+01 mg/m3	1hour	Marginal	TEEL2	
6.5E+00 mg/m3		1hour	Marginal	TEEL2	1.5E+01 mg/m3	1hour	Negligible	TEEL1	
3.9E+00 mg/m3		1hour	Negligible	TEEL1	5.0E+00 mg/m3	8hour	Negligible	TLV_TWA_irr	
Rhenium hexafluoride				10049-17-9	1.7E+00 mg/m3	14day	Negligible	TLV_TWA_irr	
5.0E+02 mg/m3		1hour	Critical	TEEL3	1.7E+00 mg/m3	1year	Negligible	TLVirr	
3.3E+01 mg/m3		1hour	Marginal	TEEL2	Rubber dust				9006-04-6
2.0E+01 mg/m3		1hour	Negligible	TEEL1	1.0E-03 mg/m3	8hour	Negligible	TLV_TWA	
Rhodamine 6G				989-38-8	2.4E-04 mg/m3	14day	Negligible	TLV_TWA	
2.5E+00 mg/m3		1hour	Critical	TEEL3	2.4E-04 mg/m3	1year	Negligible	TLVadj	
6.0E-01 mg/m3		1hour	Marginal	TEEL2	Rubber solvent				64742-89-8
7.5E-02 mg/m3		1hour	Negligible	TEEL1	4.0E+03 mg/m3	1hour	Critical	TEEL3	
Rhodium				7440-16-6	7.5E+02 mg/m3	1hour	Marginal	TEEL2	
1.0E+02 mg/m3		1hour	Critical	TEEL3	4.0E+02 mg/m3	1hour	Negligible	TEEL1	
5.0E+00 mg/m3		1hour	Marginal	TEEL2	Rubidium				7440-17-7
3.0E+00 mg/m3		1hour	Negligible	TEEL1	5.0E+02 mg/m3	1hour	Critical	TEEL3	
1.0E+00 mg/m3		8hour	Negligible	TLV_TWA_irr	1.0E+02 mg/m3	1hour	Marginal	TEEL2	
3.4E-01 mg/m3		14day	Negligible	TLV_TWA_irr	1.5E+01 mg/m3	1hour	Negligible	TEEL1	
3.4E-01 mg/m3		1year	Negligible	TLVirr					

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Rubidium bromide				7789-39-1	Salicylic acid				69-72-7
2.5E+02	mg/m3	1hour	Critical	TEEL3	4.0E+02	mg/m3	1hour	Critical	TEEL3
5.0E+01	mg/m3	1hour	Marginal	TEEL2	6.0E+00	mg/m3	1hour	Marginal	TEEL2
3.0E+01	mg/m3	1hour	Negligible	TEEL1	7.5E-01	mg/m3	1hour	Negligible	TEEL1
Rubidium chloride				7791-11-9	Salicylic acid, monoammonium salt				528-94-9
5.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
3.5E-01	mg/m3	1hour	Marginal	TEEL2	3.0E+01	mg/m3	1hour	Marginal	TEEL2
5.0E-02	mg/m3	1hour	Negligible	TEEL1	4.0E+00	mg/m3	1hour	Negligible	TEEL1
Rubidium hydroxide				1310-82-3	Salicylic acid, phenyl ester				118-55-8
2.5E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
5.0E+01	mg/m3	1hour	Marginal	TEEL2	7.5E+01	mg/m3	1hour	Marginal	TEEL2
7.5E+00	mg/m3	1hour	Negligible	TEEL1	1.3E+01	mg/m3	1hour	Negligible	TEEL1
Rubidium nitrate				13126-12-0	Samarium				7440-19-9
5.0E+02	mg/m3	1hour	Critical	TEEL3	2.5E+02	mg/m3	1hour	Critical	TEEL3
4.0E+02	mg/m3	1hour	Marginal	TEEL2	5.0E+01	mg/m3	1hour	Marginal	TEEL2
6.0E+01	mg/m3	1hour	Negligible	TEEL1	3.0E+01	mg/m3	1hour	Negligible	TEEL1
Ruthenium				7440-18-8	Samarium (III) oxide				12060-58-1
2.5E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
5.0E+01	mg/m3	1hour	Marginal	TEEL2	4.0E+02	mg/m3	1hour	Marginal	TEEL2
3.0E+01	mg/m3	1hour	Negligible	TEEL1	6.0E+01	mg/m3	1hour	Negligible	TEEL1
Ruthenium (IV) oxide				12036-10-1	Samarium nitrate				10361-83-8
1.5E+01	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
1.5E+01	mg/m3	1hour	Marginal	TEEL2	1.5E+02	mg/m3	1hour	Marginal	TEEL2
1.3E+01	mg/m3	1hour	Negligible	TEEL1	2.5E+01	mg/m3	1hour	Negligible	TEEL1
Ruthenium trichloride				10049-08-8	Samarium(ii) iodide solution				32248-43-4
1.5E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
3.0E+01	mg/m3	1hour	Marginal	TEEL2	1.5E+02	mg/m3	1hour	Marginal	TEEL2
4.0E+00	mg/m3	1hour	Negligible	TEEL1	2.5E+01	mg/m3	1hour	Negligible	TEEL1
Safranine				477-73-6	Samarium(III) chloride hexahydrate				13465-55-9
2.5E+01	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
5.0E+00	mg/m3	1hour	Marginal	TEEL2	2.5E+02	mg/m3	1hour	Marginal	TEEL2
7.5E-01	mg/m3	1hour	Negligible	TEEL1	4.0E+01	mg/m3	1hour	Negligible	TEEL1
Safrole				94-59-7	Saxitoxin				35523-89-8
5.0E+02	mg/m3	1hour	Critical	TEEL3	3.5E-03	mg/m3	1hour	Critical	TEEL3
1.0E+02	mg/m3	1hour	Marginal	TEEL2	6.0E-04	mg/m3	1hour	Marginal	TEEL2
1.5E+01	mg/m3	1hour	Negligible	TEEL1	1.0E-04	mg/m3	1hour	Negligible	TEEL1
Salcomine				14167-18-1	Scandium				7440-20-2
4.0E+02	mg/m3	1hour	Critical	TEEL3	2.5E+02	mg/m3	1hour	Critical	TEEL3
3.9E+01	mg/m3	1hour	Marginal	TEEL2	5.0E+01	mg/m3	1hour	Marginal	TEEL2
2.0E+01	mg/m3	1hour	Negligible	TEEL1	3.0E+01	mg/m3	1hour	Negligible	TEEL1
Salicylaldehyde				90-02-8	Scandium oxide				12060-08-1
2.0E+02	mg/m3	1hour	Critical	TEEL3	2.5E+02	mg/m3	1hour	Critical	TEEL3
1.3E+01	mg/m3	1hour	Marginal	TEEL2	5.0E+01	mg/m3	1hour	Marginal	TEEL2
1.5E+00	mg/m3	1hour	Negligible	TEEL1	3.0E+01	mg/m3	1hour	Negligible	TEEL1

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
sec-Butyl chloroformate				17462-58-7	Selenium sulfide				7488-56-4
3.7E+01 mg/m3		1hour	Critical	AEGL3_1hr	1.5E+01 mg/m3	1hour	1hour	Critical	TEEL3
1.2E+01 mg/m3		1hour	Marginal	AEGL2_1hr	6.0E+01 mg/m3	1hour	1hour	Critical	TEEL3
1.5E+00 mg/m3		1hour	Negligible	TEEL1	1.3E+01 mg/m3	1hour	1hour	Marginal	TEEL2
Sec-butyllithium				598-30-1	Semicarbazide hydrochloride				563-41-7
1.0E+02 mg/m3		1hour	Critical	TEEL3	1.8E+00 mg/m3	1hour	1hour	Marginal	TEEL2
2.0E+01 mg/m3		1hour	Marginal	TEEL2	8.4E-01 mg/m3	1hour	1hour	Negligible	TEEL1
3.0E+00 mg/m3		1hour	Negligible	TEEL1	1.1E+00 mg/m3	1hour	1hour	Negligible	TEEL1
Selenious acid				7783-00-8	Sephacryl s-200, superfine				65546-95-4
2.5E+02 mg/m3		1hour	Critical	TEEL3	1.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
2.5E+02 mg/m3		1hour	Marginal	TEEL2	1.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
9.8E-01 mg/m3		1hour	Negligible	TEEL1	6.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
Selenium				7782-49-2	Sephacryl s-300				82785-74-8
1.0E+00 mg/m3		1hour	Critical	TEEL3	2.5E+02 mg/m3	1hour	1hour	Critical	TEEL3
1.0E+00 mg/m3		1hour	Marginal	TEEL2	5.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
6.0E-01 mg/m3		1hour	Negligible	TEEL1	3.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
2.0E-01 mg/m3		8hour	Negligible	TLV_TWA_irr	Sephacryl s-300				82785-74-8
6.8E-02 mg/m3		14day	Negligible	TLV_TWA_irr	2.5E+02 mg/m3	1hour	1hour	Critical	TEEL3
6.8E-02 mg/m3		1year	Negligible	TLVirr	5.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
Selenium dioxide				7446-08-4	Sepharose CL 4B				61970-08-9
1.5E+02 mg/m3		1hour	Critical	TEEL3	2.5E+02 mg/m3	1hour	1hour	Critical	TEEL3
1.4E+00 mg/m3		1hour	Marginal	TEEL2	5.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
8.4E-01 mg/m3		1hour	Negligible	TEEL1	3.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
Selenium hexafluoride				7783-79-1	Sesone				136-78-7
2.1E+00 mg/m3		1hour	Critical	AEGL3_1hr	1.0E+01 mg/m3	8hour	8hour	Negligible	TLV_TWA_irr
6.9E-01 mg/m3		1hour	Marginal	AEGL2_1hr	3.4E+00 mg/m3	14day	14day	Negligible	TLV_TWA_irr
4.2E-01 mg/m3		1hour	Negligible	AEGL1_1hr	3.4E+00 mg/m3	1year	1year	Negligible	TLVirr
1.3E-01 mg/m3		8hour	Negligible	AEGL1_8hr	Sesquimustard				3563-36-8
9.7E-02 mg/m3		14day	Negligible	TLV_TWA	6.0E+00 mg/m3	1hour	1hour	Critical	TEEL3
9.7E-02 mg/m3		1year	Negligible	TLVadj	1.3E+00 mg/m3	1hour	1hour	Marginal	TEEL2
Selenium oxychloride				7791-23-3	Sethoxydim				74051-80-2
1.0E+01 mg/m3		1hour	Critical	TEEL3	1.5E-01 mg/m3	1hour	1hour	Negligible	TEEL1
1.0E+01 mg/m3		1hour	Marginal	TEEL2	Sethoxydim				74051-80-2
1.3E+00 mg/m3		1hour	Negligible	TEEL1	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
Selenium sulfide				7446-34-6	Silica gel				1343-98-2
1.5E+01 mg/m3		1hour	Critical	TEEL3	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
6.0E+01 mg/m3		1hour	Critical	TEEL3	3.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
1.3E+01 mg/m3		1hour	Marginal	TEEL2	1.8E+01 mg/m3	1hour	1hour	Negligible	TEEL1
1.8E+00 mg/m3		1hour	Marginal	TEEL2	Silica gel dessicant				63231-67-4
8.4E-01 mg/m3		1hour	Negligible	TEEL1	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
1.1E+00 mg/m3		1hour	Negligible	TEEL1	3.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
					Silica gel, silica precipitated				112926-00-8
					5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
					1.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
					1.8E+01 mg/m3	1hour	1hour	Negligible	TEEL1

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Silica, amorphous				7631-86-9	Silicon carbide, nonfibrous, inhalable				Sil carb inhal
5.0E+02 mg/m3		1hour	Critical	TEEL3	3.0E+00 mg/m3	8hour		Negligible	TLV_TWA
1.3E+02 mg/m3		1hour	Marginal	TEEL2	7.3E-01 mg/m3	14day		Negligible	TLV_TWA
1.8E+01 mg/m3		1hour	Negligible	TEEL1	7.3E-01 mg/m3	1year		Negligible	TLVadj
Silica, amorphous fume				69012-64-2	Silicon nitride				12033-89-5
5.0E+02 mg/m3		1hour	Critical	TEEL3	2.5E+02 mg/m3	1hour		Critical	TEEL3
1.5E+00 mg/m3		1hour	Marginal	TEEL2	5.0E+01 mg/m3	1hour		Marginal	TEEL2
9.0E-01 mg/m3		1hour	Negligible	TEEL1	3.0E+01 mg/m3	1hour		Negligible	TEEL1
Silica, amorphous fumed				112945-52-5	Silicon tetrafluoride				7783-61-1
5.0E+02 mg/m3		1hour	Critical	TEEL3	4.3E+01 mg/m3	1hour		Critical	AEGL3_1hr
3.0E+01 mg/m3		1hour	Marginal	TEEL2	1.4E+01 mg/m3	1hour		Marginal	AEGL2_1hr
1.8E+01 mg/m3		1hour	Negligible	TEEL1	2.1E-01 mg/m3	1hour		Negligible	AEGL1_1hr
Silica, crystalline quartz				14808-60-7	2.1E-01 mg/m3	8hour		Negligible	AEGL1_8hr
5.0E+01 mg/m3		1hour	Critical	TEEL3	Silicon tetrahydride				7803-62-5
1.3E-01 mg/m3		1hour	Marginal	TEEL2	3.5E+02 mg/m3	1hour		Critical	AEGL3_1hr
7.5E-02 mg/m3		1hour	Negligible	TEEL1	1.7E+02 mg/m3	1hour		Marginal	AEGL2_1hr
2.5E-02 mg/m3		8hour	Negligible	TLV_TWA	1.3E+02 mg/m3	1hour		Negligible	AEGL1_1hr
6.1E-03 mg/m3		14day	Negligible	TLV_TWA	6.6E+00 mg/m3	8hour		Negligible	TLV_TWA_irr
6.1E-03 mg/m3		1year	Negligible	TLVadj	2.2E+00 mg/m3	14day		Negligible	TLV_TWA_irr
Silica, crystalline tripoli				1317-95-9	2.2E+00 mg/m3	1year		Negligible	TLVirr
2.5E-02 mg/m3		8hour	Negligible	TLV_TWA	Silicone				63148-62-9
6.1E-03 mg/m3		14day	Negligible	TLV_TWA	5.0E+02 mg/m3	1hour		Critical	TEEL3
6.1E-03 mg/m3		1year	Negligible	TLVadj	3.5E+02 mg/m3	1hour		Marginal	TEEL2
Silicic acid				7699-41-4	5.0E+01 mg/m3	1hour		Negligible	TEEL1
4.0E+02 mg/m3		1hour	Critical	TEEL3	Silicone oil				63148-58-3
7.5E+01 mg/m3		1hour	Marginal	TEEL2	2.5E+02 mg/m3	1hour		Critical	TEEL3
1.0E+01 mg/m3		1hour	Negligible	TEEL1	5.0E+01 mg/m3	1hour		Marginal	TEEL2
Silicic acid, aluminum calcium sodium salt				1344-01-0	7.5E+00 mg/m3	1hour		Negligible	TEEL1
6.0E+01 mg/m3		1hour	Critical	TEEL3	Siloprene k 1000				63394-02-5
5.0E+01 mg/m3		1hour	Marginal	TEEL2	5.0E+02 mg/m3	1hour		Critical	TEEL3
3.0E+01 mg/m3		1hour	Negligible	TEEL1	5.0E+02 mg/m3	1hour		Marginal	TEEL2
Silicofluoric acid				16961-83-4	1.0E+02 mg/m3	1hour		Negligible	TEEL1
5.0E+01 mg/m3		1hour	Critical	TEEL3	Siloxanes and Silicones, di-Me, Me hydrogen				68037-59-2
1.6E+01 mg/m3		1hour	Marginal	TEEL2	2.5E+02 mg/m3	1hour		Critical	TEEL3
9.5E+00 mg/m3		1hour	Negligible	TEEL1	5.0E+01 mg/m3	1hour		Marginal	TEEL2
Silicon				7440-21-3	3.0E+01 mg/m3	1hour		Negligible	TEEL1
5.0E+02 mg/m3		1hour	Critical	TEEL3	Siloxanes and Silicones, di-Me, Me vinyl, vinyl group-terminated				68083-18-1
7.5E+01 mg/m3		1hour	Marginal	TEEL2	2.5E+02 mg/m3	1hour		Critical	TEEL3
4.5E+01 mg/m3		1hour	Negligible	TEEL1	5.0E+01 mg/m3	1hour		Marginal	TEEL2
Silicon (II) oxide				10097-28-6	3.0E+01 mg/m3	1hour		Negligible	TEEL1
2.5E+02 mg/m3		1hour	Critical	TEEL3	Siloxanes and silicones, di-Me, reaction products				67762-90-7
5.0E+01 mg/m3		1hour	Marginal	TEEL2	5.0E+02 mg/m3	1hour		Critical	TEEL3
3.0E+01 mg/m3		1hour	Negligible	TEEL1	1.3E+02 mg/m3	1hour		Marginal	TEEL2
Silicon carbide, fibrous				409-21-2	1.5E+01 mg/m3	1hour		Negligible	TEEL1
5.0E+02 mg/m3		1hour	Critical	TEEL3					
2.5E+02 mg/m3		1hour	Marginal	TEEL2					
4.5E+01 mg/m3		1hour	Negligible	TEEL1					

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Siloxanes and Silicones, di-Me, vinyl group-terminated				68083-19-2	Silvex				93-72-1
5.0E+02 mg/m3	1hour		Critical	TEEL3	2.5E+02 mg/m3	1hour		Critical	TEEL3
5.0E+02 mg/m3	1hour		Marginal	TEEL2	2.0E+02 mg/m3	1hour		Marginal	TEEL2
2.0E+02 mg/m3	1hour		Negligible	TEEL1	3.5E+01 mg/m3	1hour		Negligible	TEEL1
Silver				7440-22-4	Soapstone, respirable dust				sil soap resp
1.0E+01 mg/m3	1hour		Critical	TEEL3	3.0E+00 mg/m3	8hour		Negligible	TLV_TWA
5.0E-01 mg/m3	1hour		Marginal	TEEL2	7.3E-01 mg/m3	14day		Negligible	TLV_TWA
3.0E-01 mg/m3	1hour		Negligible	TEEL1	7.3E-01 mg/m3	1year		Negligible	TLVadj
1.0E-01 mg/m3	8hour		Negligible	TLV_TWA	Soda lime				8006-28-8
2.4E-02 mg/m3	14day		Negligible	TLV_TWA	2.5E+01 mg/m3	1hour		Critical	TEEL3
2.4E-02 mg/m3	1year		Negligible	TLVadj	1.0E+01 mg/m3	1hour		Marginal	TEEL2
Silver carbonate				534-16-7	Sodium				7440-23-5
1.3E+01 mg/m3	1hour		Critical	TEEL3	5.0E+01 mg/m3	1hour		Critical	TEEL3
6.4E-02 mg/m3	1hour		Marginal	TEEL2	5.0E+00 mg/m3	1hour		Marginal	TEEL2
3.8E-02 mg/m3	1hour		Negligible	TEEL1	5.0E-01 mg/m3	1hour		Negligible	TEEL1
Silver chloride				7783-90-6	Sodium acetate				127-09-3
1.3E+01 mg/m3	1hour		Critical	TEEL3	5.0E+02 mg/m3	1hour		Critical	TEEL3
6.6E-02 mg/m3	1hour		Marginal	TEEL2	3.0E+02 mg/m3	1hour		Marginal	TEEL2
4.0E-02 mg/m3	1hour		Negligible	TEEL1	4.0E+01 mg/m3	1hour		Negligible	TEEL1
Silver cyanide				506-64-9	Sodium acetate trihydrate				6131-90-4
1.3E+02 mg/m3	1hour		Critical	TEEL3	5.0E+02 mg/m3	1hour		Critical	TEEL3
1.3E+02 mg/m3	1hour		Marginal	TEEL2	3.0E+02 mg/m3	1hour		Marginal	TEEL2
7.7E+01 mg/m3	1hour		Negligible	TEEL1	4.0E+01 mg/m3	1hour		Negligible	TEEL1
Silver hydroxide				z-0060	Sodium aluminate				11138-49-1
1.2E+01 mg/m3	1hour		Critical	TEEL3	2.0E+02 mg/m3	1hour		Critical	TEEL3
6.0E-02 mg/m3	1hour		Marginal	TEEL2	1.5E+02 mg/m3	1hour		Critical	TEEL3
3.5E-02 mg/m3	1hour		Negligible	TEEL1	4.4E+01 mg/m3	1hour		Marginal	TEEL2
Silver nitrate				7761-88-8	Sodium aluminate				1302-42-7
1.6E+01 mg/m3	1hour		Critical	TEEL3	3.0E+01 mg/m3	1hour		Marginal	TEEL2
3.0E+00 mg/m3	1hour		Marginal	TEEL2	2.6E+01 mg/m3	1hour		Negligible	TEEL1
4.0E-01 mg/m3	1hour		Negligible	TEEL1	1.8E+01 mg/m3	1hour		Negligible	TEEL1
Silver nitrite				7783-99-5	Sodium aluminum hydride				13770-96-2
1.4E+01 mg/m3	1hour		Critical	TEEL3	3.0E+02 mg/m3	1hour		Critical	TEEL3
7.5E-02 mg/m3	1hour		Marginal	TEEL2	6.0E+01 mg/m3	1hour		Marginal	TEEL2
4.3E-02 mg/m3	1hour		Negligible	TEEL1	7.5E+00 mg/m3	1hour		Negligible	TEEL1
Silver oxide				20667-12-3	Sodium aluminum silicate				73987-94-7
3.0E+01 mg/m3	1hour		Critical	TEEL3	5.0E+02 mg/m3	1hour		Critical	TEEL3
6.0E+00 mg/m3	1hour		Marginal	TEEL2	1.5E+01 mg/m3	1hour		Marginal	TEEL2
7.5E-01 mg/m3	1hour		Negligible	TEEL1	1.0E+01 mg/m3	1hour		Negligible	TEEL1
Silver soluble compounds				Ag sol cmpds					
1.0E-02 mg/m3	8hour		Negligible	TLV_TWA					
2.4E-03 mg/m3	14day		Negligible	TLV_TWA					
2.4E-03 mg/m3	1year		Negligible	TLVadj					

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN		
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis		
Sodium antimony				11112-10-0	Sodium bisulfite				7631-90-5		
1.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3		
5.1E+00	mg/m3	1hour	Marginal	TEEL2	2.5E+01	mg/m3	1hour	Marginal	TEEL2		
3.0E+00	mg/m3	1hour	Negligible	TEEL1	1.5E+01	mg/m3	1hour	Negligible	TEEL1		
Sodium arsenate				7631-89-2	Sodium borohydride				16940-66-2		
1.4E+01	mg/m3	1hour	Critical	TEEL3	5.0E+00	mg/m3	8hour	Negligible	TLV_TWA		
1.4E+01	mg/m3	1hour	Marginal	TEEL2	1.2E+00	mg/m3	14day	Negligible	TLV_TWA		
7.5E+00	mg/m3	1hour	Negligible	TEEL1	1.2E+00	mg/m3	1year	Negligible	TLVadj		
Sodium arsenite				7784-46-5	Sodium bromate				7789-38-0		
8.7E+00	mg/m3	1hour	Critical	TEEL3	7.5E+00	mg/m3	1hour	Critical	TEEL3		
8.7E+00	mg/m3	1hour	Marginal	TEEL2	1.5E+00	mg/m3	1hour	Marginal	TEEL2		
1.3E+00	mg/m3	1hour	Negligible	TEEL1	2.0E-01	mg/m3	1hour	Negligible	TEEL1		
Sodium azide				26628-22-8	Sodium bromide				7647-15-6		
2.0E+01	mg/m3	1hour	Critical	TEEL3	6.0E+01	mg/m3	1hour	Critical	TEEL3		
2.0E+01	mg/m3	1hour	Marginal	TEEL2	1.3E+01	mg/m3	1hour	Marginal	TEEL2		
3.0E+00	mg/m3	1hour	Negligible	TEEL1	1.5E+00	mg/m3	1hour	Negligible	TEEL1		
Sodium bicarbonate				144-55-8	Sodium bromide				7647-15-6		
5.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3		
2.0E+00	mg/m3	1hour	Marginal	TEEL2	3.5E+01	mg/m3	1hour	Marginal	TEEL2		
3.5E-01	mg/m3	1hour	Negligible	TEEL1	5.0E+00	mg/m3	1hour	Negligible	TEEL1		
Sodium bifluoride				1333-83-1	Sodium cacodylate				124-65-2		
4.1E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3		
7.5E+01	mg/m3	1hour	Marginal	TEEL2	4.0E+01	mg/m3	1hour	Marginal	TEEL2		
1.0E+01	mg/m3	1hour	Negligible	TEEL1	3.2E+00	mg/m3	1hour	Negligible	TEEL1		
Sodium bis(2-methoxyethoxy) aluminum hydride				22722-98-1	Sodium carbonate				497-19-8		
3.5E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3		
7.5E+01	mg/m3	1hour	Marginal	TEEL2	2.5E-01	mg/m3	1hour	Marginal	TEEL2		
4.5E+01	mg/m3	1hour	Negligible	TEEL1	4.0E-02	mg/m3	1hour	Negligible	TEEL1		
Sodium bismuthate				12232-99-4	Sodium carbonate monohydrate				5968-11-6		
1.5E+02	mg/m3	1hour	Critical	TEEL3	1.5E+02	mg/m3	1hour	Critical	TEEL3		
3.5E+01	mg/m3	1hour	Marginal	TEEL2	3.5E+01	mg/m3	1hour	Marginal	TEEL2		
5.0E+00	mg/m3	1hour	Negligible	TEEL1	5.0E+00	mg/m3	1hour	Negligible	TEEL1		
Sodium bisulfate				7681-38-1	Sodium carboxymethyl cellulose				9004-32-4		
1.3E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3		
2.5E+01	mg/m3	1hour	Marginal	TEEL2	7.5E+00	mg/m3	1hour	Marginal	TEEL2		
3.5E+00	mg/m3	1hour	Negligible	TEEL1	1.3E+00	mg/m3	1hour	Negligible	TEEL1		
Sodium bisulfate monohydrate				10034-88-5	Sodium chlorate				7775-09-9		
7.5E+01	mg/m3	1hour	Critical	TEEL3	7.5E+01	mg/m3	1hour	Critical	TEEL3		
1.5E+01	mg/m3	1hour	Marginal	TEEL2	3.0E+00	mg/m3	1hour	Marginal	TEEL2		
2.5E+00	mg/m3	1hour	Negligible	TEEL1	4.0E-01	mg/m3	1hour	Negligible	TEEL1		
					Sodium chloride				7647-14-5		
					5.0E+02 mg/m3				1hour	Critical	TEEL3
					3.0E+02 mg/m3				1hour	Marginal	TEEL2
					4.0E+01 mg/m3				1hour	Negligible	TEEL1
					Sodium chromate				7775-11-3		
					4.7E+01 mg/m3				1hour	Critical	TEEL3
					7.5E-01 mg/m3				1hour	Marginal	TEEL2
					1.3E-01 mg/m3				1hour	Negligible	TEEL1

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Sodium chromate tetrahydrate				10034-82-9	Sodium dodecylbenzenesulfonate				25155-30-0
8.7E+01	mg/m3	1hour	Critical	TEEL3	2.0E+02	mg/m3	1hour	Critical	TEEL3
1.5E+01	mg/m3	1hour	Marginal	TEEL2	7.5E+01	mg/m3	1hour	Marginal	TEEL2
2.5E+00	mg/m3	1hour	Negligible	TEEL1	1.3E+01	mg/m3	1hour	Negligible	TEEL1
Sodium cobaltinitrite				13600-98-1	Sodium ethoxide				141-52-6
1.5E+01	mg/m3	1hour	Critical	TEEL3	1.5E+02	mg/m3	1hour	Critical	TEEL3
3.0E+00	mg/m3	1hour	Marginal	TEEL2	3.5E+01	mg/m3	1hour	Marginal	TEEL2
4.0E-01	mg/m3	1hour	Negligible	TEEL1	5.0E+00	mg/m3	1hour	Negligible	TEEL1
Sodium cyanide				143-33-9	Sodium ferricyanide				14402-89-2
3.0E+01	mg/m3	1hour	Critical	AEGL3_1hr	2.0E+01	mg/m3	1hour	Critical	TEEL3
1.4E+01	mg/m3	1hour	Marginal	AEGL2_1hr	1.3E+01	mg/m3	1hour	Marginal	TEEL2
4.0E+00	mg/m3	1hour	Negligible	AEGL1_1hr	2.0E+00	mg/m3	1hour	Negligible	TEEL1
2.0E+00	mg/m3	8hour	Negligible	AEGL1_8hr	Sodium ferrocyanide				13601-19-9
Sodium cyclopentadienylide				4984-82-1	5.0E+02	mg/m3	1hour	Critical	TEEL3
2.5E+02	mg/m3	1hour	Critical	TEEL3	2.7E+01	mg/m3	1hour	Marginal	TEEL2
5.0E+01	mg/m3	1hour	Marginal	TEEL2	1.6E+01	mg/m3	1hour	Negligible	TEEL1
3.0E+01	mg/m3	1hour	Negligible	TEEL1	Sodium fluoroacetate				62-74-8
Sodium deuterioxide				14014-06-3	2.5E+00	mg/m3	1hour	Critical	TEEL3
5.0E+01	mg/m3	1hour	Critical	TEEL3	5.0E-01	mg/m3	1hour	Marginal	TEEL2
5.0E+00	mg/m3	1hour	Marginal	TEEL2	1.5E-01	mg/m3	1hour	Negligible	TEEL1
5.0E-01	mg/m3	1hour	Negligible	TEEL1	5.0E-02	mg/m3	8hour	Negligible	TLV_TWA
Sodium dichromate				10588-01-9	1.2E-02	mg/m3	14day	Negligible	TLV_TWA
3.8E+01	mg/m3	1hour	Critical	TEEL3	1.2E-02	mg/m3	1year	Negligible	TLVadj
3.8E+01	mg/m3	1hour	Marginal	TEEL2	Sodium formate				141-53-7
2.0E+01	mg/m3	1hour	Negligible	TEEL1	5.0E+02	mg/m3	1hour	Critical	TEEL3
Sodium dichromate dihydrate (VI)				7789-12-0	5.0E+02	mg/m3	1hour	Marginal	TEEL2
4.3E+01	mg/m3	1hour	Critical	TEEL3	1.3E+02	mg/m3	1hour	Negligible	TEEL1
7.2E-01	mg/m3	1hour	Marginal	TEEL2	Sodium gluconate				527-07-1
4.3E-01	mg/m3	1hour	Negligible	TEEL1	7.5E+01	mg/m3	1hour	Critical	TEEL3
Sodium diethyldithiocarbamate				148-18-5	1.5E+01	mg/m3	1hour	Marginal	TEEL2
5.0E+02	mg/m3	1hour	Critical	TEEL3	2.0E+00	mg/m3	1hour	Negligible	TEEL1
2.5E+02	mg/m3	1hour	Marginal	TEEL2	Sodium glycinate				6000-44-8
6.0E+00	mg/m3	1hour	Negligible	TEEL1	5.0E+02	mg/m3	1hour	Critical	TEEL3
Sodium diethyldithiocarbamate trihydrate				20624-25-3	1.0E+02	mg/m3	1hour	Marginal	TEEL2
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.3E+01	mg/m3	1hour	Negligible	TEEL1
1.0E+01	mg/m3	1hour	Marginal	TEEL2	Sodium glycolate				2836-32-0
6.0E+00	mg/m3	1hour	Negligible	TEEL1	3.0E+03	mg/m3	1hour	Critical	TEEL3
Sodium dihydrogen phosphate				10049-21-5	7.5E+02	mg/m3	1hour	Marginal	TEEL2
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.3E+02	mg/m3	1hour	Negligible	TEEL1
5.0E+02	mg/m3	1hour	Marginal	TEEL2	Sodium hexametaphosphate				10124-56-8
3.0E+02	mg/m3	1hour	Negligible	TEEL1	5.0E+02	mg/m3	1hour	Critical	TEEL3
Sodium dithionate dihydrate				7631-94-9	5.0E+02	mg/m3	1hour	Marginal	TEEL2
2.5E+02	mg/m3	1hour	Critical	TEEL3	7.5E+01	mg/m3	1hour	Negligible	TEEL1
5.0E+01	mg/m3	1hour	Marginal	TEEL2	Sodium hexamethyldisilazane				1070-89-9
3.0E+01	mg/m3	1hour	Negligible	TEEL1	2.5E+02	mg/m3	1hour	Critical	TEEL3
					5.0E+01	mg/m3	1hour	Marginal	TEEL2
					3.0E+01	mg/m3	1hour	Negligible	TEEL1

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Sodium hydride				7646-69-7	Sodium lactate				72-17-3
4.0E+01	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
7.5E+00	mg/m3	1hour	Marginal	TEEL2	3.0E+02	mg/m3	1hour	Marginal	TEEL2
1.3E+00	mg/m3	1hour	Negligible	TEEL1	4.0E+01	mg/m3	1hour	Negligible	TEEL1
Sodium hydrosulfite				7775-14-6	Sodium lauryl sulfate				151-21-3
2.5E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
5.0E+01	mg/m3	1hour	Marginal	TEEL2	6.0E+00	mg/m3	1hour	Marginal	TEEL2
3.0E+01	mg/m3	1hour	Negligible	TEEL1	1.0E+00	mg/m3	1hour	Negligible	TEEL1
Sodium hydroxide				1310-73-2	Sodium metabisulfite				7681-57-4
5.0E+01	mg/m3	1hour	Critical	ERPG3	1.0E+02	mg/m3	1hour	Critical	TEEL3
5.0E+00	mg/m3	1hour	Marginal	ERPG2	2.5E+01	mg/m3	1hour	Marginal	TEEL2
5.0E-01	mg/m3	1hour	Negligible	ERPG1	1.5E+01	mg/m3	1hour	Negligible	TEEL1
Sodium hypobromite				13824-96-9	Sodium metaborate				7775-19-1
2.5E+02	mg/m3	1hour	Critical	TEEL3	5.0E+00	mg/m3	8hour	Negligible	TLV_TWA_irr
5.0E+01	mg/m3	1hour	Marginal	TEEL2	1.7E+00	mg/m3	14day	Negligible	TLV_TWA_irr
3.0E+01	mg/m3	1hour	Negligible	TEEL1	1.7E+00	mg/m3	1year	Negligible	TLVirr
Sodium hypochlorite				7681-52-9	Sodium metaphosphate				10361-03-2
5.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
5.0E+01	mg/m3	1hour	Marginal	TEEL2	2.0E+02	mg/m3	1hour	Marginal	TEEL2
2.0E+00	mg/m3	1hour	Negligible	TEEL1	3.7E+01	mg/m3	1hour	Negligible	TEEL1
Sodium hypochlorite pentahydrate				10022-70-5	Sodium metaphosphate				10361-03-2
5.0E+02	mg/m3	1hour	Critical	TEEL3	3.5E+02	mg/m3	1hour	Critical	TEEL3
1.5E+00	mg/m3	1hour	Marginal	TEEL2	7.5E+01	mg/m3	1hour	Marginal	TEEL2
2.0E-01	mg/m3	1hour	Negligible	TEEL1	1.0E+01	mg/m3	1hour	Negligible	TEEL1
Sodium hypophosphite hydrate				123333-67-5	Sodium metasilicate				6834-92-0
5.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
5.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Marginal	TEEL2
1.3E+02	mg/m3	1hour	Marginal	TEEL2	2.0E+02	mg/m3	1hour	Negligible	TEEL1
1.3E+02	mg/m3	1hour	Marginal	TEEL2	Sodium metasilicate pentahydrate				10213-79-3
2.0E+01	mg/m3	1hour	Negligible	TEEL1	3.5E+02	mg/m3	1hour	Critical	TEEL3
2.0E+01	mg/m3	1hour	Negligible	TEEL1	7.5E+01	mg/m3	1hour	Marginal	TEEL2
Sodium hypophosphite hydrate				7681-53-0	Sodium metasilicate, nonahydrate				13517-24-3
5.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.0E+02	mg/m3	1hour	Marginal	TEEL2
1.3E+02	mg/m3	1hour	Marginal	TEEL2	6.1E+01	mg/m3	1hour	Negligible	TEEL1
1.3E+02	mg/m3	1hour	Marginal	TEEL2	Sodium metavanadate				13718-26-8
2.0E+01	mg/m3	1hour	Negligible	TEEL1	3.0E+01	mg/m3	1hour	Critical	TEEL3
2.0E+01	mg/m3	1hour	Negligible	TEEL1	1.2E+00	mg/m3	1hour	Marginal	TEEL2
Sodium iodate				7681-55-2	Sodium methylate				124-41-4
2.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
4.0E+01	mg/m3	1hour	Marginal	TEEL2	1.5E+02	mg/m3	1hour	Marginal	TEEL2
6.0E+00	mg/m3	1hour	Negligible	TEEL1	2.5E+01	mg/m3	1hour	Negligible	TEEL1
Sodium iodide				7681-82-5	Sodium molybdate				7631-95-0
5.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
1.5E+01	mg/m3	1hour	Marginal	TEEL2	1.0E+01	mg/m3	1hour	Marginal	TEEL2
2.5E+00	mg/m3	1hour	Negligible	TEEL1	3.2E+00	mg/m3	1hour	Negligible	TEEL1

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Sodium molybdate, dihydrate				10102-40-6	Sodium perchlorate				7601-89-0
5.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
5.0E+02	mg/m3	1hour	Marginal	TEEL2	1.5E+02	mg/m3	1hour	Marginal	TEEL2
1.3E+01	mg/m3	1hour	Negligible	TEEL1	2.5E+01	mg/m3	1hour	Negligible	TEEL1
Sodium monoxide				12401-86-4	Sodium perchlorate monohydrate				7791-07-3
5.0E+01	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
5.0E+00	mg/m3	1hour	Marginal	TEEL2	1.0E+02	mg/m3	1hour	Marginal	TEEL2
5.0E-01	mg/m3	1hour	Negligible	TEEL1	1.5E+01	mg/m3	1hour	Negligible	TEEL1
Sodium m-periodate				7790-28-5	Sodium permanganate				10101-50-5
2.5E+01	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
5.0E+00	mg/m3	1hour	Marginal	TEEL2	1.3E+01	mg/m3	1hour	Marginal	TEEL2
7.5E-01	mg/m3	1hour	Negligible	TEEL1	7.8E+00	mg/m3	1hour	Negligible	TEEL1
Sodium nitrate				7631-99-4	Sodium peroxide				1313-60-6
1.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+01	mg/m3	1hour	Critical	TEEL3
7.5E+00	mg/m3	1hour	Marginal	TEEL2	5.0E+00	mg/m3	1hour	Marginal	TEEL2
1.0E+00	mg/m3	1hour	Negligible	TEEL1	5.0E-01	mg/m3	1hour	Negligible	TEEL1
Sodium nitrite				7632-00-0	Sodium perrhenate				13472-33-8
6.0E+01	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
1.0E+00	mg/m3	1hour	Marginal	TEEL2	1.5E+02	mg/m3	1hour	Marginal	TEEL2
1.5E-01	mg/m3	1hour	Negligible	TEEL1	2.5E+01	mg/m3	1hour	Negligible	TEEL1
Sodium o-benzyl-p-chlorophenate				3184-65-4	Sodium persulfate				7775-27-1
2.5E+02	mg/m3	1hour	Critical	TEEL3	1.0E+02	mg/m3	1hour	Critical	TEEL3
5.0E+01	mg/m3	1hour	Marginal	TEEL2	2.0E+01	mg/m3	1hour	Marginal	TEEL2
3.0E+01	mg/m3	1hour	Negligible	TEEL1	2.5E+00	mg/m3	1hour	Negligible	TEEL1
Sodium orthovanadate				13721-39-6	Sodium phophate dibasic				7558-79-4
1.3E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
1.8E+00	mg/m3	1hour	Marginal	TEEL2	5.0E+02	mg/m3	1hour	Marginal	TEEL2
2.5E-01	mg/m3	1hour	Negligible	TEEL1	2.0E+02	mg/m3	1hour	Negligible	TEEL1
Sodium oxalate				62-76-0	Sodium phosphate decahydrate				13472-36-1
3.0E+01	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
6.0E+00	mg/m3	1hour	Marginal	TEEL2	2.0E+02	mg/m3	1hour	Marginal	TEEL2
7.5E-01	mg/m3	1hour	Negligible	TEEL1	3.0E+01	mg/m3	1hour	Negligible	TEEL1
Sodium oxide				1313-59-3	Sodium phosphate dibasic dodecahydrate				10039-32-4
5.0E+01	mg/m3	1hour	Critical	TEEL3	1.5E+02	mg/m3	1hour	Critical	TEEL3
5.0E+00	mg/m3	1hour	Marginal	TEEL2	3.5E+01	mg/m3	1hour	Marginal	TEEL2
5.0E-01	mg/m3	1hour	Negligible	TEEL1	5.0E+00	mg/m3	1hour	Negligible	TEEL1
Sodium pentachlorophenate				131-52-2	Sodium phosphate monobasic				7558-80-7
7.5E+01	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
2.4E+01	mg/m3	1hour	Marginal	TEEL2	5.0E+02	mg/m3	1hour	Marginal	TEEL2
3.5E+00	mg/m3	1hour	Negligible	TEEL1	1.0E+02	mg/m3	1hour	Negligible	TEEL1
Sodium perborate				7632-04-4	Sodium phosphate tribasic dodecahydrate				10101-89-0
5.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
1.0E+01	mg/m3	1hour	Marginal	TEEL2	5.0E+02	mg/m3	1hour	Marginal	TEEL2
1.5E+00	mg/m3	1hour	Negligible	TEEL1	7.5E+01	mg/m3	1hour	Negligible	TEEL1

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Sodium phosphate, dibasic heptahydrate				7782-85-6	Sodium selenate				13410-01-0
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.6E+00	mg/m3	1hour	Critical	TEEL3
5.0E+02	mg/m3	1hour	Marginal	TEEL2	1.6E+00	mg/m3	1hour	Marginal	TEEL2
1.5E+02	mg/m3	1hour	Negligible	TEEL1	1.4E+00	mg/m3	1hour	Negligible	TEEL1
Sodium phosphate, tribasic				7601-54-9	Sodium selenite				10102-18-8
5.0E+02	mg/m3	1hour	Critical	TEEL3	3.0E+00	mg/m3	1hour	Critical	TEEL3
5.0E+02	mg/m3	1hour	Marginal	TEEL2	2.3E+00	mg/m3	1hour	Marginal	TEEL2
5.0E+00	mg/m3	1hour	Negligible	TEEL1	1.3E+00	mg/m3	1hour	Negligible	TEEL1
Sodium Phosphide				12058-85-4	Sodium silicate				1344-09-8
1.5E+01	mg/m3	1hour	Critical	AEGL3_1hr	5.0E+02	mg/m3	1hour	Critical	TEEL3
8.2E+00	mg/m3	1hour	Marginal	AEGL2_1hr	1.5E+02	mg/m3	1hour	Marginal	TEEL2
5.0E+00	mg/m3	1hour	Negligible	TEEL1	2.5E+01	mg/m3	1hour	Negligible	TEEL1
Sodium polyphosphate				68915-31-1	Sodium silicoaluminate				1344-00-9
5.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
2.5E+02	mg/m3	1hour	Marginal	TEEL2	1.5E+02	mg/m3	1hour	Marginal	TEEL2
4.0E+01	mg/m3	1hour	Negligible	TEEL1	1.0E+01	mg/m3	1hour	Negligible	TEEL1
Sodium polytungstate				12141-67-2	Sodium stannate				12058-66-1
1.5E+02	mg/m3	1hour	Critical	TEEL3	1.8E+02	mg/m3	1hour	Critical	TEEL3
3.5E+01	mg/m3	1hour	Marginal	TEEL2	1.8E+01	mg/m3	1hour	Marginal	TEEL2
1.4E+01	mg/m3	1hour	Negligible	TEEL1	1.1E+01	mg/m3	1hour	Negligible	TEEL1
Sodium potassium alloys				11135-81-2	Sodium stearate				822-16-2
5.0E+01	mg/m3	1hour	Critical	TEEL3	1.5E+01	mg/m3	1hour	Critical	TEEL3
5.0E+00	mg/m3	1hour	Marginal	TEEL2	3.5E+00	mg/m3	1hour	Marginal	TEEL2
4.8E-01	mg/m3	1hour	Negligible	TEEL1	5.0E-01	mg/m3	1hour	Negligible	TEEL1
Sodium potassium tartrate				304-59-6	Sodium succinate				150-90-3
5.0E+02	mg/m3	1hour	Critical	TEEL3	4.0E+03	mg/m3	1hour	Critical	TEEL3
4.0E+02	mg/m3	1hour	Marginal	TEEL2	7.5E+02	mg/m3	1hour	Marginal	TEEL2
6.0E+01	mg/m3	1hour	Negligible	TEEL1	1.0E+02	mg/m3	1hour	Negligible	TEEL1
Sodium potassium tartrate, tetrahydrate				6381-59-5	Sodium succinate, hexahydrate				6106-21-4
5.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
4.0E+02	mg/m3	1hour	Marginal	TEEL2	5.0E+02	mg/m3	1hour	Marginal	TEEL2
6.0E+01	mg/m3	1hour	Negligible	TEEL1	1.0E+02	mg/m3	1hour	Negligible	TEEL1
Sodium p-tert-amylphenate				31366-95-7	Sodium sulfate				7757-82-6
2.5E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
5.0E+01	mg/m3	1hour	Marginal	TEEL2	5.0E+02	mg/m3	1hour	Marginal	TEEL2
3.0E+01	mg/m3	1hour	Negligible	TEEL1	2.0E+02	mg/m3	1hour	Negligible	TEEL1
Sodium pyruvate (pyruvic acid, sodium salt)				113-24-6	Sodium sulfhydrylate				16721-80-5
2.5E+02	mg/m3	1hour	Critical	TEEL3	6.0E+00	mg/m3	1hour	Critical	TEEL3
5.0E+01	mg/m3	1hour	Marginal	TEEL2	1.3E+00	mg/m3	1hour	Marginal	TEEL2
3.0E+01	mg/m3	1hour	Negligible	TEEL1	1.5E-01	mg/m3	1hour	Negligible	TEEL1
Sodium salicylate				54-21-7	Sodium sulfide				1313-82-2
5.0E+02	mg/m3	1hour	Critical	TEEL3	7.5E+01	mg/m3	1hour	Critical	TEEL3
5.0E+02	mg/m3	1hour	Marginal	TEEL2	1.5E+01	mg/m3	1hour	Marginal	TEEL2
1.0E+02	mg/m3	1hour	Negligible	TEEL1	2.5E+00	mg/m3	1hour	Negligible	TEEL1

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Sodium sulfide, nonahydrate				1313-84-4	Sodium tridecylbenzene sulfonate				26248-24-8
2.0E+01	mg/m3	1hour	Critical	TEEL3	2.0E+02	mg/m3	1hour	Critical	TEEL3
4.0E+00	mg/m3	1hour	Marginal	TEEL2	4.0E+01	mg/m3	1hour	Marginal	TEEL2
6.0E-01	mg/m3	1hour	Negligible	TEEL1	6.0E+00	mg/m3	1hour	Negligible	TEEL1
Sodium sulfite				7757-83-7	Sodium triethylborohydride				17979-81-6
1.0E+02	mg/m3	1hour	Critical	TEEL3	1.5E+02	mg/m3	1hour	Critical	TEEL3
2.0E+01	mg/m3	1hour	Marginal	TEEL2	6.8E+01	mg/m3	1hour	Marginal	TEEL2
3.0E+00	mg/m3	1hour	Negligible	TEEL1	6.8E+01	mg/m3	1hour	Negligible	TEEL1
Sodium tartrate dihydrate				6106-24-7	Sodium trimetaphosphate				7785-84-4
5.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
1.0E+02	mg/m3	1hour	Marginal	TEEL2	3.0E+02	mg/m3	1hour	Marginal	TEEL2
1.5E+01	mg/m3	1hour	Negligible	TEEL1	4.0E+01	mg/m3	1hour	Negligible	TEEL1
Sodium tellurite				10102-20-2	Sodium tripolyphosphate				7758-29-4
2.5E+01	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
7.5E+00	mg/m3	1hour	Marginal	TEEL2	2.5E+01	mg/m3	1hour	Marginal	TEEL2
5.2E-01	mg/m3	1hour	Negligible	TEEL1	3.5E+00	mg/m3	1hour	Negligible	TEEL1
Sodium tetraborate				1330-43-4	Sodium tungstate				13472-45-2
5.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
2.8E+01	mg/m3	1hour	Marginal	TEEL2	3.0E+00	mg/m3	1hour	Marginal	TEEL2
2.8E+01	mg/m3	1hour	Negligible	TEEL1	3.0E+00	mg/m3	1hour	Negligible	TEEL1
2.0E+00	mg/m3	8hour	Negligible	TLV_TWA_irr	Sodium tungstate dihydrate				10213-10-2
6.8E-01	mg/m3	14day	Negligible	TLV_TWA_irr	7.5E+01	mg/m3	1hour	Critical	TEEL3
6.8E-01	mg/m3	1year	Negligible	TLVirr	1.5E+01	mg/m3	1hour	Marginal	TEEL2
Sodium tetrafluoroborate(1-)				13755-29-8	5.4E+00	mg/m3	1hour	Negligible	TEEL1
3.6E+02	mg/m3	1hour	Critical	TEEL3	Sodium uranate				66018-57-3
1.8E+01	mg/m3	1hour	Marginal	TEEL2	1.6E+01	mg/m3	1hour	Critical	TEEL3
1.1E+01	mg/m3	1hour	Negligible	TEEL1	3.0E+00	mg/m3	1hour	Marginal	TEEL2
Sodium tetraphenyl borate				143-66-8	9.4E-01	mg/m3	1hour	Negligible	TEEL1
1.3E+02	mg/m3	1hour	Critical	TEEL3	Solvent naphtha, petroleum, heavy aliph.				64742-96-7
2.5E+01	mg/m3	1hour	Marginal	TEEL2	5.0E+02	mg/m3	1hour	Critical	TEEL3
3.5E+00	mg/m3	1hour	Negligible	TEEL1	3.0E+02	mg/m3	1hour	Marginal	TEEL2
Sodium thiocyanate				540-72-7	4.0E+01	mg/m3	1hour	Negligible	TEEL1
1.0E+02	mg/m3	1hour	Critical	TEEL3	Solvent naphtha, petroleum, medium aliphatic				64742-88-7
6.0E+00	mg/m3	1hour	Marginal	TEEL2	5.0E+02	mg/m3	1hour	Critical	TEEL3
7.5E-01	mg/m3	1hour	Negligible	TEEL1	5.0E+02	mg/m3	1hour	Marginal	TEEL2
Sodium thiosulfate				7772-98-7	7.5E+01	mg/m3	1hour	Negligible	TEEL1
5.0E+02	mg/m3	1hour	Critical	TEEL3	Solvent yellow 3				97-56-3
4.0E+02	mg/m3	1hour	Marginal	TEEL2	5.0E+02	mg/m3	1hour	Critical	TEEL3
6.0E+01	mg/m3	1hour	Negligible	TEEL1	4.0E+01	mg/m3	1hour	Marginal	TEEL2
Sodium thiosulfate pentahydrate				10102-17-7	6.0E+00	mg/m3	1hour	Negligible	TEEL1
5.0E+02	mg/m3	1hour	Critical	TEEL3	Solvent-refined heavy paraffinic distillate				64741-88-4
2.5E+01	mg/m3	1hour	Marginal	TEEL2	5.0E+02	mg/m3	1hour	Critical	TEEL3
3.5E+00	mg/m3	1hour	Negligible	TEEL1	2.5E+01	mg/m3	1hour	Marginal	TEEL2
Sodium titanate				12034-34-3	1.5E+01	mg/m3	1hour	Negligible	TEEL1
2.5E+02	mg/m3	1hour	Critical	TEEL3					
5.0E+01	mg/m3	1hour	Marginal	TEEL2					
3.0E+01	mg/m3	1hour	Negligible	TEEL1					

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Sorbitan monolaurate				5959-89-7	Stannic chloride				7646-78-8
2.5E+02	mg/m3	1hour	Critical	TEEL3	2.2E+02	mg/m3	1hour	Critical	TEEL3
5.0E+01	mg/m3	1hour	Marginal	TEEL2	5.0E+00	mg/m3	1hour	Marginal	TEEL2
3.0E+01	mg/m3	1hour	Negligible	TEEL1	4.4E+00	mg/m3	1hour	Negligible	TEEL1
Sorbitan monostearate polyoxyethylene				9005-67-8	Stannous chloride				7772-99-8
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.6E+02	mg/m3	1hour	Critical	TEEL3
1.5E+01	mg/m3	1hour	Marginal	TEEL2	5.0E+01	mg/m3	1hour	Marginal	TEEL2
2.0E+00	mg/m3	1hour	Negligible	TEEL1	9.6E+00	mg/m3	1hour	Negligible	TEEL1
Sorbitan trioleate				26266-58-0	Stannous octoate				301-10-0
5.0E+02	mg/m3	1hour	Critical	TEEL3	8.5E+01	mg/m3	1hour	Critical	TEEL3
3.5E+02	mg/m3	1hour	Marginal	TEEL2	1.5E+01	mg/m3	1hour	Marginal	TEEL2
5.0E+01	mg/m3	1hour	Negligible	TEEL1	2.5E+00	mg/m3	1hour	Negligible	TEEL1
Sorbitan, monolaurate				1338-39-2	Starch				9005-25-8
5.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
5.0E+02	mg/m3	1hour	Marginal	TEEL2	5.0E+02	mg/m3	1hour	Marginal	TEEL2
5.0E+02	mg/m3	1hour	Negligible	TEEL1	3.0E+01	mg/m3	1hour	Negligible	TEEL1
Sorbitan, monooleate				1338-43-8	Stearates				stearates
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.0E+01	mg/m3	8hour	Negligible	TLV_TWA
5.0E+02	mg/m3	1hour	Marginal	TEEL2	2.4E+00	mg/m3	14day	Negligible	TLV_TWA
5.0E+02	mg/m3	1hour	Negligible	TEEL1	2.4E+00	mg/m3	1year	Negligible	TLVadj
Sorbitan, monooleate polyoxyethylene				9005-65-6	Stibine				7803-52-3
5.0E+02	mg/m3	1hour	Critical	TEEL3	4.9E+01	mg/m3	1hour	Critical	AEGL3_1hr
1.5E+01	mg/m3	1hour	Marginal	TEEL2	7.7E+00	mg/m3	1hour	Marginal	AEGL2_1hr
2.5E+00	mg/m3	1hour	Negligible	TEEL1	1.0E+00	mg/m3	1hour	Negligible	TEEL1
Sorbitan, monostearate				1338-41-6	Stibine				7803-52-3
5.0E+02	mg/m3	1hour	Critical	TEEL3	5.1E-01	mg/m3	8hour	Negligible	TLV_TWA_irr
5.0E+02	mg/m3	1hour	Marginal	TEEL2	1.7E-01	mg/m3	14day	Negligible	TLV_TWA_irr
5.0E+02	mg/m3	1hour	Negligible	TEEL1	1.7E-01	mg/m3	1year	Negligible	TLVirr
Sorbitol				50-70-4	Stilbene				588-59-0
5.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
5.0E+02	mg/m3	1hour	Marginal	TEEL2	1.0E+02	mg/m3	1hour	Marginal	TEEL2
1.3E+02	mg/m3	1hour	Negligible	TEEL1	1.5E+01	mg/m3	1hour	Negligible	TEEL1
Soybean oil				8001-22-7	Stoddard solvent				8052-41-3
5.0E+02	mg/m3	1hour	Critical	TEEL3	2.0E+04	mg/m3	1hour	Critical	TEEL3
5.0E+02	mg/m3	1hour	Marginal	TEEL2	1.5E+03	mg/m3	1hour	Marginal	TEEL2
1.0E+02	mg/m3	1hour	Negligible	TEEL1	5.7E+02	mg/m3	1hour	Negligible	TLV_TWA_irr ⁺
Squalane				111-01-3	Stoddard solvent				8052-41-3
7.5E+03	mg/m3	1hour	Critical	TEEL3	5.7E+02	mg/m3	8hour	Negligible	TLV_TWA_irr
1.5E+03	mg/m3	1hour	Marginal	TEEL2	2.0E+02	mg/m3	14day	Negligible	TLV_TWA_irr
2.5E+02	mg/m3	1hour	Negligible	TEEL1	2.0E+02	mg/m3	1year	Negligible	TLVirr
Squalen				111-02-4	Strontium carbonate				1633-05-2
5.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
4.0E+02	mg/m3	1hour	Marginal	TEEL2	2.0E+02	mg/m3	1hour	Marginal	TEEL2
6.0E+01	mg/m3	1hour	Negligible	TEEL1	3.0E+01	mg/m3	1hour	Negligible	TEEL1

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Strontium chloride heptahydrate				10476-85-4	Styrene				100-42-5
5.0E+02	mg/m3	1hour	Critical	TEEL3	4.7E+03	mg/m3	1hour	Critical	TEEL3
1.5E+02	mg/m3	1hour	Marginal	TEEL2	5.5E+02	mg/m3	1hour	Marginal	TEEL2
2.0E+01	mg/m3	1hour	Negligible	TEEL1	8.5E+01	mg/m3	1hour	Negligible	TEEL1
Strontium chromate				7789-06-2	8.5E+01	mg/m3	8hour	Negligible	TLV_TWA_irr
5.0E-04	mg/m3	8hour	Negligible	TLV_TWA	5.8E+00	mg/m3	14day	Negligible	MRLi_acute
1.2E-04	mg/m3	14day	Negligible	TLV_TWA	5.8E-01	mg/m3	1year	Negligible	MRL_chr
1.2E-04	mg/m3	1year	Negligible	TLVadj	Styrene oxide				96-09-3
Strontium hydroxide				18480-07-4	2.5E+02	mg/m3	1hour	Critical	TEEL3
7.5E+01	mg/m3	1hour	Critical	TEEL3	2.5E+02	mg/m3	1hour	Marginal	TEEL2
2.0E+01	mg/m3	1hour	Marginal	TEEL2	6.0E+01	mg/m3	1hour	Negligible	TEEL1
7.5E-01	mg/m3	1hour	Negligible	TEEL1	Styrene, polymer				9003-53-6
Strontium nitrate				10042-76-9	7.5E+01	mg/m3	1hour	Critical	TEEL3
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.5E+01	mg/m3	1hour	Marginal	TEEL2
2.5E+02	mg/m3	1hour	Marginal	TEEL2	2.0E+00	mg/m3	1hour	Negligible	TEEL1
3.5E+01	mg/m3	1hour	Negligible	TEEL1	Styrene-allyl alcohol copolymer				25119-62-4
Strontium oxalate				814-95-9	2.5E+02	mg/m3	1hour	Critical	TEEL3
7.5E+01	mg/m3	1hour	Critical	TEEL3	5.0E+01	mg/m3	1hour	Marginal	TEEL2
6.0E+01	mg/m3	1hour	Marginal	TEEL2	3.0E+01	mg/m3	1hour	Negligible	TEEL1
2.5E+01	mg/m3	1hour	Negligible	TEEL1	Succinic acid				110-15-6
Strontium Phosphide				12504-13-1	5.0E+02	mg/m3	1hour	Critical	TEEL3
2.4E+01	mg/m3	1hour	Critical	AEGL3_1hr	2.0E+02	mg/m3	1hour	Marginal	TEEL2
1.3E+01	mg/m3	1hour	Marginal	AEGL2_1hr	2.5E+01	mg/m3	1hour	Negligible	TEEL1
3.0E+00	mg/m3	1hour	Negligible	TEEL1	Succinic anhydride				108-30-5
Strontium sulfate				7759-02-6	5.0E+02	mg/m3	1hour	Critical	TEEL3
2.5E+02	mg/m3	1hour	Critical	TEEL3	1.5E+01	mg/m3	1hour	Marginal	TEEL2
5.0E+01	mg/m3	1hour	Marginal	TEEL2	2.0E+00	mg/m3	1hour	Negligible	TEEL1
3.0E+01	mg/m3	1hour	Negligible	TEEL1	Succinimidyl-6-(beta-maleimido propionamido)hexanoate				0-582*
Strontium, stable				7440-24-6	2.5E+02	mg/m3	1hour	Critical	TEEL3
5.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+01	mg/m3	1hour	Marginal	TEEL2
5.0E+02	mg/m3	1hour	Marginal	TEEL2	3.0E+01	mg/m3	1hour	Negligible	TEEL1
1.3E+02	mg/m3	1hour	Negligible	TEEL1	Sucrose				57-50-1
Strychnine				57-24-9	5.0E+02	mg/m3	1hour	Critical	TEEL3
3.0E+00	mg/m3	1hour	Critical	TEEL3	5.0E+01	mg/m3	1hour	Marginal	TEEL2
3.0E-01	mg/m3	1hour	Marginal	TEEL2	3.0E+01	mg/m3	1hour	Negligible	TEEL1
3.0E-01	mg/m3	1hour	Negligible	TEEL1	1.0E+01	mg/m3	8hour	Negligible	TLV_TWA
1.5E-01	mg/m3	8hour	Negligible	TLV_TWA	2.4E+00	mg/m3	14day	Negligible	TLV_TWA
3.7E-02	mg/m3	14day	Negligible	TLV_TWA	2.4E+00	mg/m3	1year	Negligible	TLVadj
3.7E-02	mg/m3	1year	Negligible	TLVadj	Sucrose, diacetate hexaisobutyrate				126-13-6
Strychnine sulfate (2:1)				60-41-3	5.0E+02	mg/m3	1hour	Critical	TEEL3
3.0E+01	mg/m3	1hour	Critical	TEEL3	3.0E+02	mg/m3	1hour	Marginal	TEEL2
5.0E+00	mg/m3	1hour	Marginal	TEEL2	4.0E+01	mg/m3	1hour	Negligible	TEEL1
3.0E+00	mg/m3	1hour	Negligible	TEEL1	Sulfamic acid				5329-14-6
					5.0E+02	mg/m3	1hour	Critical	TEEL3
					2.5E+02	mg/m3	1hour	Marginal	TEEL2
					4.0E+01	mg/m3	1hour	Negligible	TEEL1

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Sulfamic acid, sodium salt (1:1)				13845-18-6	Sulfur pentafluoride				5714-22-7
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.0E+01	mg/m3	1hour	Critical	TEEL3
1.5E+02	mg/m3	1hour	Marginal	TEEL2	1.0E-01	mg/m3	1hour	Marginal	TEEL2
2.5E+01	mg/m3	1hour	Negligible	TEEL1	1.0E-01	mg/m3	1hour	Negligible	TEEL1
Sulfanilamide				63-74-1	Sulfur tetrafluoride				7783-60-0
5.0E+02	mg/m3	1hour	Critical	TEEL3	7.5E+00	mg/m3	1hour	Critical	TEEL3
2.0E+01	mg/m3	1hour	Marginal	TEEL2	7.5E+00	mg/m3	1hour	Marginal	TEEL2
3.0E+00	mg/m3	1hour	Negligible	TEEL1	1.0E+00	mg/m3	1hour	Negligible	TEEL1
Sulfanilic acid				121-57-3	Sulfur Trioxide				7446-11-9
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.6E+02	mg/m3	1hour	Critical	AEGL3_1hr*
5.0E+02	mg/m3	1hour	Marginal	TEEL2	8.7E+00	mg/m3	1hour	Marginal	AEGL2_1hr*
1.5E+02	mg/m3	1hour	Negligible	TEEL1	2.0E-01	mg/m3	1hour	Negligible	AEGL1_1hr*
Sulfometuron methyl				74222-97-2	2.0E-01	mg/m3	8hour	Negligible	AEGL1_8hr*
5.0E+00	mg/m3	8hour	Negligible	TLV_TWA_irr	2.0E-01	mg/m3	10min	Negligible	AEGL1_10min
1.7E+00	mg/m3	14day	Negligible	TLV_TWA_irr	8.7E+00	mg/m3	10min	Marginal	AEGL2_10min
1.7E+00	mg/m3	1year	Negligible	TLVirr	8.7E+00	mg/m3	8hour	Marginal	AEGL2_8h*
Sulfosalicylic acid				97-05-2	9.3E+01	mg/m3	8hour	Critical	AEGL3_8h*
5.0E+02	mg/m3	1hour	Critical	TEEL3	2.7E+02	mg/m3	10min	Critical	AEGL3_10min
2.0E+02	mg/m3	1hour	Marginal	TEEL2	Sulfuric Acid				7664-93-9
3.0E+01	mg/m3	1hour	Negligible	TEEL1	1.6E+02	mg/m3	1hour	Critical	AEGL3_1hr*
Sulfosalicylic acid, dihydrate, crystal				5965-83-3	8.7E+00	mg/m3	1hour	Marginal	AEGL2_1hr*
5.0E+02	mg/m3	1hour	Critical	TEEL3	2.0E-01	mg/m3	1hour	Negligible	AEGL1_1hr*
1.5E+02	mg/m3	1hour	Marginal	TEEL2	2.0E-01	mg/m3	8hour	Negligible	AEGL1_8hr*
2.0E+01	mg/m3	1hour	Negligible	TEEL1	4.9E-02	mg/m3	14day	Negligible	TLV_TWA
Sulfur (precipitated)				7704-34-9	4.9E-02	mg/m3	1year	Negligible	TLVadj
1.3E+01	mg/m3	1hour	Critical	TEEL3	2.0E-01	mg/m3	10min	Negligible	AEGL1_10min
2.5E+00	mg/m3	1hour	Marginal	TEEL2	8.7E+00	mg/m3	10min	Marginal	AEGL2_10min
4.0E-01	mg/m3	1hour	Negligible	TEEL1	8.7E+00	mg/m3	8hour	Marginal	AEGL2_8h*
Sulfur Dioxide				7446-09-5	9.3E+01	mg/m3	8hour	Critical	AEGL3_8h*
7.9E+01	mg/m3	1hour	Critical	AEGL3_1hr*	2.7E+02	mg/m3	10min	Critical	AEGL3_10min
2.0E+00	mg/m3	1hour	Marginal	AEGL2_1hr*	Sulfuric Acid D2				13813-19-9
5.2E-01	mg/m3	1hour	Negligible	AEGL1_1hr*	1.6E+02	mg/m3	1hour	Critical	TEEL3
5.2E-01	mg/m3	8hour	Negligible	AEGL1_8hr*	8.7E+00	mg/m3	1hour	Marginal	TEEL2
5.2E-01	mg/m3	14day	Negligible	AEGL1_8hr*	2.0E-01	mg/m3	1hour	Negligible	TEEL1
5.2E-01	mg/m3	1year	Negligible	AEGL1_8hr*	Sulfuric acid, thallium salt				10031-59-1
5.2E-01	mg/m3	10min	Negligible	AEGL1_10min	1.6E+01	mg/m3	1hour	Critical	TEEL3
2.0E+00	mg/m3	10min	Marginal	AEGL2_10min	2.0E+00	mg/m3	1hour	Marginal	TEEL2
2.0E+00	mg/m3	8hour	Marginal	AEGL2_8h*	3.2E-01	mg/m3	1hour	Negligible	TEEL1
2.5E+01	mg/m3	8hour	Critical	AEGL3_8h*	Sulfuric acid, zirconium(4+) salt (2:1), tetrahydrate				7446-31-3
7.9E+01	mg/m3	10min	Critical	AEGL3_10min	2.0E+02	mg/m3	1hour	Critical	TEEL3
Sulfur hexafluoride				2551-62-4	3.9E+01	mg/m3	1hour	Marginal	TEEL2
3.0E+04	mg/m3	1hour	Critical	TEEL3	3.9E+01	mg/m3	1hour	Negligible	TEEL1
3.0E+04	mg/m3	1hour	Marginal	TEEL2	Sulfurous acid				7782-99-2
1.5E+04	mg/m3	1hour	Negligible	TEEL1	1.5E+00	mg/m3	1hour	Critical	TEEL3
6.0E+03	mg/m3	8hour	Negligible	TLV_TWA	3.0E-01	mg/m3	1hour	Marginal	TEEL2
1.5E+03	mg/m3	14day	Negligible	TLV_TWA	4.0E-02	mg/m3	1hour	Negligible	TEEL1
1.5E+03	mg/m3	1year	Negligible	TLVadj					

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Sulfuryl chloride				7791-25-5	Tartaric acid				87-69-4
6.1E+01 mg/m3		1hour	Critical	AEGL3_1hr	4.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
2.0E+01 mg/m3		1hour	Marginal	AEGL2_1hr	7.5E+01 mg/m3	1hour	1hour	Marginal	TEEL2
1.7E+00 mg/m3		1hour	Negligible	ERPG1	1.3E+01 mg/m3	1hour	1hour	Negligible	TEEL1
Sulfuryl fluoride				2699-79-8	Tartaric acid, monopotassium salt				868-14-4
2.7E+02 mg/m3		1hour	Critical	AEGL3_1hr	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
8.8E+01 mg/m3		1hour	Marginal	AEGL2_1hr	5.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
4.0E+01 mg/m3		1hour	Negligible	TEEL1	5.0E+02 mg/m3	1hour	1hour	Negligible	TEEL1
2.1E+01 mg/m3		8hour	Negligible	TLV_TWA_irr	Tartaric acid, monosodium salt				526-94-3
7.1E+00 mg/m3		14day	Negligible	TLV_TWA_irr	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
7.1E+00 mg/m3		1year	Negligible	TLVirr	4.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
Sulprofos				35400-43-2	5.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
1.0E-01 mg/m3		8hour	Negligible	TLV_TWA	TCDD, 2,3,7,8-				1746-01-6
2.4E-02 mg/m3		14day	Negligible	TLV_TWA	7.5E-03 mg/m3	1hour	1hour	Critical	TEEL3
2.4E-02 mg/m3		1year	Negligible	TLVadj	7.5E-03 mg/m3	1hour	1hour	Marginal	TEEL2
Talc				14807-96-6	1.5E-03 mg/m3	1hour	1hour	Negligible	TEEL1
5.0E+02 mg/m3		1hour	Critical	TEEL3	1.1E-07 mg/m3	1year	1year	Negligible	HEAST
1.0E+01 mg/m3		1hour	Marginal	TEEL2	Tellurium and compounds				13494-80-9
2.0E+00 mg/m3		1hour	Negligible	TEEL1	2.5E+01 mg/m3	1hour	1hour	Critical	TEEL3
2.0E+00 mg/m3		8hour	Negligible	TLV_TWA	2.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
4.9E-01 mg/m3		14day	Negligible	TLV_TWA	3.0E-01 mg/m3	1hour	1hour	Negligible	TEEL1
4.9E-01 mg/m3		1year	Negligible	TLVadj	1.0E-01 mg/m3	8hour	8hour	Negligible	TLV_TWA
Tall oil (alkyd resin)				68333-62-0	2.4E-02 mg/m3	14day	14day	Negligible	TLV_TWA
2.5E+02 mg/m3		1hour	Critical	TEEL3	2.4E-02 mg/m3	1year	1year	Negligible	TLVadj
5.0E+01 mg/m3		1hour	Marginal	TEEL2	Tellurium hexafluoride				7783-80-4
3.0E+01 mg/m3		1hour	Negligible	TEEL1	5.2E-01 mg/m3	1hour	1hour	Critical	AEGL3_1hr
Tantalum				7440-25-7	1.8E-01 mg/m3	1hour	1hour	Marginal	AEGL2_1hr
5.0E+02 mg/m3		1hour	Critical	TEEL3	1.8E-01 mg/m3	1hour	1hour	Negligible	AEGL2_1hr*
2.0E+02 mg/m3		1hour	Marginal	TEEL2	1.8E-01 mg/m3	8hour	8hour	Negligible	AEGL2_1hr*
1.0E+01 mg/m3		1hour	Negligible	TEEL1	6.8E-02 mg/m3	14day	14day	Negligible	TLV_TWA_irr
Tantalum (V) fluoride				7783-71-3	6.8E-02 mg/m3	1year	1year	Negligible	TLVirr
5.0E+02 mg/m3		1hour	Critical	TEEL3	Tellurium oxide				7446-07-3
3.6E+01 mg/m3		1hour	Marginal	TEEL2	3.1E+01 mg/m3	1hour	1hour	Critical	TEEL3
2.2E+01 mg/m3		1hour	Negligible	TEEL1	5.0E+00 mg/m3	1hour	1hour	Marginal	TEEL2
Tantalum carbide				12070-06-3	3.8E-01 mg/m3	1hour	1hour	Negligible	TEEL1
5.0E+02 mg/m3		1hour	Critical	TEEL3	Tellurium tetrachloride				10026-07-0
5.0E+02 mg/m3		1hour	Marginal	TEEL2	5.3E+01 mg/m3	1hour	1hour	Critical	TEEL3
1.1E+01 mg/m3		1hour	Negligible	TEEL1	1.5E+01 mg/m3	1hour	1hour	Marginal	TEEL2
Tantalum oxide				1314-61-0	6.3E-01 mg/m3	1hour	1hour	Negligible	TEEL1
5.0E+02 mg/m3		1hour	Critical	TEEL3	Temephos				3383-96-8
6.0E+01 mg/m3		1hour	Marginal	TEEL2	1.0E+00 mg/m3	8hour	8hour	Negligible	TLV_TWA
1.2E+01 mg/m3		1hour	Negligible	TEEL1	2.4E-01 mg/m3	14day	14day	Negligible	TLV_TWA
Tantalum(V) ethoxide				6074-84-6	2.4E-01 mg/m3	1year	1year	Negligible	TLVadj
2.5E+02 mg/m3		1hour	Critical	TEEL3	Terbium				7440-27-9
5.0E+01 mg/m3		1hour	Marginal	TEEL2	1.5E+02 mg/m3	1hour	1hour	Critical	TEEL3
3.0E+01 mg/m3		1hour	Negligible	TEEL1	3.5E+01 mg/m3	1hour	1hour	Marginal	TEEL2
					5.0E+00 mg/m3	1hour	1hour	Negligible	TEEL1

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Terbium oxide (Tb₂O₃)				12036-41-8	Tert-Butyl isocyanate				1609-86-5
2.5E+02 mg/m ³		1hour	Critical	TEEL3	2.5E+01 mg/m ³	1hour	Critical	TEEL3	
5.0E+01 mg/m ³		1hour	Marginal	TEEL2	5.0E+00 mg/m ³	1hour	Marginal	TEEL2	
3.0E+01 mg/m ³		1hour	Negligible	TEEL1	7.5E-01 mg/m ³	1hour	Negligible	TEEL1	
Terbium(III,IV) oxide				12037-01-3	tert-Butyl Methyl-d₃ Ether				29366-08-3
2.5E+02 mg/m ³		1hour	Critical	TEEL3	2.0E+04 mg/m ³	1hour	Critical	TEEL3	
5.0E+01 mg/m ³		1hour	Marginal	TEEL2	2.0E+03 mg/m ³	1hour	Marginal	TEEL2	
3.0E+01 mg/m ³		1hour	Negligible	TEEL1	1.5E+02 mg/m ³	1hour	Negligible	TEEL1	
Terbufos				13071-79-9	Tert-pentane				463-82-1
1.0E+00 mg/m ³		1hour	Critical	TEEL3	4.0E+03 mg/m ³	1hour	Critical	TEEL3	
1.0E+00 mg/m ³		1hour	Marginal	TEEL2	1.8E+03 mg/m ³	1hour	Marginal	TLV_TWA_irr*	
3.0E-02 mg/m ³		1hour	Negligible	TEEL1	1.8E+03 mg/m ³	1hour	Negligible	TLV_TWA_irr*	
1.0E-02 mg/m ³		8hour	Negligible	TLV_TWA	1.8E+03 mg/m ³	8hour	Negligible	TLV_TWA_irr	
2.4E-03 mg/m ³		14day	Negligible	TLV_TWA	6.1E+02 mg/m ³	14day	Negligible	TLV_TWA_irr	
2.4E-03 mg/m ³		1year	Negligible	TLVadj	6.1E+02 mg/m ³	1year	Negligible	TLVirr	
Terephthaloyl chloride				100-20-9	tert-Pentyl alcohol				75-85-4
5.0E+02 mg/m ³		1hour	Critical	TEEL3	4.0E+02 mg/m ³	1hour	Critical	TEEL3	
2.0E+01 mg/m ³		1hour	Marginal	TEEL2	4.0E+02 mg/m ³	1hour	Marginal	TEEL2	
2.5E+00 mg/m ³		1hour	Negligible	TEEL1	4.0E+02 mg/m ³	1hour	Negligible	TEEL1	
Terphenyl, p-				92-94-4	Tetraamine palladium (II) nitrate				13601-08-6
5.0E+02 mg/m ³		1hour	Critical	TEEL3	1.5E+02 mg/m ³	1hour	Critical	TEEL3	
9.0E+00 mg/m ³		1hour	Marginal	TEEL2	3.5E+01 mg/m ³	1hour	Marginal	TEEL2	
1.3E+00 mg/m ³		1hour	Negligible	TEEL1	5.0E+00 mg/m ³	1hour	Negligible	TEEL1	
Terphenyls				26140-60-3	Tetrabutylammonium bromide				1643-19-2
5.0E+02 mg/m ³		1hour	Critical	TEEL3	2.5E+02 mg/m ³	1hour	Critical	TEEL3	
9.0E+00 mg/m ³		1hour	Marginal	TEEL2	5.0E+01 mg/m ³	1hour	Marginal	TEEL2	
1.3E+00 mg/m ³		1hour	Negligible	TEEL1	3.0E+01 mg/m ³	1hour	Negligible	TEEL1	
Tert butyllithium				594-19-4	Tetrabutylammonium dihydrogen phosphate				5574-97-0
1.5E+02 mg/m ³		1hour	Critical	TEEL3	2.5E+02 mg/m ³	1hour	Critical	TEEL3	
3.5E+01 mg/m ³		1hour	Marginal	TEEL2	5.0E+01 mg/m ³	1hour	Marginal	TEEL2	
5.0E+00 mg/m ³		1hour	Negligible	TEEL1	3.0E+01 mg/m ³	1hour	Negligible	TEEL1	
Tert-amyl methyl ether				994-05-8	Tetrabutylammonium fluoride				429-41-4
6.0E+02 mg/m ³		1hour	Critical	TEEL3	5.0E+02 mg/m ³	1hour	Critical	TEEL3	
6.0E+02 mg/m ³		1hour	Marginal	TEEL2	1.7E+02 mg/m ³	1hour	Marginal	TEEL2	
6.0E+02 mg/m ³		1hour	Negligible	TEEL1	1.0E+02 mg/m ³	1hour	Negligible	TEEL1	
8.4E+01 mg/m ³		8hour	Negligible	TLV_TWA	Tetrabutylammonium hydroxide				2052-49-5
2.0E+01 mg/m ³		14day	Negligible	TLV_TWA	6.0E+00 mg/m ³	1hour	Critical	TEEL3	
2.0E+01 mg/m ³		1year	Negligible	TLVadj	1.3E+00 mg/m ³	1hour	Marginal	TEEL2	
Tert-butyl alcohol				75-65-0	Tetrabutylammonium nitrate				1941-27-1
5.0E+03 mg/m ³		1hour	Critical	TEEL3	7.5E+00 mg/m ³	1hour	Critical	TEEL3	
5.0E+03 mg/m ³		1hour	Marginal	TEEL2	1.5E+00 mg/m ³	1hour	Marginal	TEEL2	
4.0E+02 mg/m ³		1hour	Negligible	TEEL1	2.5E-01 mg/m ³	1hour	Negligible	TEEL1	
3.0E+02 mg/m ³		8hour	Negligible	TLV_TWA_irr	Tetrachlorobenzene, 1,2,3,4-				634-66-2
1.0E+02 mg/m ³		14day	Negligible	TLV_TWA_irr	5.0E+02 mg/m ³	1hour	Critical	TEEL3	
1.0E+02 mg/m ³		1year	Negligible	TLVirr	2.5E+02 mg/m ³	1hour	Marginal	TEEL2	
					3.5E+01 mg/m ³	1hour	Negligible	TEEL1	

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Tetrachlorobenzene, 1,2,4,5-				95-94-3	Tetradecane				629-59-4
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.0E+04	mg/m3	1hour	Critical	TEEL3
1.3E+02	mg/m3	1hour	Marginal	TEEL2	2.5E+00	mg/m3	1hour	Marginal	TEEL2
1.5E+01	mg/m3	1hour	Negligible	TEEL1	4.0E-01	mg/m3	1hour	Negligible	TEEL1
Tetrachloroethane				25322-20-7	Tetradecanoic acid				544-63-8
3.0E+03	mg/m3	1hour	Critical	TEEL3	3.5E+01	mg/m3	1hour	Critical	TEEL3
2.0E+02	mg/m3	1hour	Marginal	TEEL2	7.5E+00	mg/m3	1hour	Marginal	TEEL2
3.5E+01	mg/m3	1hour	Negligible	TEEL1	1.0E+00	mg/m3	1hour	Negligible	TEEL1
Tetrachloroethane, 1,1,1,2-				630-20-6	Tetradecyltrimethylammonium bromide				1119-97-7
1.5E+03	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
4.0E+02	mg/m3	1hour	Marginal	TEEL2	3.5E+02	mg/m3	1hour	Marginal	TEEL2
6.0E+01	mg/m3	1hour	Negligible	TEEL1	5.0E+01	mg/m3	1hour	Negligible	TEEL1
6.5E-01	mg/m3	1year	Negligible	IRIS	Tetraethoxysilane				78-10-4
Tetrachloroethane, 1,1,1,2,2-				79-34-5	2.6E+03	mg/m3	1hour	Critical	ERPG3
6.0E+02	mg/m3	1hour	Critical	TEEL3	8.5E+02	mg/m3	1hour	Marginal	ERPG2
2.0E+02	mg/m3	1hour	Marginal	TEEL2	2.1E+02	mg/m3	1hour	Negligible	ERPG1
2.0E+01	mg/m3	1hour	Negligible	TEEL1	8.5E+01	mg/m3	8hour	Negligible	TLV_TWA_irr
6.9E+00	mg/m3	8hour	Negligible	TLV_TWA	2.9E+01	mg/m3	14day	Negligible	TLV_TWA_irr
1.7E+00	mg/m3	14day	Negligible	TLV_TWA	2.9E+01	mg/m3	1year	Negligible	TLVirr
8.3E-02	mg/m3	1year	Negligible	IRIS	Tetraethyl ammonium bromide				71-91-0
Tetrachlorohexafluorobutane, 2,2,3,3-				375-34-8	4.0E+01	mg/m3	1hour	Critical	TEEL3
2.5E+02	mg/m3	1hour	Critical	TEEL3	3.0E+01	mg/m3	1hour	Marginal	TEEL2
5.0E+01	mg/m3	1hour	Marginal	TEEL2	4.0E+00	mg/m3	1hour	Negligible	TEEL1
7.5E+00	mg/m3	1hour	Negligible	TEEL1	Tetraethyl dithiopyrophosphate				3689-24-5
Tetrachloronaphthalene				1335-88-2	1.0E+01	mg/m3	1hour	Critical	TEEL3
2.0E+00	mg/m3	8hour	Negligible	TLV_TWA	3.5E+00	mg/m3	1hour	Marginal	TEEL2
4.9E-01	mg/m3	14day	Negligible	TLV_TWA	5.0E-01	mg/m3	1hour	Negligible	TEEL1
4.9E-01	mg/m3	1year	Negligible	TLVadj	1.0E-01	mg/m3	8hour	Negligible	TLV_TWA
Tetrachlorosilane				10026-04-7	2.4E-02	mg/m3	14day	Negligible	TLV_TWA
1.7E+02	mg/m3	1hour	Critical	TEEL3	2.4E-02	mg/m3	1year	Negligible	TLVadj
3.8E+01	mg/m3	1hour	Marginal	TEEL2	Tetraethyl lead				78-00-2
3.1E+00	mg/m3	1hour	Negligible	TEEL1	6.2E+01	mg/m3	1hour	Critical	TEEL3
Tetracyanoquinodimethane, 7,7,8,8,-				1518-16-7	4.0E+00	mg/m3	1hour	Marginal	TEEL2
5.0E+01	mg/m3	1hour	Critical	TEEL3	4.7E-01	mg/m3	1hour	Negligible	TEEL1
1.0E+01	mg/m3	1hour	Marginal	TEEL2	1.0E-01	mg/m3	8hour	Negligible	TLV_TWA
1.3E+00	mg/m3	1hour	Negligible	TEEL1	2.4E-02	mg/m3	14day	Negligible	TLV_TWA
Tetracycline hydrochloride				64-75-5	2.4E-02	mg/m3	1year	Negligible	TLVadj
5.0E+02	mg/m3	1hour	Critical	TEEL3	Tetraethyl pyrophosphate				107-49-3
1.5E+01	mg/m3	1hour	Marginal	TEEL2	5.0E+00	mg/m3	1hour	Critical	TEEL3
2.5E+00	mg/m3	1hour	Negligible	TEEL1	1.0E+00	mg/m3	1hour	Marginal	TEEL2
Tetradecafluorohexane				355-42-0	1.5E-01	mg/m3	1hour	Negligible	TEEL1
3.5E+05	mg/m3	1hour	Critical	TEEL3	1.0E-02	mg/m3	8hour	Negligible	TLV_TWA
6.0E+04	mg/m3	1hour	Marginal	TEEL2	2.4E-03	mg/m3	14day	Negligible	TLV_TWA
7.5E+03	mg/m3	1hour	Negligible	TEEL1	2.4E-03	mg/m3	1year	Negligible	TLVadj

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Tetraethyl tin				597-64-8	Tetrafluoroethylene				116-14-3
5.0E+01 mg/m ³		1hour	Critical	TEEL3	1.4E+04 mg/m ³	1hour	Critical		AEGL3_1hr
7.0E+00 mg/m ³		1hour	Marginal	TEEL2	1.3E+04 mg/m ³	1hour	Critical		AEGL3_1hr
4.0E-01 mg/m ³		1hour	Negligible	TEEL1	2.3E+03 mg/m ³	1hour	Marginal		AEGL2_1hr
Tetraethylammonium chloride				56-34-8	Tetrafluoroethane				
5.0E+02 mg/m ³		1hour	Critical	TEEL3	2.2E+03 mg/m ³	1hour	Marginal		AEGL2_1hr
6.0E+00 mg/m ³		1hour	Marginal	TEEL2	9.0E+02 mg/m ³	1hour	Negligible		AEGL1_1hr
7.5E-01 mg/m ³		1hour	Negligible	TEEL1	9.0E+02 mg/m ³	1hour	Negligible		AEGL1_1hr
Tetraethylammonium hydroxide				77-98-5	Tetrafluoroethane				
3.5E+01 mg/m ³		1hour	Critical	TEEL3	3.7E+02 mg/m ³	8hour	Negligible		AEGL1_8hr
7.5E+00 mg/m ³		1hour	Marginal	TEEL2	3.7E+02 mg/m ³	8hour	Negligible		AEGL1_8hr
1.0E+00 mg/m ³		1hour	Negligible	TEEL1	2.0E+00 mg/m ³	14day	Negligible		TLV_TWA
Tetraethylammoniumiodide				68-05-3	Tetrafluoroethane				
4.3E+01 mg/m ³		1hour	Critical	TEEL3	2.0E+00 mg/m ³	14day	Negligible		TLV_TWA
2.0E+00 mg/m ³		1hour	Marginal	TEEL2	2.0E+00 mg/m ³	1year	Negligible		TLVadj
2.0E+00 mg/m ³		1hour	Negligible	TEEL1	2.0E+00 mg/m ³	1year	Negligible		TLVadj
Tetraethylene glycol				112-60-7	Tetrafluorohydrazine				10036-47-2
5.0E+02 mg/m ³		1hour	Critical	TEEL3	4.0E+02 mg/m ³	1hour	Critical		TEEL3
5.0E+02 mg/m ³		1hour	Marginal	TEEL2	7.5E+01 mg/m ³	1hour	Marginal		TEEL2
3.5E+02 mg/m ³		1hour	Negligible	TEEL1	1.0E+01 mg/m ³	1hour	Negligible		TEEL1
Tetraethylene glycol diacrylate				17831-71-9	Tetrahydrofuran				109-99-9
3.5E+02 mg/m ³		1hour	Critical	TEEL3	1.5E+04 mg/m ³	1hour	Critical		ERPG3
2.5E+01 mg/m ³		1hour	Marginal	TEEL2	1.5E+03 mg/m ³	1hour	Marginal		ERPG2
3.5E+00 mg/m ³		1hour	Negligible	TEEL1	2.9E+02 mg/m ³	1hour	Negligible		ERPG1
Tetraethylenepentamine				112-57-2	Tetrahydrofuran-d8				1693-74-9
5.0E+02 mg/m ³		1hour	Critical	TEEL3	1.5E+04 mg/m ³	1hour	Critical		TEEL3
3.5E+02 mg/m ³		1hour	Marginal	TEEL2	1.5E+03 mg/m ³	1hour	Marginal		TEEL2
5.0E+01 mg/m ³		1hour	Negligible	TEEL1	3.0E+02 mg/m ³	1hour	Negligible		TEEL1
Tetrafluoroethylene				116-14-3	Tetrahydrophthalic anhydride				85-43-8
1.4E+04 mg/m ³		1hour	Critical	AEGL3_1hr	5.0E+02 mg/m ³	1hour	Critical		TEEL3
1.3E+04 mg/m ³		1hour	Critical	AEGL3_1hr	1.0E+00 mg/m ³	1hour	Marginal		TEEL2
2.3E+03 mg/m ³		1hour	Marginal	AEGL2_1hr	1.5E-01 mg/m ³	1hour	Negligible		TEEL1
2.2E+03 mg/m ³		1hour	Marginal	AEGL2_1hr	Tetrahydrothiophene-1,1-dioxide				126-33-0
9.0E+02 mg/m ³		1hour	Negligible	AEGL1_1hr	2.0E+02 mg/m ³	1hour	Critical		TEEL3
9.0E+02 mg/m ³		1hour	Negligible	AEGL1_1hr	2.0E+02 mg/m ³	1hour	Marginal		TEEL2
3.7E+02 mg/m ³		8hour	Negligible	AEGL1_8hr	2.0E+02 mg/m ³	1hour	Negligible		TEEL1
3.7E+02 mg/m ³		8hour	Negligible	AEGL1_8hr	Tetrakis (hydroxymethyl) phosphonium chloride				124-64-1
2.0E+00 mg/m ³		14day	Negligible	TLV_TWA	2.0E+00 mg/m ³	8hour	Negligible		TLV_TWA
2.0E+00 mg/m ³		14day	Negligible	TLV_TWA	4.9E-01 mg/m ³	14day	Negligible		TLV_TWA
2.0E+00 mg/m ³		1year	Negligible	TLVadj	4.9E-01 mg/m ³	1year	Negligible		TLVadj
2.0E+00 mg/m ³		1year	Negligible	TLVadj	Tetrakis (hydroxymethyl) phosphonium sulfate				55566-30-8
					2.0E+00 mg/m ³	8hour	Negligible		TLV_TWA
					4.9E-01 mg/m ³	14day	Negligible		TLV_TWA
					4.9E-01 mg/m ³	1year	Negligible		TLVadj

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Tetralin					119-64-2				
1.0E+02	mg/m3	1hour	Critical	TEEL3	Tetramethylammonium bromide				
2.5E+01	mg/m3	1hour	Marginal	TEEL2	2.0E+01	mg/m3	1hour	Critical	TEEL3
3.5E+00	mg/m3	1hour	Negligible	TEEL1	4.0E+00	mg/m3	1hour	Marginal	TEEL2
Tetramethoxysilane					681-84-5				
8.7E+00	mg/m3	1hour	Critical	AEGL3_1hr	Tetramethylammonium hydroxide pentahydrate				
5.7E+00	mg/m3	1hour	Marginal	AEGL2_1hr	4.0E+00	mg/m3	1hour	Critical	TEEL3
5.7E+00	mg/m3	1hour	Negligible	AEGL2_1hr*	4.0E+00	mg/m3	1hour	Marginal	TEEL2
5.7E+00	mg/m3	8hour	Negligible	AEGL2_1hr*	1.5E+00	mg/m3	1hour	Negligible	TEEL1
1.5E+00	mg/m3	14day	Negligible	TLV_TWA	Tetramethylammonium silicate				
1.5E+00	mg/m3	1year	Negligible	TLVadj	2.5E+02	mg/m3	1hour	Critical	TEEL3
Tetramethyl ammonium hydroxide					75-59-2				
2.0E+00	mg/m3	1hour	Critical	TEEL3	5.0E+01	mg/m3	1hour	Marginal	TEEL2
2.0E+00	mg/m3	1hour	Marginal	TEEL2	3.0E+01	mg/m3	1hour	Negligible	TEEL1
7.5E-01	mg/m3	1hour	Negligible	TEEL1	Tetranitromethane				
Tetramethyl ammonium, tetrahydroborate(1-)					16883-45-7				
3.5E+01	mg/m3	1hour	Critical	TEEL3	1.4E+01	mg/m3	1hour	Critical	AEGL3_1hr
6.0E+00	mg/m3	1hour	Marginal	TEEL2	4.2E+00	mg/m3	1hour	Marginal	AEGL2_1hr
1.0E+00	mg/m3	1hour	Negligible	TEEL1	4.2E+00	mg/m3	1hour	Negligible	AEGL2_1hr*
Tetramethyl butanediamine					97-84-7				
2.0E+02	mg/m3	1hour	Critical	TEEL3	4.0E-02	mg/m3	8hour	Negligible	TLV_TWA_irr
4.0E+01	mg/m3	1hour	Marginal	TEEL2	1.4E-02	mg/m3	14day	Negligible	TLV_TWA_irr
6.0E+00	mg/m3	1hour	Negligible	TEEL1	1.4E-02	mg/m3	1year	Negligible	TLVirr
Tetramethyl ethylene diamine					110-18-9				
6.0E+02	mg/m3	1hour	Critical	TEEL3	Tetraphenylarsonium chloride				
6.0E+02	mg/m3	1hour	Marginal	TEEL2	2.5E+01	mg/m3	1hour	Critical	TEEL3
1.5E+02	mg/m3	1hour	Negligible	TEEL1	1.4E+01	mg/m3	1hour	Marginal	TEEL2
Tetramethyl lead					75-74-1				
5.2E+01	mg/m3	1hour	Critical	TEEL3	8.4E+00	mg/m3	1hour	Negligible	TEEL1
4.0E+00	mg/m3	1hour	Marginal	TEEL2	Tetrapotassium ethylenediaminetetraacetate				
5.8E-01	mg/m3	1hour	Negligible	TEEL1	4.0E+02	mg/m3	1hour	Critical	TEEL3
1.5E-01	mg/m3	8hour	Negligible	TLV_TWA	7.5E+01	mg/m3	1hour	Marginal	TEEL2
3.7E-02	mg/m3	14day	Negligible	TLV_TWA	1.5E+01	mg/m3	1hour	Negligible	TEEL1
3.7E-02	mg/m3	1year	Negligible	TLVadj	Tetrapropoxysilane				
Tetramethyl silane					75-76-3				
3.5E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
7.5E+01	mg/m3	1hour	Marginal	TEEL2	1.5E+02	mg/m3	1hour	Marginal	TEEL2
5.0E+01	mg/m3	1hour	Negligible	TEEL1	2.5E+01	mg/m3	1hour	Negligible	TEEL1
Tetramethyl succinonitrile					3333-52-6				
2.8E+00	mg/m3	8hour	Negligible	TLV_TWA	Tetrapropylammonium hydroxide				
6.8E-01	mg/m3	14day	Negligible	TLV_TWA	1.5E+01	mg/m3	1hour	Critical	TEEL3
6.8E-01	mg/m3	1year	Negligible	TLVadj	3.5E+00	mg/m3	1hour	Marginal	TEEL2
Tetramethyl-5-decyne-4,7-diol, 2,4,7,9-					126-86-3				
2.5E+02	mg/m3	1hour	Critical	TEEL3	5.0E-01	mg/m3	1hour	Negligible	TEEL1
5.0E+01	mg/m3	1hour	Marginal	TEEL2	Tetrapropylorthotitanate				
3.0E+01	mg/m3	1hour	Negligible	TEEL1	2.5E+02	mg/m3	1hour	Critical	TEEL3
Tetrasodium ethylenediaminetetraacetate					64-02-8				
5.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+01	mg/m3	1hour	Marginal	TEEL2
5.0E+02	mg/m3	1hour	Marginal	TEEL2	3.0E+01	mg/m3	1hour	Negligible	TEEL1
1.3E+02	mg/m3	1hour	Negligible	TEEL1	Tetrasodium ethylenediaminetetraacetate				

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Tetrasodium pyrophosphate				7722-88-5	Thenoyltrifluoroacetone				326-91-0
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.3E+02	mg/m3	1hour	Critical	TEEL3
2.5E+01	mg/m3	1hour	Marginal	TEEL2	2.5E+01	mg/m3	1hour	Marginal	TEEL2
1.5E+01	mg/m3	1hour	Negligible	TEEL1	3.5E+00	mg/m3	1hour	Negligible	TEEL1
Thallic oxide				1314-32-5	Thioacetamide				62-55-5
2.0E+01	mg/m3	1hour	Critical	TEEL3	1.3E+02	mg/m3	1hour	Critical	TEEL3
2.0E+00	mg/m3	1hour	Marginal	TEEL2	1.3E+02	mg/m3	1hour	Marginal	TEEL2
1.3E+00	mg/m3	1hour	Negligible	TEEL1	1.5E+01	mg/m3	1hour	Negligible	TEEL1
Thallium				7440-28-0	Thioacetic acid				507-09-5
3.0E+00	mg/m3	1hour	Critical	TEEL3	3.0E+01	mg/m3	1hour	Critical	TEEL3
3.0E+00	mg/m3	1hour	Marginal	TEEL2	4.0E-01	mg/m3	1hour	Marginal	TEEL2
5.0E-01	mg/m3	1hour	Negligible	TEEL1	6.0E-02	mg/m3	1hour	Negligible	TEEL1
Thallium (I) acetate				563-68-8	Thiobis(4-chloro-6-methylphenol), 2,2'-				4418-66-0
1.9E+01	mg/m3	1hour	Critical	TEEL3	1.3E+00	mg/m3	1hour	Critical	TEEL3
2.5E+00	mg/m3	1hour	Marginal	TEEL2	1.3E+00	mg/m3	1hour	Marginal	TEEL2
3.9E-01	mg/m3	1hour	Negligible	TEEL1	7.5E-01	mg/m3	1hour	Negligible	TEEL1
Thallium (I) carbonate				6533-73-9	Thiocarbazine				2231-57-4
1.7E+01	mg/m3	1hour	Critical	TEEL3	1.0E+02	mg/m3	1hour	Critical	TEEL3
2.0E+00	mg/m3	1hour	Marginal	TEEL2	1.0E+02	mg/m3	1hour	Marginal	TEEL2
3.4E-01	mg/m3	1hour	Negligible	TEEL1	6.0E+01	mg/m3	1hour	Negligible	TEEL1
Thallium (I) chloride				7791-12-0	Thiodiglycol				111-48-8
1.8E+01	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
2.0E+00	mg/m3	1hour	Marginal	TEEL2	5.0E+02	mg/m3	1hour	Marginal	TEEL2
3.5E-01	mg/m3	1hour	Negligible	TEEL1	7.5E+01	mg/m3	1hour	Negligible	TEEL1
Thallium (I) nitrate				10102-45-1	Thiofanox				39196-18-4
2.0E+01	mg/m3	1hour	Critical	TEEL3	3.0E+01	mg/m3	1hour	Critical	TEEL3
2.0E+01	mg/m3	1hour	Marginal	TEEL2	8.5E+00	mg/m3	1hour	Marginal	TEEL2
3.9E-01	mg/m3	1hour	Negligible	TEEL1	5.0E+00	mg/m3	1hour	Negligible	TEEL1
Thallium (I) sulfate				7446-18-6	Thioglycolic acid				68-11-1
1.9E+01	mg/m3	1hour	Critical	TEEL3	2.0E+01	mg/m3	1hour	Critical	TEEL3
2.0E+00	mg/m3	1hour	Marginal	TEEL2	4.0E+00	mg/m3	1hour	Marginal	TEEL2
3.7E-01	mg/m3	1hour	Negligible	TEEL1	3.8E+00	mg/m3	1hour	Negligible	TLV_TWA_irr*
Thallium (III) perchlorate hexahydrate				15596-83-5	3.8E+00 mg/m3 8hour Negligible TLV_TWA_irr				
4.5E+01	mg/m3	1hour	Critical	TEEL3	1.3E+00	mg/m3	14day	Negligible	TLV_TWA_irr
7.5E+00	mg/m3	1hour	Marginal	TEEL2	1.3E+00	mg/m3	1year	Negligible	TLVirr
1.3E+00	mg/m3	1hour	Negligible	TEEL1	Thionazin				297-97-2
Thallium oxide				1314-12-1	3.5E+00 mg/m3 1hour Critical TEEL3				
1.5E+01	mg/m3	1hour	Critical	TEEL3	3.5E+00 mg/m3 1hour Marginal TEEL2				
5.2E-01	mg/m3	1hour	Marginal	TEEL2	2.0E+00 mg/m3 1hour Negligible TEEL1				
3.1E-01	mg/m3	1hour	Negligible	TEEL1	Thionyl chloride				7719-09-7
Thallos malonate				2757-18-8	6.8E+01 mg/m3 1hour Critical AEGL3_1hr				
7.5E+00	mg/m3	1hour	Critical	TEEL3	1.2E+01 mg/m3 1hour Marginal AEGL2_1hr				
2.0E+00	mg/m3	1hour	Marginal	TEEL2	9.7E-01 mg/m3 1hour Negligible ERPG1				
1.3E+00	mg/m3	1hour	Negligible	TEEL1	Thiophosphoryl chloride				3982-91-0
					6.0E+01 mg/m3 1hour Critical TEEL3				
					2.5E+01 mg/m3 1hour Marginal TEEL2				
					4.0E+00 mg/m3 1hour Negligible TEEL1				

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Thiosemicarbazide				79-19-6	Thymol blue				76-61-9
9.2E+00	mg/m3	1hour	Critical	TEEL3	2.5E+02	mg/m3	1hour	Critical	TEEL3
9.2E+00	mg/m3	1hour	Marginal	TEEL2	5.0E+01	mg/m3	1hour	Marginal	TEEL2
5.0E+00	mg/m3	1hour	Negligible	TEEL1	3.0E+01	mg/m3	1hour	Negligible	TEEL1
Thiourea				62-56-6	Thyodene				9005-84-9
1.3E+02	mg/m3	1hour	Critical	TEEL3	2.5E+02	mg/m3	1hour	Critical	TEEL3
2.5E+01	mg/m3	1hour	Marginal	TEEL2	5.0E+01	mg/m3	1hour	Marginal	TEEL2
4.0E+00	mg/m3	1hour	Negligible	TEEL1	3.0E+01	mg/m3	1hour	Negligible	TEEL1
Thiram				137-26-8	Tin (II) chloride dihydrate				10025-69-1
1.0E+02	mg/m3	1hour	Critical	TEEL3	1.9E+02	mg/m3	1hour	Critical	TEEL3
7.5E+01	mg/m3	1hour	Marginal	TEEL2	2.0E+01	mg/m3	1hour	Marginal	TEEL2
1.0E+01	mg/m3	1hour	Negligible	TEEL1	1.1E+01	mg/m3	1hour	Negligible	TEEL1
5.0E-02	mg/m3	8hour	Negligible	TLV_TWA_irr	Tin (II) sulfate				7488-55-3
1.7E-02	mg/m3	14day	Negligible	TLV_TWA_irr	1.8E+02	mg/m3	1hour	Critical	TEEL3
1.7E-02	mg/m3	1year	Negligible	TLVirr	1.8E+01	mg/m3	1hour	Marginal	TEEL2
Thorium				7440-29-1	1.1E+01	mg/m3	1hour	Negligible	TEEL1
3.5E+01	mg/m3	1hour	Critical	TEEL3	Tin fluoroborate				13814-97-6
6.0E+00	mg/m3	1hour	Marginal	TEEL2	2.5E+02	mg/m3	1hour	Critical	TEEL3
1.0E+00	mg/m3	1hour	Negligible	TEEL1	2.5E+01	mg/m3	1hour	Marginal	TEEL2
Thorium (IV) nitrate				13823-29-5	1.5E+01	mg/m3	1hour	Negligible	TEEL1
2.5E+01	mg/m3	1hour	Critical	TEEL3	Tin organic compounds				Sn organ cmpd
1.5E+01	mg/m3	1hour	Marginal	TEEL2	1.0E-01	mg/m3	8hour	Negligible	TLV_TWA_irr
2.0E+00	mg/m3	1hour	Negligible	TEEL1	3.4E-02	mg/m3	14day	Negligible	TLV_TWA_irr
Thorium oxalate				2040-52-0	3.4E-02	mg/m3	1year	Negligible	TLVirr
5.0E+02	mg/m3	1hour	Critical	TEEL3	Tin oxide				18282-10-5
2.1E+02	mg/m3	1hour	Marginal	TEEL2	5.0E+02	mg/m3	1hour	Critical	TEEL3
1.3E+02	mg/m3	1hour	Negligible	TEEL1	1.3E+01	mg/m3	1hour	Marginal	TEEL2
Thorium oxide				1314-20-1	7.6E+00	mg/m3	1hour	Negligible	TEEL1
5.0E+02	mg/m3	1hour	Critical	TEEL3	2.0E+00	mg/m3	8hour	Negligible	TLV_TWA
5.0E+02	mg/m3	1hour	Marginal	TEEL2	4.9E-01	mg/m3	14day	Negligible	TLV_TWA
7.5E+01	mg/m3	1hour	Negligible	TEEL1	4.9E-01	mg/m3	1year	Negligible	TLVadj
Thorium perchlorate				16045-17-3	Tin(II) oxide				1332-29-2
5.0E+02	mg/m3	1hour	Critical	TEEL3	6.0E+01	mg/m3	1hour	Critical	TEEL3
1.6E+02	mg/m3	1hour	Marginal	TEEL2	1.3E+01	mg/m3	1hour	Marginal	TEEL2
9.4E+01	mg/m3	1hour	Negligible	TEEL1	7.6E+00	mg/m3	1hour	Negligible	TEEL1
Thulium				7440-30-4	Tin(IV) isopropoxide				1184-61-8
2.5E+02	mg/m3	1hour	Critical	TEEL3	8.7E+01	mg/m3	1hour	Critical	TEEL3
5.0E+01	mg/m3	1hour	Marginal	TEEL2	1.5E+01	mg/m3	1hour	Marginal	TEEL2
3.0E+01	mg/m3	1hour	Negligible	TEEL1	7.0E-01	mg/m3	1hour	Negligible	TEEL1
Thulium oxide				12036-44-1	Tin, inorganic				7440-31-5
3.0E+02	mg/m3	1hour	Critical	TEEL3	1.0E+02	mg/m3	1hour	Critical	TEEL3
6.0E+01	mg/m3	1hour	Marginal	TEEL2	1.0E+02	mg/m3	1hour	Marginal	TEEL2
3.4E+01	mg/m3	1hour	Negligible	TEEL1	6.0E+00	mg/m3	1hour	Negligible	TEEL1
Thulium trichloride				13537-18-3	2.0E+00	mg/m3	8hour	Negligible	TLV_TWA
5.0E+02	mg/m3	1hour	Critical	TEEL3	4.9E-01	mg/m3	14day	Negligible	TLV_TWA
3.5E+02	mg/m3	1hour	Marginal	TEEL2	4.9E-01	mg/m3	1year	Negligible	TLVadj
5.0E+01	mg/m3	1hour	Negligible	TEEL1					

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Tirpate				26419-73-8	Titanium trichloride				7705-07-9
1.0E+00	mg/m3	1hour	Critical	TEEL3	5.0E+01	mg/m3	1hour	Critical	TEEL3
1.0E+00	mg/m3	1hour	Marginal	TEEL2	1.0E+01	mg/m3	1hour	Marginal	TEEL2
6.0E-01	mg/m3	1hour	Negligible	TEEL1	1.5E+00	mg/m3	1hour	Negligible	TEEL1
Titanium				7440-32-6	t-Octyl mercaptan				141-59-3
6.0E+01	mg/m3	1hour	Critical	TEEL3	1.1E+01	mg/m3	1hour	Critical	AEGL3_1hr
1.3E+01	mg/m3	1hour	Marginal	TEEL2	3.6E+00	mg/m3	1hour	Marginal	AEGL2_1hr
2.0E+00	mg/m3	1hour	Negligible	TEEL1	Toluene				108-88-3
Titanium (II) oxide				12137-20-1	1.7E+04	mg/m3	1hour	Critical	AEGL3_1hr
2.5E+02	mg/m3	1hour	Critical	TEEL3	4.5E+03	mg/m3	1hour	Marginal	AEGL2_1hr
5.0E+01	mg/m3	1hour	Marginal	TEEL2	7.5E+02	mg/m3	1hour	Negligible	AEGL1_1hr
3.0E+01	mg/m3	1hour	Negligible	TEEL1	7.5E+02	mg/m3	8hour	Negligible	AEGL1_8hr
Titanium (III) fluoride				7783-63-3	7.5E+01	mg/m3	14day	Negligible	CEGL
4.6E+02	mg/m3	1hour	Critical	TEEL3	3.4E+00	mg/m3	1year	Negligible	PPRTV_sub
7.5E+01	mg/m3	1hour	Marginal	TEEL2	Toluene 2,4-diisocyanate				584-84-9
1.3E+01	mg/m3	1hour	Negligible	TEEL1	3.6E+00	mg/m3	1hour	Critical	AEGL3_1hr
Titanium boride				12045-63-5	5.9E-01	mg/m3	1hour	Marginal	AEGL2_1hr
1.5E+02	mg/m3	1hour	Critical	TEEL3	1.4E-01	mg/m3	1hour	Negligible	AEGL1_1hr
3.2E+01	mg/m3	1hour	Marginal	TEEL2	7.1E-02	mg/m3	8hour	Negligible	AEGL1_8hr
1.9E+01	mg/m3	1hour	Negligible	TEEL1	Toluene diisocyanate mixture, 2,4-/2,6-				26471-62-5
Titanium carbide				12070-08-5	1.3E+01	mg/m3	1hour	Critical	TEEL3
2.5E+02	mg/m3	1hour	Critical	TEEL3	1.3E+01	mg/m3	1hour	Marginal	TEEL2
5.0E+01	mg/m3	1hour	Marginal	TEEL2	5.0E+00	mg/m3	1hour	Negligible	TEEL1
3.0E+01	mg/m3	1hour	Negligible	TEEL1	4.8E-05	mg/m3	1year	Negligible	IRIS_chr
Titanium dioxide				13463-67-7	Toluene-2,4-diamine				95-80-7
5.0E+02	mg/m3	1hour	Critical	TEEL3	2.5E+02	mg/m3	1hour	Critical	TEEL3
5.0E+01	mg/m3	1hour	Marginal	TEEL2	6.0E+01	mg/m3	1hour	Marginal	TEEL2
3.0E+01	mg/m3	1hour	Negligible	TEEL1	7.5E+00	mg/m3	1hour	Negligible	TEEL1
1.0E+01	mg/m3	8hour	Negligible	TLV_TWA	Toluene-2,6-diamine				823-40-5
2.4E+00	mg/m3	14day	Negligible	TLV_TWA	1.5E+02	mg/m3	1hour	Critical	TEEL3
2.4E+00	mg/m3	1year	Negligible	TLVadj	3.0E+01	mg/m3	1hour	Marginal	TEEL2
Titanium hydride				7704-98-5	4.0E+00	mg/m3	1hour	Negligible	TEEL1
1.5E+02	mg/m3	1hour	Critical	TEEL3	Toluene-d8				2037-26-5
3.5E+01	mg/m3	1hour	Marginal	TEEL2	1.5E+04	mg/m3	1hour	Critical	TEEL3
5.0E+00	mg/m3	1hour	Negligible	TEEL1	5.0E+03	mg/m3	1hour	Marginal	TEEL2
Titanium isopropoxide				546-68-9	7.5E+02	mg/m3	1hour	Negligible	TEEL1
5.0E+02	mg/m3	1hour	Critical	TEEL3	Toluenediisocyanate, 2,6-				91-08-7
5.0E+02	mg/m3	1hour	Marginal	TEEL2	3.6E+00	mg/m3	1hour	Critical	AEGL3_1hr
7.5E+01	mg/m3	1hour	Negligible	TEEL1	5.9E-01	mg/m3	1hour	Marginal	AEGL2_1hr
Titanium tetrachloride				7550-45-0	1.4E-01	mg/m3	1hour	Negligible	AEGL1_1hr
4.4E+01	mg/m3	1hour	Critical	AEGL3_1hr	7.1E-02	mg/m3	8hour	Negligible	AEGL1_8hr
7.8E+00	mg/m3	1hour	Marginal	AEGL2_1hr	Toluenesulfonyl chloride, p-				98-59-9
5.0E+00	mg/m3	1hour	Negligible	ERPG1	2.5E+02	mg/m3	1hour	Critical	TEEL3
6.8E-03	mg/m3	1year	Negligible	MRL_inter	5.0E+01	mg/m3	1hour	Marginal	TEEL2
					7.5E+00	mg/m3	1hour	Negligible	TEEL1

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Toluenesulphonic acid monohydrate, p-				6192-52-5	Triamiphos				1031-47-6
5.0E+02 mg/m3		1hour	Critical	TEEL3	1.0E+01 mg/m3	1hour	1hour	Critical	TEEL3
2.0E+02 mg/m3		1hour	Marginal	TEEL2	1.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
3.0E+01 mg/m3		1hour	Negligible	TEEL1	6.0E+00 mg/m3	1hour	1hour	Negligible	TEEL1
Toluenethiol, m-				108-40-7	Triazofos				24017-47-8
2.0E+01 mg/m3		1hour	Critical	TEEL3	1.3E+02 mg/m3	1hour	1hour	Critical	TEEL3
4.0E+00 mg/m3		1hour	Marginal	TEEL2	2.8E+00 mg/m3	1hour	1hour	Marginal	TEEL2
6.0E-01 mg/m3		1hour	Negligible	TEEL1	1.5E+00 mg/m3	1hour	1hour	Negligible	TEEL1
Toluidine, m-				108-44-1	Tribenzylamine				620-40-6
2.0E+02 mg/m3		1hour	Critical	TEEL3	2.5E+02 mg/m3	1hour	1hour	Critical	TEEL3
2.0E+02 mg/m3		1hour	Marginal	TEEL2	5.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
3.5E+01 mg/m3		1hour	Negligible	TEEL1	3.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
8.8E+00 mg/m3		8hour	Negligible	TLV_TWA	Tributyl (2,4-dichlorobenzyl) phosphonium chloride				115-78-6
2.1E+00 mg/m3		14day	Negligible	TLV_TWA	7.5E+01 mg/m3	1hour	1hour	Critical	TEEL3
2.1E+00 mg/m3		1year	Negligible	TLVadj	1.5E+01 mg/m3	1hour	1hour	Marginal	TEEL2
Toluidine, p-				106-49-0	Tributyl citrate				77-94-1
1.5E+02 mg/m3		1hour	Critical	TEEL3	1.3E+03 mg/m3	1hour	1hour	Critical	TEEL3
1.3E+02 mg/m3		1hour	Marginal	TEEL2	3.5E+02 mg/m3	1hour	1hour	Marginal	TEEL2
1.5E+01 mg/m3		1hour	Negligible	TEEL1	5.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
8.8E+00 mg/m3		8hour	Negligible	TLV_TWA	Tributyl phosphate				126-73-8
2.1E+00 mg/m3		14day	Negligible	TLV_TWA	3.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
2.1E+00 mg/m3		1year	Negligible	TLVadj	1.5E+02 mg/m3	1hour	1hour	Marginal	TEEL2
Tolyltriazole, sodium salt				64665-57-2	Tributyl phosphite				77-94-1
2.5E+02 mg/m3		1hour	Critical	TEEL3	1.3E+03 mg/m3	1hour	1hour	Critical	TEEL3
5.0E+01 mg/m3		1hour	Marginal	TEEL2	3.5E+02 mg/m3	1hour	1hour	Marginal	TEEL2
7.5E+00 mg/m3		1hour	Negligible	TEEL1	5.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
Toxaphene				8001-35-2	Tributyl tetradecyl phosphonium chloride				81741-28-8
2.0E+02 mg/m3		1hour	Critical	TEEL3	2.5E+02 mg/m3	1hour	1hour	Critical	TEEL3
2.0E+01 mg/m3		1hour	Marginal	TEEL2	5.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
1.0E+00 mg/m3		1hour	Negligible	TEEL1	3.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
5.0E-01 mg/m3		8hour	Negligible	TLV_TWA	Tributylamine				102-82-9
1.2E-01 mg/m3		14day	Negligible	TLV_TWA	6.0E+01 mg/m3	1hour	1hour	Critical	TEEL3
1.5E-02 mg/m3		1year	Negligible	IRIS	3.5E+00 mg/m3	1hour	1hour	Marginal	TEEL2
Tranid				15271-41-7	Tributylphosphine				998-40-3
1.9E+01 mg/m3		1hour	Critical	TEEL3	3.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
1.9E+01 mg/m3		1hour	Marginal	TEEL2	6.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
1.0E+01 mg/m3		1hour	Negligible	TEEL1	7.5E+00 mg/m3	1hour	1hour	Negligible	TEEL1
Tri(2-butoxyethyl) phosphate				78-51-3	Trichloro(dichlorophenyl) silane				27137-85-5
5.0E+02 mg/m3		1hour	Critical	TEEL3	3.8E+02 mg/m3	1hour	1hour	Critical	AEGL3_1hr
1.5E+02 mg/m3		1hour	Marginal	TEEL2	8.4E+01 mg/m3	1hour	1hour	Marginal	AEGL2_1hr
2.0E+01 mg/m3		1hour	Negligible	TEEL1	6.9E+00 mg/m3	1hour	1hour	Negligible	AEGL1_1hr
Triacetin				102-76-1	Triethylamine				102-82-9
5.0E+02 mg/m3		1hour	Critical	TEEL3	6.0E+01 mg/m3	1hour	1hour	Critical	TEEL3
2.5E+02 mg/m3		1hour	Marginal	TEEL2	3.5E+00 mg/m3	1hour	1hour	Marginal	TEEL2
3.5E+01 mg/m3		1hour	Negligible	TEEL1	5.0E-01 mg/m3	1hour	1hour	Negligible	TEEL1

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Trichloro-1,2,2-trifluoroethane, 1,1,2-				76-13-1	Trichloroethylene				79-01-6
1.5E+04	mg/m3	1hour	Critical	TEEL3	2.0E+04	mg/m3	1hour	Critical	AEGL3_1hr
1.0E+04	mg/m3	1hour	Marginal	TEEL2	2.4E+03	mg/m3	1hour	Marginal	AEGL2_1hr
1.0E+04	mg/m3	1hour	Negligible	TEEL1	7.0E+02	mg/m3	1hour	Negligible	AEGL1_1hr
7.7E+03	mg/m3	8hour	Negligible	TLV_TWA	4.1E+02	mg/m3	8hour	Negligible	AEGL1_8hr
7.7E+02	mg/m3	14day	Negligible	CEGL	7.4E+00	mg/m3	14day	Negligible	MRLi_acute
2.1E+01	mg/m3	1year	Negligible	HEAST_sub	3.7E-01	mg/m3	1year	Negligible	MRL_inter
Trichloro-2,2,2-trifluoroethane, 1,1,1-				354-58-5	Trichloroethylsilane				115-21-9
5.0E+02	mg/m3	1hour	Critical	TEEL3	2.2E+02	mg/m3	1hour	Critical	AEGL3_1hr
5.0E+02	mg/m3	1hour	Marginal	TEEL2	4.9E+01	mg/m3	1hour	Marginal	AEGL2_1hr
5.0E+02	mg/m3	1hour	Negligible	TEEL1	4.0E+00	mg/m3	1hour	Negligible	AEGL1_1hr
Trichloroacetic acid				76-03-9	Trichloroethylsilane				115-21-9
1.5E+02	mg/m3	1hour	Critical	TEEL3	4.0E+00	mg/m3	8hour	Negligible	AEGL1_8hr
1.5E+01	mg/m3	1hour	Marginal	TEEL2	Trichlorofluoromethane				75-69-4
6.7E+00	mg/m3	1hour	Negligible	TLV_TWA_irr [‡]	1.0E+04	mg/m3	1hour	Critical	TEEL3
6.7E+00	mg/m3	8hour	Negligible	TLV_TWA_irr	7.5E+03	mg/m3	1hour	Marginal	TEEL2
2.3E+00	mg/m3	14day	Negligible	TLV_TWA_irr	5.0E+03	mg/m3	1hour	Negligible	TEEL1
2.3E+00	mg/m3	1year	Negligible	TLVirr	5.6E+02	mg/m3	14day	Negligible	CEGL
Trichloroacetyl chloride				76-02-8	Trichlorofon				52-68-6
5.0E+01	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
4.0E+00	mg/m3	1hour	Marginal	TEEL2	1.3E+01	mg/m3	1hour	Marginal	TEEL2
6.0E-01	mg/m3	1hour	Negligible	TEEL1	3.0E+00	mg/m3	1hour	Negligible	TEEL1
Trichlorobenzene, 1,2,3-				87-61-6	Trichlorobenzene, 1,2,3-				87-61-6
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.0E+00	mg/m3	8hour	Negligible	TLV_TWA
2.5E+01	mg/m3	1hour	Marginal	TEEL2	2.4E-01	mg/m3	14day	Negligible	TLV_TWA
1.5E+01	mg/m3	1hour	Negligible	TEEL1	2.4E-01	mg/m3	1year	Negligible	TLVadj
Trichlorobenzene, 1,2,4-				120-82-1	Trichloroisocyanuric acid				87-90-1
3.0E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
3.5E+01	mg/m3	1hour	Marginal	TEEL2	5.0E+02	mg/m3	1hour	Marginal	TEEL2
5.0E+00	mg/m3	1hour	Negligible	TEEL1	7.5E+01	mg/m3	1hour	Negligible	TEEL1
1.4E-02	mg/m3	1year	Negligible	PPRTV_sub	Trichloronaphthalene				1321-65-9
Trichloroethane, 1,1,1-				71-55-6	Trichloronaphthalene				1321-65-9
2.3E+04	mg/m3	1hour	Critical	AEGL3_1hr	5.0E+01	mg/m3	1hour	Critical	TEEL3
3.3E+03	mg/m3	1hour	Marginal	AEGL2_1hr	2.5E+01	mg/m3	1hour	Marginal	TEEL2
1.3E+03	mg/m3	1hour	Negligible	AEGL1_1hr	1.5E+01	mg/m3	1hour	Negligible	TEEL1
1.3E+03	mg/m3	8hour	Negligible	AEGL1_8hr	5.0E+00	mg/m3	8hour	Negligible	TLV_TWA
7.5E+00	mg/m3	14day	Negligible	MRLi_acute	1.2E+00	mg/m3	14day	Negligible	TLV_TWA
2.6E+00	mg/m3	1year	Negligible	MRL_inter	1.2E+00	mg/m3	1year	Negligible	TLVadj
Trichloroethane, 1,1,2-				79-00-5	Trichloronate				327-98-0F
5.0E+02	mg/m3	1hour	Critical	TEEL3	3.0E+02	mg/m3	1hour	Critical	TEEL3
7.5E+01	mg/m3	1hour	Marginal	TEEL2	1.0E+01	mg/m3	1hour	Marginal	TEEL2
5.5E+01	mg/m3	1hour	Negligible	TLV_TWA*	6.0E+00	mg/m3	1hour	Negligible	TEEL1
5.5E+01	mg/m3	8hour	Negligible	TLV_TWA	Trichlorophenol, 2,3,6-				933-75-5
1.3E+01	mg/m3	14day	Negligible	TLV_TWA	1.3E+02	mg/m3	1hour	Critical	TEEL3
3.0E-01	mg/m3	1year	Negligible	IRIS	2.5E+01	mg/m3	1hour	Marginal	TEEL2
					4.0E+00	mg/m3	1hour	Negligible	TEEL1

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Trichlorophenol, 2,4,5-				95-95-4	Tridodecylamine				102-87-4
3.5E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
3.5E+02	mg/m3	1hour	Marginal	TEEL2	1.5E+02	mg/m3	1hour	Marginal	TEEL2
3.0E+01	mg/m3	1hour	Negligible	TEEL1	2.5E+01	mg/m3	1hour	Negligible	TEEL1
Trichlorophenol, 2,4,6-				88-06-2	Triethanolamine				102-71-6
3.5E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
3.5E+02	mg/m3	1hour	Marginal	TEEL2	2.0E+01	mg/m3	1hour	Marginal	TEEL2
1.0E+02	mg/m3	1hour	Negligible	TEEL1	5.0E+00	mg/m3	1hour	Negligible	TEEL1
1.5E+00	mg/m3	1year	Negligible	IRIS	5.0E+00	mg/m3	8hour	Negligible	TLV_TWA_irr
Trichlorophenoxyacetic acid				93-76-5	Triethoxysilane				998-30-1
2.5E+02	mg/m3	1hour	Critical	TEEL3	1.7E+00	mg/m3	14day	Negligible	TLV_TWA_irr
5.0E+01	mg/m3	1hour	Marginal	TEEL2	1.7E+00	mg/m3	1year	Negligible	TLVirr
3.0E+01	mg/m3	1hour	Negligible	TEEL1	Triethoxyvinylsilane				78-08-0
1.0E+01	mg/m3	8hour	Negligible	TLV_TWA_irr	6.7E+01	mg/m3	1hour	Critical	ERPG3
3.4E+00	mg/m3	14day	Negligible	TLV_TWA_irr	2.7E+01	mg/m3	1hour	Marginal	ERPG2
3.4E+00	mg/m3	1year	Negligible	TLVirr	3.4E+00	mg/m3	1hour	Negligible	ERPG1
Trichlorophenylsilane				98-13-5	Triethyl phosphate				78-40-0
2.9E+02	mg/m3	1hour	Critical	AEGL3_1hr	5.0E+02	mg/m3	1hour	Critical	TEEL3
6.3E+01	mg/m3	1hour	Marginal	AEGL2_1hr	5.0E+02	mg/m3	1hour	Marginal	TEEL2
5.2E+00	mg/m3	1hour	Negligible	AEGL1_1hr	2.0E+02	mg/m3	1hour	Negligible	TEEL1
5.2E+00	mg/m3	8hour	Negligible	AEGL1_8hr	Triethyl phosphite				122-52-1
Trichloropropane, 1,2,3-				96-18-4	Triethylaluminum				97-93-8
6.0E+02	mg/m3	1hour	Critical	TEEL3	2.5E+02	mg/m3	1hour	Critical	TEEL3
3.0E+02	mg/m3	1hour	Marginal	TEEL2	5.0E+01	mg/m3	1hour	Marginal	TEEL2
1.5E+02	mg/m3	1hour	Negligible	TEEL1	8.5E+00	mg/m3	1hour	Negligible	TEEL1
6.0E+01	mg/m3	8hour	Negligible	TLV_TWA	Triethylamine				121-44-8
1.2E-03	mg/m3	14day	Negligible	MRLi_acute	7.5E+02	mg/m3	1hour	Critical	TEEL3
1.2E-03	mg/m3	1year	Negligible	MRLi_acute*	1.3E+01	mg/m3	1hour	Marginal	TEEL2
Trichloropropene, 1,2,3-				96-19-5	Triethylammonium bicarbonate				15715-58-9
2.1E-03	mg/m3	1year	Negligible	PPRTV_sub	2.5E+02	mg/m3	1hour	Critical	TEEL3
Trichlorosilane				10025-78-2	Triethylbenzenes				25340-18-5
1.8E+02	mg/m3	1hour	Critical	TEEL3	4.0E+03	mg/m3	1hour	Critical	TEEL3
4.0E+01	mg/m3	1hour	Marginal	TEEL2	7.5E+02	mg/m3	1hour	Marginal	TEEL2
3.3E+00	mg/m3	1hour	Negligible	TEEL1	1.3E+02	mg/m3	1hour	Negligible	TEEL1
Tricresol				1319-77-3	Triethylphenols				102-71-6
1.0E+03	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
1.0E+02	mg/m3	1hour	Marginal	TEEL2	1.5E+02	mg/m3	1hour	Marginal	TEEL2
6.0E+01	mg/m3	1hour	Negligible	TEEL1	2.5E+01	mg/m3	1hour	Negligible	TEEL1
2.0E+01	mg/m3	8hour	Negligible	TLV_TWA_irr	5.0E+00	mg/m3	8hour	Negligible	TLV_TWA_irr
6.8E+00	mg/m3	14day	Negligible	TLV_TWA_irr	1.4E+00	mg/m3	14day	Negligible	TLV_TWA_irr
6.8E+00	mg/m3	1year	Negligible	TLVirr	4.8E-02	mg/m3	1year	Negligible	IRIS_sub
Tridecane				629-50-5	Triethylamine				121-44-8
5.0E+01	mg/m3	1hour	Critical	TEEL3	7.5E+02	mg/m3	1hour	Critical	TEEL3
2.5E+00	mg/m3	1hour	Marginal	TEEL2	1.3E+01	mg/m3	1hour	Marginal	TEEL2
3.5E-01	mg/m3	1hour	Negligible	TEEL1	1.3E+01	mg/m3	1hour	Negligible	TEEL1

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Triethylene glycol				112-27-6	Trifluoroethanol, 2,2,2-				75-89-8
5.0E+02	mg/m3	1hour	Critical	TEEL3	2.5E+02	mg/m3	1hour	Critical	TEEL3
5.0E+02	mg/m3	1hour	Marginal	TEEL2	2.5E+02	mg/m3	1hour	Marginal	TEEL2
5.0E+02	mg/m3	1hour	Negligible	TEEL1	3.5E+01	mg/m3	1hour	Negligible	TEEL1
Triethylene glycol dimethacrylate				109-16-0	Trifluoromethanesulfonic acid				1493-13-6
5.0E+02	mg/m3	1hour	Critical	TEEL3	6.0E+01	mg/m3	1hour	Critical	TEEL3
3.5E+01	mg/m3	1hour	Marginal	TEEL2	1.3E+01	mg/m3	1hour	Marginal	TEEL2
5.0E+00	mg/m3	1hour	Negligible	TEEL1	1.5E+00	mg/m3	1hour	Negligible	TEEL1
Triethylene glycol monomethyl ether				112-35-6	Trifluoromethanesulfonic anhydride				358-23-6
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.5E+02	mg/m3	1hour	Critical	TEEL3
5.0E+02	mg/m3	1hour	Marginal	TEEL2	3.5E+01	mg/m3	1hour	Marginal	TEEL2
1.3E+02	mg/m3	1hour	Negligible	TEEL1	5.0E+00	mg/m3	1hour	Negligible	TEEL1
Triethylenetetramine				112-24-3	Trifluoromethyl iodide				2314-97-8
1.0E+03	mg/m3	1hour	Critical	TEEL3	3.5E+04	mg/m3	1hour	Critical	TEEL3
3.5E+02	mg/m3	1hour	Marginal	TEEL2	3.5E+04	mg/m3	1hour	Marginal	TEEL2
5.0E+01	mg/m3	1hour	Negligible	TEEL1	3.5E+04	mg/m3	1hour	Negligible	TEEL1
Triethyloxonium tetrafluoroborate				368-39-8	Trifluoromethylaniline, 3-				98-16-8
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.5E+02	mg/m3	1hour	Critical	TEEL3
3.1E+01	mg/m3	1hour	Marginal	TEEL2	4.4E+00	mg/m3	1hour	Marginal	TEEL2
1.9E+01	mg/m3	1hour	Negligible	TEEL1	2.5E+00	mg/m3	1hour	Negligible	TEEL1
Triethylphosphorothionate				126-68-1	Trifluralin				1582-09-8
1.3E+02	mg/m3	1hour	Critical	TEEL3	3.0E+02	mg/m3	1hour	Critical	TEEL3
2.5E+01	mg/m3	1hour	Marginal	TEEL2	6.0E-01	mg/m3	1hour	Marginal	TEEL2
4.0E+00	mg/m3	1hour	Negligible	TEEL1	7.5E-02	mg/m3	1hour	Negligible	TEEL1
Trifluoroacetaldehyde hydrate				421-53-4	Triglycidyl isocyanurate				2451-62-9
2.5E+02	mg/m3	1hour	Critical	TEEL3	5.0E-02	mg/m3	8hour	Negligible	TLV_TWA
5.0E+01	mg/m3	1hour	Marginal	TEEL2	1.2E-02	mg/m3	14day	Negligible	TLV_TWA
7.5E+00	mg/m3	1hour	Negligible	TEEL1	1.2E-02	mg/m3	1year	Negligible	TLVadj
Trifluoroacetic acid				76-05-1	Triisobutyl aluminum				100-99-2
7.5E+01	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
7.5E+01	mg/m3	1hour	Marginal	TEEL2	5.0E+02	mg/m3	1hour	Marginal	TEEL2
7.5E+01	mg/m3	1hour	Negligible	TEEL1	1.0E+02	mg/m3	1hour	Negligible	TEEL1
Trifluoroacetic acid anhydride				407-25-0	Trilauryl phosphite				3076-63-9
4.6E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
2.3E+01	mg/m3	1hour	Marginal	TEEL2	2.5E+02	mg/m3	1hour	Marginal	TEEL2
1.4E+01	mg/m3	1hour	Negligible	TEEL1	4.0E+01	mg/m3	1hour	Negligible	TEEL1
Trifluoroacetyl chloride				354-32-5	Trimellitic anhydride				552-30-7
1.3E+03	mg/m3	1hour	Critical	TEEL3	5.0E-04	mg/m3	8hour	Negligible	TLV_TWA
2.5E+02	mg/m3	1hour	Marginal	TEEL2	1.2E-04	mg/m3	14day	Negligible	TLV_TWA
3.5E+01	mg/m3	1hour	Negligible	TEEL1	1.2E-04	mg/m3	1year	Negligible	TLVadj
Trifluorobromomethane				75-63-8	Trimethoxy(3,3,3-fluoropropyl) silane				429-60-7
2.5E+05	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
1.5E+05	mg/m3	1hour	Marginal	TEEL2	5.0E+01	mg/m3	1hour	Marginal	TEEL2
2.0E+04	mg/m3	1hour	Negligible	TEEL1	2.9E+01	mg/m3	1hour	Negligible	TEEL1
6.1E+03	mg/m3	8hour	Negligible	TLV_TWA					
6.1E+02	mg/m3	14day	Negligible	CEGL					
6.1E+02	mg/m3	1year	Negligible	CEGL*					

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Trimethoxyboroxine				102-24-9	Trimethylacetyl chloride				3282-30-2
5.0E+02 mg/m3		1hour	Critical	TEEL3	7.9E+00 mg/m3	1hour	1hour	Critical	AEGL3_1hr
4.0E+02 mg/m3		1hour	Marginal	TEEL2	2.6E+00 mg/m3	1hour	1hour	Marginal	AEGL2_1hr
6.0E+01 mg/m3		1hour	Negligible	TEEL1	1.5E+00 mg/m3	1hour	1hour	Negligible	TEEL1
Trimethoxysilane				2487-90-3	Trimethylaluminum				75-24-1
1.2E+01 mg/m3		1hour	Critical	AEGL3_1hr	1.3E+02 mg/m3	1hour	1hour	Critical	TEEL3
4.1E+00 mg/m3		1hour	Marginal	AEGL2_1hr	2.7E+01 mg/m3	1hour	1hour	Marginal	TEEL2
2.5E+00 mg/m3		1hour	Negligible	ERPG1	1.6E+01 mg/m3	1hour	1hour	Negligible	TEEL1
Trimethyl benzene				25551-13-7	Trimethylamine				75-50-3
1.2E+02 mg/m3		8hour	Negligible	TLV_TWA_irr	9.2E+02 mg/m3	1hour	1hour	Critical	AEGL3_1hr
4.2E+01 mg/m3		14day	Negligible	TLV_TWA_irr	2.9E+02 mg/m3	1hour	1hour	Marginal	AEGL2_1hr
4.2E+01 mg/m3		1year	Negligible	TLVirr	1.9E+01 mg/m3	1hour	1hour	Negligible	AEGL1_1hr
Trimethyl borate				121-43-7	Trimethylammonium chloride				75-57-0
2.5E+03 mg/m3		1hour	Critical	TEEL3	4.1E+00 mg/m3	14day	14day	Negligible	TLV_TWA_irr
5.0E+02 mg/m3		1hour	Marginal	TEEL2	4.1E+00 mg/m3	1year	1year	Negligible	TLVirr
7.5E+01 mg/m3		1hour	Negligible	TEEL1	Trimethylammonium chloride				75-57-0
Trimethyl N', 2-hydroxyethyl-propylenediamine				82136-26-3	Trimethylammonium chloride				75-57-0
2.5E+02 mg/m3		1hour	Critical	TEEL3	2.0E+01 mg/m3	1hour	1hour	Critical	TEEL3
5.0E+01 mg/m3		1hour	Marginal	TEEL2	4.0E+00 mg/m3	1hour	1hour	Marginal	TEEL2
3.0E+01 mg/m3		1hour	Negligible	TEEL1	6.0E-01 mg/m3	1hour	1hour	Negligible	TEEL1
Trimethyl octane				98060-52-7	Trimethylaniline, 2,4,6-				88-05-1
6.0E+03 mg/m3		1hour	Critical	TEEL3	4.0E+01 mg/m3	1hour	1hour	Critical	TEEL3
1.5E+03 mg/m3		1hour	Marginal	TEEL2	2.9E+00 mg/m3	1hour	1hour	Marginal	TEEL2
3.5E+02 mg/m3		1hour	Negligible	TEEL1	4.0E-01 mg/m3	1hour	1hour	Negligible	TEEL1
Trimethyl phosphate				512-56-1	Trimethylbenzene, 1,2,3-				526-73-8
3.5E+02 mg/m3		1hour	Critical	TEEL3	7.5E+03 mg/m3	1hour	1hour	Critical	TEEL3
3.5E+02 mg/m3		1hour	Marginal	TEEL2	1.8E+03 mg/m3	1hour	1hour	Marginal	AEGL2_1hr
7.5E+01 mg/m3		1hour	Negligible	TEEL1	6.9E+02 mg/m3	1hour	1hour	Negligible	AEGL1_1hr
Trimethyl phosphite				121-45-9	Trimethylbenzene, 1,2,4-				95-63-6
1.6E+03 mg/m3		1hour	Critical	AEGL3_1hr	7.5E+03 mg/m3	1hour	1hour	Critical	TEEL3
3.1E+02 mg/m3		1hour	Marginal	AEGL2_1hr	1.8E+03 mg/m3	1hour	1hour	Marginal	AEGL2_1hr
3.1E+01 mg/m3		1hour	Negligible	AEGL1_1hr	6.9E+02 mg/m3	1hour	1hour	Negligible	AEGL1_1hr
1.3E+01 mg/m3		8hour	Negligible	AEGL1_8hr	2.2E+02 mg/m3	8hour	8hour	Negligible	AEGL1_8hr
3.5E+00 mg/m3		14day	Negligible	TLV_TWA_irr	4.8E-02 mg/m3	1year	1year	Negligible	PPRTV_sub
3.5E+00 mg/m3		1year	Negligible	TLVirr	Trimethylbenzene, 1,3,5-				108-67-8
Trimethyl-1,3-pentanediol monoisobutyrate, 2,2,4-				25265-77-4	Trimethylbenzene, 1,3,5-				108-67-8
5.0E+02 mg/m3		1hour	Critical	TEEL3	2.5E+03 mg/m3	1hour	1hour	Critical	TEEL3
5.0E+02 mg/m3		1hour	Marginal	TEEL2	2.5E+03 mg/m3	1hour	1hour	Critical	TEEL3
7.5E+01 mg/m3		1hour	Negligible	TEEL1	1.8E+03 mg/m3	1hour	1hour	Marginal	AEGL2_1hr
Trimethylacetic acid				75-98-9	Trimethylbenzene, 1,3,5-				108-67-8
4.0E+02 mg/m3		1hour	Critical	TEEL3	1.8E+03 mg/m3	1hour	1hour	Marginal	AEGL2_1hr
7.5E+01 mg/m3		1hour	Marginal	TEEL2	6.9E+02 mg/m3	1hour	1hour	Negligible	AEGL1_1hr
1.0E+01 mg/m3		1hour	Negligible	TEEL1	6.9E+02 mg/m3	1hour	1hour	Negligible	AEGL1_1hr
					2.2E+02 mg/m3	8hour	8hour	Negligible	AEGL1_8hr
					2.2E+02 mg/m3	8hour	8hour	Negligible	AEGL1_8hr
					6.8E-03 mg/m3	1year	1year	Negligible	PPRTV_sub
					6.8E-03 mg/m3	1year	1year	Negligible	PPRTV_sub

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Trimethylbenzene, 1,3,5-				108-67-8	Trimethylphosphine				594-09-2
2.5E+03	mg/m3	1hour	Critical	TEEL3	3.5E+01	mg/m3	1hour	Critical	TEEL3
2.5E+03	mg/m3	1hour	Critical	TEEL3	6.0E+00	mg/m3	1hour	Marginal	TEEL2
1.8E+03	mg/m3	1hour	Marginal	AEGL2_1hr	1.0E+00	mg/m3	1hour	Negligible	TEEL1
1.8E+03	mg/m3	1hour	Marginal	AEGL2_1hr	Trimethylpyridine, 2,4,6-				108-75-8
6.9E+02	mg/m3	1hour	Negligible	AEGL1_1hr	7.5E+02	mg/m3	1hour	Critical	TEEL3
6.9E+02	mg/m3	1hour	Negligible	AEGL1_1hr	1.5E+02	mg/m3	1hour	Marginal	TEEL2
2.2E+02	mg/m3	8hour	Negligible	AEGL1_8hr	2.5E+01	mg/m3	1hour	Negligible	TEEL1
2.2E+02	mg/m3	8hour	Negligible	AEGL1_8hr	Trimethylsilanol				1066-40-6
6.8E-03	mg/m3	1year	Negligible	PPRTV_sub	1.5E+01	mg/m3	1hour	Critical	TEEL3
6.8E-03	mg/m3	1year	Negligible	PPRTV_sub	7.5E+00	mg/m3	1hour	Marginal	TEEL2
Trimethylchlorosilane				75-77-4	1.5E+00	mg/m3	1hour	Negligible	TEEL1
4.4E+02	mg/m3	1hour	Critical	AEGL3_1hr	Trimethylsilylmethylithium				1822-00-0
9.8E+01	mg/m3	1hour	Marginal	AEGL2_1hr	1.5E+02	mg/m3	1hour	Critical	TEEL3
8.0E+00	mg/m3	1hour	Negligible	AEGL1_1hr	3.5E+01	mg/m3	1hour	Marginal	TEEL2
8.0E+00	mg/m3	8hour	Negligible	AEGL1_8hr	5.0E+00	mg/m3	1hour	Negligible	TEEL1
Trimethylene oxide				503-30-0	Trimethyltin chloride				1066-45-1
7.5E+01	mg/m3	1hour	Critical	TEEL3	4.2E+01	mg/m3	1hour	Critical	TEEL3
2.0E+00	mg/m3	1hour	Marginal	TEEL2	2.0E+01	mg/m3	1hour	Marginal	TEEL2
3.0E-01	mg/m3	1hour	Negligible	TEEL1	3.4E-01	mg/m3	1hour	Negligible	TEEL1
Trimethylgallium				1445-79-0	Trinitrobenzene, 1,3,5-				99-35-4
1.5E+02	mg/m3	1hour	Critical	TEEL3	1.3E+02	mg/m3	1hour	Critical	TEEL3
3.5E+01	mg/m3	1hour	Marginal	TEEL2	2.5E+01	mg/m3	1hour	Marginal	TEEL2
5.0E+00	mg/m3	1hour	Negligible	TEEL1	3.5E+00	mg/m3	1hour	Negligible	TEEL1
Trimethylhexane, 2,2,5-				3522-94-9	Trinitrochlorobenzene				28260-61-9
7.5E+03	mg/m3	1hour	Critical	TEEL3	2.5E+02	mg/m3	1hour	Critical	TEEL3
1.5E+03	mg/m3	1hour	Marginal	TEEL2	5.0E+01	mg/m3	1hour	Marginal	TEEL2
3.5E+02	mg/m3	1hour	Negligible	TEEL1	3.0E+01	mg/m3	1hour	Negligible	TEEL1
Trimethylolpropane ethoxylate				50586-59-9	Trinitrophenylmethylnitramine				479-45-8
2.5E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
5.0E+01	mg/m3	1hour	Marginal	TEEL2	5.0E+01	mg/m3	1hour	Marginal	TEEL2
3.0E+01	mg/m3	1hour	Negligible	TEEL1	7.5E+00	mg/m3	1hour	Negligible	TEEL1
Trimethylolpropane phosphite				824-11-3	1.5E+00	mg/m3	8hour	Negligible	TLV_TWA
6.0E+00	mg/m3	1hour	Critical	TEEL3	3.7E-01	mg/m3	14day	Negligible	TLV_TWA
2.5E+00	mg/m3	1hour	Marginal	TEEL2	3.7E-01	mg/m3	1year	Negligible	TLVadj
3.5E-01	mg/m3	1hour	Negligible	TEEL1	Trinitrotoluene, 2,4,6-				118-96-7
Trimethylpropane methylated copolymer				71342-93-3	5.0E+02	mg/m3	1hour	Critical	TEEL3
2.5E+02	mg/m3	1hour	Critical	TEEL3	7.5E+00	mg/m3	1hour	Marginal	TEEL2
5.0E+01	mg/m3	1hour	Marginal	TEEL2	1.3E+00	mg/m3	1hour	Negligible	TEEL1
3.0E+01	mg/m3	1hour	Negligible	TEEL1	1.0E-01	mg/m3	8hour	Negligible	TLV_TWA_irr
Trimethylpentane, 2,2,4-				540-84-1	3.4E-02	mg/m3	14day	Negligible	TLV_TWA_irr
4.0E+03	mg/m3	1hour	Critical	TEEL3	3.4E-02	mg/m3	1year	Negligible	TLVirr
1.5E+03	mg/m3	1hour	Marginal	TEEL2	Trioctylamine				1116-76-3
1.5E+03	mg/m3	1hour	Negligible	TEEL1	4.0E+02	mg/m3	1hour	Critical	TEEL3
					7.5E+01	mg/m3	1hour	Marginal	TEEL2
					1.3E+01	mg/m3	1hour	Negligible	TEEL1

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Trioctylphosphine				4731-53-7	Triphenyltin acetate				900-95-8
5.0E+01 mg/m3		1hour	Critical	TEEL3	8.6E+01 mg/m3	1hour	1hour	Critical	TEEL3
1.0E+01 mg/m3		1hour	Marginal	TEEL2	2.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
1.5E+00 mg/m3		1hour	Negligible	TEEL1	6.9E-01 mg/m3	1hour	1hour	Negligible	TEEL1
Trioctylphosphine oxide				78-50-2	Triphenyltin chloride				639-58-7
2.5E+02 mg/m3		1hour	Critical	TEEL3	8.1E+01 mg/m3	1hour	1hour	Critical	TEEL3
5.0E+01 mg/m3		1hour	Marginal	TEEL2	2.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
3.0E+01 mg/m3		1hour	Negligible	TEEL1	6.5E-01 mg/m3	1hour	1hour	Negligible	TEEL1
Triorthocresyl phosphate				78-30-8	Tripopyl phosphate				513-08-6
6.0E+02 mg/m3		1hour	Critical	TEEL3	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
7.5E+00 mg/m3		1hour	Marginal	TEEL2	1.3E+02 mg/m3	1hour	1hour	Marginal	TEEL2
4.0E+00 mg/m3		1hour	Negligible	TEEL1	1.5E+01 mg/m3	1hour	1hour	Negligible	TEEL1
1.0E-01 mg/m3		8hour	Negligible	TLV_TWA	Tripopylamine				102-69-2
2.4E-02 mg/m3		14day	Negligible	TLV_TWA	2.0E+03 mg/m3	1hour	1hour	Critical	TEEL3
2.4E-02 mg/m3		1year	Negligible	TLVadj	4.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
Tripentaerythritol				78-24-0	Tripopylamine				102-69-2
2.5E+02 mg/m3		1hour	Critical	TEEL3	6.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
5.0E+01 mg/m3		1hour	Marginal	TEEL2	Tripopylene glycol				1638-16-0
3.0E+01 mg/m3		1hour	Negligible	TEEL1	1.5E+03 mg/m3	1hour	1hour	Critical	TEEL3
Triphenyl phosphate				115-86-6	7.5E-01 mg/m3	1hour	1hour	Marginal	TEEL2
5.0E+02 mg/m3		1hour	Critical	TEEL3	1.3E-01 mg/m3	1hour	1hour	Negligible	TEEL1
5.0E+02 mg/m3		1hour	Marginal	TEEL2	Tripopylene glycol monomethyl ether				25498-49-1
9.0E+00 mg/m3		1hour	Negligible	TEEL1	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
3.0E+00 mg/m3		8hour	Negligible	TLV_TWA_irr	2.5E+02 mg/m3	1hour	1hour	Marginal	TEEL2
1.0E+00 mg/m3		14day	Negligible	TLV_TWA_irr	4.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
1.0E+00 mg/m3		1year	Negligible	TLVirr	Tris(2-aminoethyl)amine				4097-89-6
Triphenyl phosphine				603-35-0	1.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
5.0E+02 mg/m3		1hour	Critical	TEEL3	4.0E+01 mg/m3	1hour	1hour	Marginal	TEEL2
4.0E+01 mg/m3		1hour	Marginal	TEEL2	6.0E+00 mg/m3	1hour	1hour	Negligible	TEEL1
5.0E+00 mg/m3		1hour	Negligible	TEEL1	Tris(2-chloroethyl)amine				555-77-1
Triphenyl phosphite				101-02-0	3.7E-01 mg/m3	1hour	1hour	Critical	AEGL3_1hr
2.0E+02 mg/m3		1hour	Critical	TEEL3	2.2E-02 mg/m3	1hour	1hour	Marginal	AEGL2_1hr
1.5E+02 mg/m3		1hour	Marginal	TEEL2	3.0E-03 mg/m3	1hour	1hour	Negligible	TEEL1
2.5E+01 mg/m3		1hour	Negligible	TEEL1	Tris(2-chloroethyl)phosphate				115-96-8
Triphenylborane				960-71-4	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
5.0E+02 mg/m3		1hour	Critical	TEEL3	1.5E+02 mg/m3	1hour	1hour	Marginal	TEEL2
1.5E+02 mg/m3		1hour	Marginal	TEEL2	2.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
2.5E+01 mg/m3		1hour	Negligible	TEEL1	Tris(2-ethylhexyl)phosphate				78-42-2
Triphenylethoxysilane				1516-80-9	1.3E+01 mg/m3	1hour	1hour	Critical	TEEL3
2.5E+02 mg/m3		1hour	Critical	TEEL3	1.3E+01 mg/m3	1hour	1hour	Marginal	TEEL2
5.0E+01 mg/m3		1hour	Marginal	TEEL2	1.3E+01 mg/m3	1hour	1hour	Negligible	TEEL1
3.0E+01 mg/m3		1hour	Negligible	TEEL1	Tris(dimethylaminomethyl)phenol, 2,4,6-				90-72-2
Triphenylolmethane triglycidyl ether				66072-38-6	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
2.5E+02 mg/m3		1hour	Critical	TEEL3	1.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
5.0E+01 mg/m3		1hour	Marginal	TEEL2	1.5E+01 mg/m3	1hour	1hour	Negligible	TEEL1
3.0E+01 mg/m3		1hour	Negligible	TEEL1					

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Tris(hydroxymethyl) aminomethane hydrochloride				1185-53-1	Tungstosilicic acid				11130-20-4
5.0E+02 mg/m3		1hour	Critical	TEEL3	1.5E+02 mg/m3	1hour		Critical	TEEL3
1.5E+02 mg/m3		1hour	Marginal	TEEL2	3.3E+01 mg/m3	1hour		Marginal	TEEL2
2.5E+01 mg/m3		1hour	Negligible	TEEL1	1.3E+01 mg/m3	1hour		Negligible	TEEL1
Tris(hydroxymethyl)aminomethane				77-86-1	Tungsten				7440-33-7
5.0E+02 mg/m3		1hour	Critical	TEEL3	5.0E+02 mg/m3	1hour		Critical	TEEL3
5.0E+02 mg/m3		1hour	Marginal	TEEL2	1.0E+01 mg/m3	1hour		Marginal	TEEL2
7.5E+01 mg/m3		1hour	Negligible	TEEL1	1.0E+01 mg/m3	1hour		Negligible	TEEL1
Trisodium arsenate				13464-38-5	5.0E+00 mg/m3	8hour		Negligible	TLV_TWA_irr
1.4E+01 mg/m3		1hour	Critical	TEEL3	1.7E+00 mg/m3	14day		Negligible	TLV_TWA_irr
1.4E-01 mg/m3		1hour	Marginal	TEEL2	1.7E+00 mg/m3	1year		Negligible	TLVirr
8.3E-02 mg/m3		1hour	Negligible	TEEL1	Tungsten (IV) oxide				12036-22-5
Trisodium citrate				68-04-2	1.5E+02 mg/m3	1hour		Critical	TEEL3
6.0E+02 mg/m3		1hour	Critical	TEEL3	3.0E+01 mg/m3	1hour		Marginal	TEEL2
1.3E+02 mg/m3		1hour	Marginal	TEEL2	1.2E+01 mg/m3	1hour		Negligible	TEEL1
2.0E+01 mg/m3		1hour	Negligible	TEEL1	Tungsten boride				12007-09-9
Trisodium ethylenediaminetriacetate				139-89-9	1.3E+02 mg/m3	1hour		Critical	TEEL3
4.0E+02 mg/m3		1hour	Critical	TEEL3	2.7E+01 mg/m3	1hour		Marginal	TEEL2
7.5E+01 mg/m3		1hour	Marginal	TEEL2	1.1E+01 mg/m3	1hour		Negligible	TEEL1
1.3E+01 mg/m3		1hour	Negligible	TEEL1	Tungsten carbide				12070-12-1
Triton X-100				9002-93-1	1.3E+02 mg/m3	1hour		Critical	TEEL3
5.0E+02 mg/m3		1hour	Critical	TEEL3	2.7E+01 mg/m3	1hour		Marginal	TEEL2
3.0E+02 mg/m3		1hour	Marginal	TEEL2	1.1E+01 mg/m3	1hour		Negligible	TEEL1
4.0E+01 mg/m3		1hour	Negligible	TEEL1	Tungsten hexafluoride				7783-82-6
Triuranium octaoxide				1344-59-8	4.0E+01 mg/m3	1hour		Critical	TEEL3
5.0E+01 mg/m3		1hour	Critical	ERPG3	8.1E+00 mg/m3	1hour		Marginal	TEEL2
1.0E+01 mg/m3		1hour	Marginal	ERPG2	4.9E+00 mg/m3	1hour		Negligible	TEEL1
7.1E-01 mg/m3		1hour	Negligible	TEEL1	Tungsten trioxide				1314-35-8
Trizma acetate				6850-28-8	4.0E+02 mg/m3	1hour		Critical	TEEL3
5.0E+02 mg/m3		1hour	Critical	TEEL3	4.0E+02 mg/m3	1hour		Marginal	TEEL2
5.0E+02 mg/m3		1hour	Marginal	TEEL2	1.3E+01 mg/m3	1hour		Negligible	TEEL1
7.5E+01 mg/m3		1hour	Negligible	TEEL1	Tungsten(iv) chloride				13470-13-8
Trypan blue				72-57-1	4.0E+01 mg/m3	1hour		Critical	TEEL3
5.0E+02 mg/m3		1hour	Critical	TEEL3	8.9E+00 mg/m3	1hour		Marginal	TEEL2
5.0E-01 mg/m3		1hour	Marginal	TEEL2	5.3E+00 mg/m3	1hour		Negligible	TEEL1
7.5E-02 mg/m3		1hour	Negligible	TEEL1	Tungsten, soluble compounds				W sol
Trypsin				9002-07-7	1.0E+00 mg/m3	8hour		Negligible	TLV_TWA_irr
3.0E+01 mg/m3		1hour	Critical	TEEL3	3.4E-01 mg/m3	14day		Negligible	TLV_TWA_irr
6.0E-01 mg/m3		1hour	Marginal	TEEL2	3.4E-01 mg/m3	1year		Negligible	TLVirr
7.5E-02 mg/m3		1hour	Negligible	TEEL1	Tungstic acid				7783-03-1
Trypsinogen				9002-08-8	1.5E+02 mg/m3	1hour		Critical	TEEL3
5.0E+02 mg/m3		1hour	Critical	TEEL3	3.5E+01 mg/m3	1hour		Marginal	TEEL2
1.5E+02 mg/m3		1hour	Marginal	TEEL2	1.4E+01 mg/m3	1hour		Negligible	TEEL1
2.5E+01 mg/m3		1hour	Negligible	TEEL1					

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Turpentine				8006-64-2	Uranium, highly soluble salts				HZ1800-90-T
4.0E+03 mg/m3		1hour	Critical	TEEL3	1.0E+01 mg/m3	1hour	1hour	Critical	TEEL3
1.1E+02 mg/m3		1hour	Marginal	TLV_TWA_irr [†]	2.0E+00 mg/m3	1hour	1hour	Marginal	TEEL2
1.1E+02 mg/m3		1hour	Negligible	TLV_TWA_irr [†]	6.0E-01 mg/m3	1hour	1hour	Negligible	TEEL1
1.1E+02 mg/m3		8hour	Negligible	TLV_TWA_irr	2.7E-04 mg/m3	1year	1year	Negligible	MRL_inter
3.8E+01 mg/m3		14day	Negligible	TLV_TWA_irr	Uranium, insoluble compounds				0-149*
3.8E+01 mg/m3		1year	Negligible	TLVirr	1.0E+01 mg/m3	1hour	1hour	Critical	TEEL3
Undecane				1120-21-4	2.0E+00 mg/m3	1hour	1hour	Marginal	TEEL2
2.0E+02 mg/m3		1hour	Critical	TEEL3	6.0E-01 mg/m3	1hour	1hour	Negligible	TEEL1
4.0E+01 mg/m3		1hour	Marginal	TEEL2	Uranyl acetate				541-09-3
6.0E+00 mg/m3		1hour	Negligible	TEEL1	1.8E+01 mg/m3	1hour	1hour	Critical	TEEL3
Undecanone, 2-				112-12-9	3.5E+00 mg/m3	1hour	1hour	Marginal	TEEL2
2.0E+03 mg/m3		1hour	Critical	TEEL3	1.1E+00 mg/m3	1hour	1hour	Negligible	TEEL1
3.0E+01 mg/m3		1hour	Marginal	TEEL2	Uranyl fluoride				13536-84-0
4.0E+00 mg/m3		1hour	Negligible	TEEL1	1.3E+01 mg/m3	1hour	1hour	Critical	TEEL3
Uranine				518-47-8	2.5E+00 mg/m3	1hour	1hour	Marginal	TEEL2
5.0E+02 mg/m3		1hour	Critical	TEEL3	7.8E-01 mg/m3	1hour	1hour	Negligible	TEEL1
2.5E+02 mg/m3		1hour	Marginal	TEEL2	Uranyl nitrate				10102-06-4
4.0E+01 mg/m3		1hour	Negligible	TEEL1	1.7E+01 mg/m3	1hour	1hour	Critical	TEEL3
Uranium				7440-61-1	3.0E+00 mg/m3	1hour	1hour	Marginal	TEEL2
1.0E+01 mg/m3		1hour	Critical	TEEL3	9.9E-01 mg/m3	1hour	1hour	Negligible	TEEL1
2.0E+00 mg/m3		1hour	Marginal	TEEL2	Uranyl nitrate hexahydrate				13520-83-7
6.0E-01 mg/m3		1hour	Negligible	TEEL1	2.1E+01 mg/m3	1hour	1hour	Critical	TEEL3
Uranium compounds				0-287*	1.3E+00 mg/m3	1hour	1hour	Marginal	TEEL2
2.0E-01 mg/m3		8hour	Negligible	TLV_TWA	1.3E+00 mg/m3	1hour	1hour	Negligible	TEEL1
4.9E-02 mg/m3		14day	Negligible	TLV_TWA	Urea				57-13-6
4.9E-02 mg/m3		1year	Negligible	TLVadj	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
Uranium dioxide				1344-57-6	1.5E+01 mg/m3	1hour	1hour	Marginal	TEEL2
3.0E+01 mg/m3		1hour	Critical	ERPG3	1.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
1.0E+01 mg/m3		1hour	Marginal	ERPG2	Urea peroxide				124-43-6
6.8E-01 mg/m3		1hour	Negligible	TEEL1	1.5E+02 mg/m3	1hour	1hour	Critical	TEEL3
Uranium hexafluoride				7783-81-5	3.5E+01 mg/m3	1hour	1hour	Marginal	TEEL2
3.6E+01 mg/m3		1hour	Critical	AEGL3_1hr	5.0E+00 mg/m3	1hour	1hour	Negligible	TEEL1
9.6E+00 mg/m3		1hour	Marginal	AEGL2_1hr	Urea, substituted				17526-94-2
3.6E+00 mg/m3		1hour	Negligible	AEGL1_1hr	1.5E+02 mg/m3	1hour	1hour	Critical	TEEL3
Uranium oxide				1344-58-7	3.5E+01 mg/m3	1hour	1hour	Marginal	TEEL2
3.0E+00 mg/m3		1hour	Critical	ERPG3	5.0E+00 mg/m3	1hour	1hour	Negligible	TEEL1
5.0E-01 mg/m3		1hour	Marginal	ERPG2	Valeraldehyde, n-				110-62-3
5.0E-01 mg/m3		1hour	Negligible	TEEL1	1.8E+02 mg/m3	8hour	8hour	Negligible	TLV_TWA_irr
Uranium telluride A				0-317*	6.0E+01 mg/m3	14day	14day	Negligible	TLV_TWA_irr
1.7E+01 mg/m3		1hour	Critical	TEEL3	6.0E+01 mg/m3	1year	1year	Negligible	TLVirr
3.5E+00 mg/m3		1hour	Marginal	TEEL2	Valeric acid				109-52-4
1.0E+00 mg/m3		1hour	Negligible	TEEL1	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
					5.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
					7.5E+01 mg/m3	1hour	1hour	Negligible	TEEL1

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Valinomycin				2001-95-8	Veratraldehyde				120-14-9
2.5E+00	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
2.5E+00	mg/m3	1hour	Marginal	TEEL2	1.5E+02	mg/m3	1hour	Marginal	TEEL2
1.5E+00	mg/m3	1hour	Negligible	TEEL1	2.5E+01	mg/m3	1hour	Negligible	TEEL1
Vanadium				7440-62-2	Vermiculite, exfoliated				1318-00-9
3.5E+01	mg/m3	1hour	Critical	TEEL3	2.5E+01	mg/m3	1hour	Critical	TEEL3
5.0E-01	mg/m3	1hour	Marginal	TEEL2	5.0E+00	mg/m3	1hour	Marginal	TEEL2
7.5E-02	mg/m3	1hour	Negligible	TEEL1	5.0E+00	mg/m3	1hour	Negligible	TEEL1
5.5E-04	mg/m3	14day	Negligible	MRLi_acute	Vinyl acetate				108-05-4
6.8E-05	mg/m3	1year	Negligible	MRLi_chr	2.1E+03	mg/m3	1hour	Critical	AEGL3_1hr
Vanadium (III) sulfate				13701-70-7	6.3E+02	mg/m3	1hour	Marginal	AEGL2_1hr
1.3E+02	mg/m3	1hour	Critical	TEEL3	2.4E+01	mg/m3	1hour	Negligible	AEGL1_1hr
1.9E-01	mg/m3	1hour	Marginal	TEEL2	2.4E+01	mg/m3	8hour	Negligible	AEGL1_8hr
2.5E-02	mg/m3	1hour	Negligible	TEEL1	1.2E+01	mg/m3	14day	Negligible	TLV_TWA_irr
Vanadium pentoxide				1314-62-1	2.4E-02	mg/m3	1year	Negligible	MRL_inter
3.5E+01	mg/m3	1hour	Critical	TEEL3	Vinyl acetate-vinyl chloride copolymers				9003-22-9
7.0E+00	mg/m3	1hour	Marginal	TEEL2	5.0E+02	mg/m3	1hour	Critical	TEEL3
1.0E+00	mg/m3	1hour	Negligible	TEEL1	5.0E+02	mg/m3	1hour	Marginal	TEEL2
5.0E-02	mg/m3	8hour	Negligible	TLV_TWA_irr	1.0E+02	mg/m3	1hour	Negligible	TEEL1
1.4E-04	mg/m3	14day	Negligible	MRLi_acute*	Vinyl chloride				75-01-4
1.4E-04	mg/m3	1year	Negligible	MRLi_acute*	1.2E+04	mg/m3	1hour	Critical	AEGL3_1hr
Vanadium sulfate				16785-81-2	3.1E+03	mg/m3	1hour	Marginal	AEGL2_1hr
3.1E+02	mg/m3	1hour	Critical	TEEL3	6.4E+02	mg/m3	1hour	Negligible	AEGL1_1hr
4.5E+00	mg/m3	1hour	Marginal	TEEL2	1.8E+02	mg/m3	8hour	Negligible	AEGL1_8hr
6.0E-01	mg/m3	1hour	Negligible	TEEL1	8.8E-01	mg/m3	14day	Negligible	MRLi_acute
Vanadium tetrachloride				7632-51-1	5.3E-02	mg/m3	1year	Negligible	MRL_inter
1.3E+02	mg/m3	1hour	Critical	TEEL3	Vinyl cyclohexene dioxide				106-87-6
1.9E-01	mg/m3	1hour	Marginal	TEEL2	5.0E+02	mg/m3	1hour	Critical	TEEL3
2.5E-02	mg/m3	1hour	Negligible	TEEL1	1.3E+01	mg/m3	1hour	Marginal	TEEL2
Vanadium trioxide				1314-34-7	2.0E+00	mg/m3	1hour	Negligible	TEEL1
5.2E+01	mg/m3	1hour	Critical	TEEL3	5.7E-01	mg/m3	8hour	Negligible	TLV_TWA_irr
7.4E+00	mg/m3	1hour	Marginal	TEEL2	2.0E-01	mg/m3	14day	Negligible	TLV_TWA_irr
1.0E+00	mg/m3	1hour	Negligible	TEEL1	2.0E-01	mg/m3	1year	Negligible	TLVirr
Vanadium, trichlorooxo				7727-18-6	Vinyl ethyl ether				109-92-2
7.5E+02	mg/m3	1hour	Critical	TEEL3	5.0E+03	mg/m3	1hour	Critical	TEEL3
1.3E+00	mg/m3	1hour	Marginal	TEEL2	1.0E+03	mg/m3	1hour	Marginal	TEEL2
1.5E-01	mg/m3	1hour	Negligible	TEEL1	1.5E+02	mg/m3	1hour	Negligible	TEEL1
Vanadyl sulfate				27774-13-6	Vinyl fluoride				75-02-5
1.1E+02	mg/m3	1hour	Critical	TEEL3	1.5E+05	mg/m3	1hour	Critical	TEEL3
1.6E+00	mg/m3	1hour	Marginal	TEEL2	7.5E+01	mg/m3	1hour	Marginal	TEEL2
2.0E-01	mg/m3	1hour	Negligible	TEEL1	1.0E+01	mg/m3	1hour	Negligible	TEEL1
Vegetable oil mist				68956-68-3	1.9E+00	mg/m3	8hour	Negligible	TLV_TWA
5.0E+02	mg/m3	1hour	Critical	TEEL3	4.6E-01	mg/m3	14day	Negligible	TLV_TWA
7.5E+01	mg/m3	1hour	Marginal	TEEL2	4.6E-01	mg/m3	1year	Negligible	TLVadj
4.5E+01	mg/m3	1hour	Negligible	TEEL1					

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Vinyl sulfoxide				1115-15-7	Vinylpyrrolidone/vinyl acetate copolymer				25086-89-9
7.5E+01	mg/m3	1hour	Critical	TEEL3	2.5E+02	mg/m3	1hour	Critical	TEEL3
1.5E+01	mg/m3	1hour	Marginal	TEEL2	2.5E+02	mg/m3	1hour	Marginal	TEEL2
2.5E+00	mg/m3	1hour	Negligible	TEEL1	2.5E+02	mg/m3	1hour	Negligible	TEEL1
Vinyl Terminated Dimethyl-Diphenylsiloxane Copolymer				68951-96-2	Vinyltrimethoxysilane				2768-02-7
5.0E+02	mg/m3	1hour	Critical	TEEL3	7.5E+03	mg/m3	1hour	Critical	TEEL3
5.0E+02	mg/m3	1hour	Marginal	TEEL2	7.5E+03	mg/m3	1hour	Marginal	TEEL2
2.5E+02	mg/m3	1hour	Negligible	TEEL1	2.5E+03	mg/m3	1hour	Negligible	TEEL1
Vinyl toluene				25013-15-4	Virginia refrigeration oil 150 and 300				64742-52-5
2.4E+02	mg/m3	8hour	Negligible	TLV_TWA_irr	5.0E+02	mg/m3	1hour	Critical	TEEL3
8.3E+01	mg/m3	14day	Negligible	TLV_TWA_irr	3.0E+02	mg/m3	1hour	Marginal	TEEL2
2.7E-02	mg/m3	1year	Negligible	HEAST_sub	4.0E+01	mg/m3	1hour	Negligible	TEEL1
Vinyl trichlorosilane				75-94-5	VX				50782-69-9
2.2E+02	mg/m3	1hour	Critical	AEGL3_1hr	2.4E-05	mg/m3	24hour	Negligible	AEGL1-based
4.8E+01	mg/m3	1hour	Marginal	AEGL2_1hr	7.1E-05	mg/m3	8hour	Negligible	AEGL1_8hr
4.0E+00	mg/m3	1hour	Negligible	AEGL1_1hr	1.7E-04	mg/m3	1hour	Negligible	AEGL1_1hr
4.0E+00	mg/m3	8hour	Negligible	AEGL1_8hr	5.7E-04	mg/m3	10min	Negligible	AEGL1_10min
Vinyl-2-pyrrolidone, N-				88-12-0	6.0E-04	mg/m3	24hour	Marginal	EC16_mild_24
3.5E+02	mg/m3	1hour	Critical	TEEL3	1.0E-03	mg/m3	24hour	Critical	EC50_mild_24
1.5E+02	mg/m3	1hour	Marginal	TEEL2	1.8E-03	mg/m3	8hour	Marginal	EC16_mild_8h
2.5E+01	mg/m3	1hour	Negligible	TEEL1	3.0E-03	mg/m3	8hour	Critical	EC50_mild_8h
2.3E-01	mg/m3	8hour	Negligible	TLV_TWA	5.1E-03	mg/m3	1hour	Marginal	EC16_mild_1h
5.6E-02	mg/m3	14day	Negligible	TLV_TWA	9.0E-03	mg/m3	1hour	Critical	EC50_mild_1h
5.6E-02	mg/m3	1year	Negligible	TLVadj	1.3E-02	mg/m3	10min	Marginal	EC16_mild_10
Vinylbenzylchloride				1592-20-7	2.2E-02	mg/m3	10min	Critical	EC50_mild_10
1.5E+02	mg/m3	1hour	Critical	TEEL3	1.1E-01	mg/m3	24hour	Catastrophic	EC50_sev_24h
3.5E+01	mg/m3	1hour	Marginal	TEEL2	3.2E-01	mg/m3	8hour	Catastrophic	EC50_sev_8hr
5.0E+00	mg/m3	1hour	Negligible	TEEL1	9.1E-01	mg/m3	1hour	Catastrophic	EC50_sev_1hr
Vinylcyclohexene, 4-				100-40-3	2.2E+00	mg/m3	10min	Catastrophic	EC50_sev_10r
1.5E+04	mg/m3	1hour	Critical	TEEL3	Warfarin				81-81-2
2.0E+02	mg/m3	1hour	Marginal	TEEL2	1.0E+02	mg/m3	1hour	Critical	TEEL3
1.3E+00	mg/m3	1hour	Negligible	TEEL1	2.0E+01	mg/m3	1hour	Marginal	TEEL2
4.4E-01	mg/m3	8hour	Negligible	TLV_TWA_irr	3.0E-01	mg/m3	1hour	Negligible	TEEL1
1.5E-01	mg/m3	14day	Negligible	TLV_TWA_irr	1.0E-01	mg/m3	8hour	Negligible	TLV_TWA
1.5E-01	mg/m3	1year	Negligible	TLVirr	2.4E-02	mg/m3	14day	Negligible	TLV_TWA
Vinylidene fluoride				75-38-7	2.4E-02	mg/m3	1year	Negligible	TLVadj
1.5E+05	mg/m3	1hour	Critical	TEEL3	Warfarin sodium				129-06-6
6.0E+03	mg/m3	1hour	Marginal	TEEL2	9.0E+00	mg/m3	1hour	Critical	TEEL3
4.0E+03	mg/m3	1hour	Negligible	TEEL1	9.0E+00	mg/m3	1hour	Marginal	TEEL2
1.3E+03	mg/m3	8hour	Negligible	TLV_TWA	5.0E+00	mg/m3	1hour	Negligible	TEEL1
3.2E+02	mg/m3	14day	Negligible	TLV_TWA	Wax				71808-29-2
3.2E+02	mg/m3	1year	Negligible	TLVadj	2.5E+02	mg/m3	1hour	Critical	TEEL3
Vinylmagnesium bromide				1826-67-1	5.0E+01	mg/m3	1hour	Marginal	TEEL2
1.5E+02	mg/m3	1hour	Critical	TEEL3	3.0E+01	mg/m3	1hour	Negligible	TEEL1
3.5E+01	mg/m3	1hour	Marginal	TEEL2					
5.0E+00	mg/m3	1hour	Negligible	TEEL1					

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Wood dust				wood dust	Xylenol orange tetrasodium salt				3618-43-7
1.0E+00	mg/m3	8hour	Negligible	TLV_TWA	2.5E+02	mg/m3	1hour	Critical	TEEL3
2.4E-01	mg/m3	14day	Negligible	TLV_TWA	5.0E+01	mg/m3	1hour	Marginal	TEEL2
2.4E-01	mg/m3	1year	Negligible	TLVadj	3.0E+01	mg/m3	1hour	Negligible	TEEL1
Wood dust, western red cedar				wood dust cedar	Xylidine				1300-73-8
5.0E-01	mg/m3	8hour	Negligible	TLV_TWA	2.5E+02	mg/m3	1hour	Critical	TEEL3
1.2E-01	mg/m3	14day	Negligible	TLV_TWA	1.3E+01	mg/m3	1hour	Marginal	TEEL2
1.2E-01	mg/m3	1year	Negligible	TLVadj	7.5E+00	mg/m3	1hour	Negligible	TEEL1
Wood dusts (birch, mahogany, teak, walnut)				Wood dust(others)	Xylidine, 2,3-				87-59-2
1.0E+00	mg/m3	8hour	Negligible	TLV_TWA	2.5E+00	mg/m3	8hour	Negligible	TLV_TWA
2.4E-01	mg/m3	14day	Negligible	TLV_TWA	6.1E-01	mg/m3	14day	Negligible	TLV_TWA
2.4E-01	mg/m3	1year	Negligible	TLVadj	6.1E-01	mg/m3	1year	Negligible	TLVadj
Xenon				7440-63-3	Xylidine, 2,6-				87-62-7
2.0E+06	mg/m3	1hour	Critical	TEEL3	4.0E+02	mg/m3	1hour	Critical	TEEL3
1.3E+06	mg/m3	1hour	Marginal	TEEL2	7.5E+01	mg/m3	1hour	Marginal	TEEL2
3.5E+05	mg/m3	1hour	Negligible	TEEL1	1.0E+01	mg/m3	1hour	Negligible	TEEL1
Xylene, m-				108-38-3	Xylylene dichloride				28347-13-9
4.0E+03	mg/m3	1hour	Critical	TEEL3	3.5E+02	mg/m3	1hour	Critical	TEEL3
7.5E+02	mg/m3	1hour	Marginal	TEEL2	1.3E+02	mg/m3	1hour	Marginal	TEEL2
6.0E+02	mg/m3	1hour	Negligible	TEEL1	2.0E+01	mg/m3	1hour	Negligible	TEEL1
4.3E+02	mg/m3	8hour	Negligible	TLV_TWA_irr	Ytterbium fluoride				13760-80-0
1.5E+02	mg/m3	14day	Negligible	TLV_TWA_irr	5.0E+02	mg/m3	1hour	Critical	TEEL3
2.7E-01	mg/m3	1year	Negligible	PPRTV_sub*	1.0E+01	mg/m3	1hour	Marginal	TEEL2
Xylene, o-				95-47-6	Ytterbium oxide				1314-37-0
4.0E+03	mg/m3	1hour	Critical	TEEL3	2.5E+02	mg/m3	1hour	Critical	TEEL3
7.5E+02	mg/m3	1hour	Marginal	TEEL2	5.0E+01	mg/m3	1hour	Marginal	TEEL2
6.0E+02	mg/m3	1hour	Negligible	TEEL1	3.0E+01	mg/m3	1hour	Negligible	TEEL1
4.3E+02	mg/m3	8hour	Negligible	TLV_TWA_irr	Yttrium				7440-65-5
1.5E+02	mg/m3	14day	Negligible	TLV_TWA_irr	5.0E+02	mg/m3	1hour	Critical	TEEL3
2.7E-01	mg/m3	1year	Negligible	PPRTV_sub*	5.0E+00	mg/m3	1hour	Marginal	TEEL2
Xylene, p-				106-42-3	Yttrium chloride, hexahydrate				10025-94-2
4.0E+03	mg/m3	1hour	Critical	TEEL3	3.0E+00	mg/m3	1hour	Negligible	TEEL1
7.5E+02	mg/m3	1hour	Marginal	TEEL2	1.0E+00	mg/m3	8hour	Negligible	TLV_TWA
6.0E+02	mg/m3	1hour	Negligible	TEEL1	2.4E-01	mg/m3	14day	Negligible	TLV_TWA
4.3E+02	mg/m3	8hour	Negligible	TLV_TWA_irr	2.4E-01	mg/m3	1year	Negligible	TLVadj
1.5E+02	mg/m3	14day	Negligible	TLV_TWA_irr	Yttrium				7440-65-5
2.7E-01	mg/m3	1year	Negligible	PPRTV_sub*	5.0E+02	mg/m3	1hour	Critical	TEEL3
Xylenes, total				1330-20-7	Yttrium chloride, hexahydrate				10025-94-2
1.1E+04	mg/m3	1hour	Critical	AEGL3_1hr	5.0E+02	mg/m3	1hour	Critical	TEEL3
4.0E+03	mg/m3	1hour	Marginal	AEGL2_1hr	5.0E+02	mg/m3	1hour	Marginal	TEEL2
5.6E+02	mg/m3	1hour	Negligible	AEGL1_1hr	1.0E+01	mg/m3	1hour	Negligible	TEEL1
5.6E+02	mg/m3	8hour	Negligible	AEGL1_8hr	Yttrium				7440-65-5
2.2E+02	mg/m3	14day	Negligible	CEGL	5.0E+02	mg/m3	1hour	Critical	TEEL3
2.7E-01	mg/m3	1year	Negligible	PPRTV_sub	5.0E+02	mg/m3	1hour	Marginal	TEEL2

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Yttrium trioxide				1314-36-9	Zinc chromate				11103-86-9
5.0E+02 mg/m3		1hour	Critical	TEEL3	1.5E+01 mg/m3	1hour	1hour	Critical	TEEL3
4.0E+01 mg/m3		1hour	Marginal	TEEL2	1.0E+00 mg/m3	1hour	1hour	Marginal	TEEL2
3.8E+00 mg/m3		1hour	Negligible	TEEL1	1.5E-01 mg/m3	1hour	1hour	Negligible	TEEL1
Zeolites, CaA				68989-20-8	1.0E-02 mg/m3	8hour	8hour	Negligible	TLV_TWA
5.0E+02 mg/m3		1hour	Critical	TEEL3	1.0E-02 mg/m3	8hour	8hour	Negligible	TLV_TWA
1.5E+02 mg/m3		1hour	Marginal	TEEL2	2.4E-03 mg/m3	14day	14day	Negligible	TLV_TWA
2.5E+01 mg/m3		1hour	Negligible	TEEL1	2.4E-03 mg/m3	14day	14day	Negligible	TLV_TWA
Zeolites, NaA				68989-22-0	2.4E-03 mg/m3	1year	1year	Negligible	TLVadj
5.0E+02 mg/m3		1hour	Critical	TEEL3	2.4E-03 mg/m3	1year	1year	Negligible	TLVadj
1.3E+02 mg/m3		1hour	Marginal	TEEL2	Zinc chromate				13530-65-9
1.5E+01 mg/m3		1hour	Negligible	TEEL1	1.5E+01 mg/m3	1hour	1hour	Critical	TEEL3
Zinc acetate				557-34-6	1.0E+00 mg/m3	1hour	1hour	Marginal	TEEL2
5.0E+02 mg/m3		1hour	Critical	TEEL3	1.5E-01 mg/m3	1hour	1hour	Negligible	TEEL1
6.0E+00 mg/m3		1hour	Marginal	TEEL2	1.0E-02 mg/m3	8hour	8hour	Negligible	TLV_TWA
7.5E-01 mg/m3		1hour	Negligible	TEEL1	1.0E-02 mg/m3	8hour	8hour	Negligible	TLV_TWA
Zinc acetate dihydrate				5970-45-6	2.4E-03 mg/m3	14day	14day	Negligible	TLV_TWA
3.5E+02 mg/m3		1hour	Critical	TEEL3	2.4E-03 mg/m3	14day	14day	Negligible	TLV_TWA
3.5E+02 mg/m3		1hour	Marginal	TEEL2	2.4E-03 mg/m3	1year	1year	Negligible	TLVadj
7.5E+01 mg/m3		1hour	Negligible	TEEL1	2.4E-03 mg/m3	1year	1year	Negligible	TLVadj
Zinc bromide				7699-45-8	Zinc cyanide				557-21-1
2.0E+02 mg/m3		1hour	Critical	TEEL3	1.1E+02 mg/m3	1hour	1hour	Critical	TEEL3
4.0E+01 mg/m3		1hour	Marginal	TEEL2	2.3E+01 mg/m3	1hour	1hour	Marginal	TEEL2
6.0E+00 mg/m3		1hour	Negligible	TEEL1	2.3E+01 mg/m3	1hour	1hour	Negligible	TEEL1
Zinc carbonate				3486-35-9	Zinc fluoride				7783-49-5
5.0E+02 mg/m3		1hour	Critical	TEEL3	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
1.0E+02 mg/m3		1hour	Marginal	TEEL2	1.3E+02 mg/m3	1hour	1hour	Marginal	TEEL2
1.5E+01 mg/m3		1hour	Negligible	TEEL1	2.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
Zinc carbonate hydroxide				5263-02-5	Zinc hydroxide				20427-58-1
2.5E+02 mg/m3		1hour	Critical	TEEL3	6.0E+01 mg/m3	1hour	1hour	Critical	TEEL3
5.0E+01 mg/m3		1hour	Marginal	TEEL2	1.5E+00 mg/m3	1hour	1hour	Marginal	TEEL2
3.0E+01 mg/m3		1hour	Negligible	TEEL1	6.0E-01 mg/m3	1hour	1hour	Negligible	TEEL1
Zinc chloride fume				7646-85-7	Zinc nitrate				7779-88-6
5.0E+01 mg/m3		1hour	Critical	TEEL3	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
5.0E+01 mg/m3		1hour	Marginal	TEEL2	1.3E+02 mg/m3	1hour	1hour	Marginal	TEEL2
2.0E+00 mg/m3		1hour	Negligible	TEEL1	1.5E+01 mg/m3	1hour	1hour	Negligible	TEEL1
1.0E+00 mg/m3		8hour	Negligible	TLV_TWA_irr	Zinc nitrate hexahydrate				10196-18-6
3.4E-01 mg/m3		14day	Negligible	TLV_TWA_irr	5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
3.4E-01 mg/m3		1year	Negligible	TLVirr	1.0E+02 mg/m3	1hour	1hour	Marginal	TEEL2
					1.5E+01 mg/m3	1hour	1hour	Negligible	TEEL1
					Zinc oxide				1314-13-2
					5.0E+02 mg/m3	1hour	1hour	Critical	TEEL3
					1.5E+01 mg/m3	1hour	1hour	Marginal	TEEL2
					1.0E+01 mg/m3	1hour	1hour	Negligible	TEEL1
					2.0E+00 mg/m3	8hour	8hour	Negligible	TLV_TWA
					4.9E-01 mg/m3	14day	14day	Negligible	TLV_TWA
					4.9E-01 mg/m3	1year	1year	Negligible	TLVadj

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME				CASRN	CHEMICAL NAME				CASRN
MEG	Units	Timeframe	Severity	Basis	MEG	Units	Timeframe	Severity	Basis
Zinc perchlorate				13637-61-1	Zirconium carbide				12070-14-3
2.5E+02	mg/m3	1hour	Critical	TEEL3	6.3E+01	mg/m3	1hour	Critical	TEEL3
5.0E+01	mg/m3	1hour	Marginal	TEEL2	1.3E+01	mg/m3	1hour	Marginal	TEEL2
3.0E+01	mg/m3	1hour	Negligible	TEEL1	1.3E+01	mg/m3	1hour	Negligible	TEEL1
Zinc perchlorate hexahydrate				10025-64-6	Zirconium chloride				10026-11-6
6.0E+01	mg/m3	1hour	Critical	TEEL3	1.3E+02	mg/m3	1hour	Critical	TEEL3
1.3E+01	mg/m3	1hour	Marginal	TEEL2	2.6E+01	mg/m3	1hour	Marginal	TEEL2
1.5E+00	mg/m3	1hour	Negligible	TEEL1	2.6E+01	mg/m3	1hour	Negligible	TEEL1
Zinc phenolsulfonate				127-82-2	Zirconium dinitrate oxide hydrate				14985-18-3
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.4E+02	mg/m3	1hour	Critical	TEEL3
1.5E+01	mg/m3	1hour	Marginal	TEEL2	2.7E+01	mg/m3	1hour	Marginal	TEEL2
2.0E+00	mg/m3	1hour	Negligible	TEEL1	2.7E+01	mg/m3	1hour	Negligible	TEEL1
Zinc phosphate				7779-90-0	Zirconium fluoride				7783-64-4
2.5E+02	mg/m3	1hour	Critical	TEEL3	5.0E+02	mg/m3	1hour	Critical	TEEL3
5.0E+01	mg/m3	1hour	Marginal	TEEL2	1.1E+02	mg/m3	1hour	Marginal	TEEL2
6.0E+00	mg/m3	1hour	Negligible	TEEL1	6.6E+01	mg/m3	1hour	Negligible	TEEL1
Zinc phosphide				1314-84-7	Zirconium hydride				7704-99-6
1.9E+01	mg/m3	1hour	Critical	AEGL3_1hr	5.1E+01	mg/m3	1hour	Critical	TEEL3
1.1E+01	mg/m3	1hour	Marginal	AEGL2_1hr	5.1E+01	mg/m3	1hour	Marginal	TEEL2
1.5E+00	mg/m3	1hour	Negligible	TEEL1	1.0E+01	mg/m3	1hour	Negligible	TEEL1
Zinc stearate				557-05-1	Zirconium hydroxide				14475-63-9
1.5E+02	mg/m3	1hour	Critical	TEEL3	8.7E+01	mg/m3	1hour	Critical	TEEL3
5.0E+01	mg/m3	1hour	Marginal	TEEL2	1.8E+01	mg/m3	1hour	Marginal	TEEL2
3.0E+01	mg/m3	1hour	Negligible	TEEL1	1.8E+01	mg/m3	1hour	Negligible	TEEL1
Zinc sulfate				7733-02-0	Zirconium nitrate				13746-89-9
5.0E+02	mg/m3	1hour	Critical	TEEL3	1.9E+02	mg/m3	1hour	Critical	TEEL3
3.5E+00	mg/m3	1hour	Marginal	TEEL2	3.7E+01	mg/m3	1hour	Marginal	TEEL2
5.0E-01	mg/m3	1hour	Negligible	TEEL1	3.7E+01	mg/m3	1hour	Negligible	TEEL1
Zinc sulfate heptahydrate				7446-20-0	Zirconium nitride				25658-42-8
2.0E+02	mg/m3	1hour	Critical	TEEL3	5.8E+01	mg/m3	1hour	Critical	TEEL3
2.0E+02	mg/m3	1hour	Marginal	TEEL2	1.2E+01	mg/m3	1hour	Marginal	TEEL2
2.0E+02	mg/m3	1hour	Negligible	TEEL1	1.2E+01	mg/m3	1hour	Negligible	TEEL1
Zinc, metallic				7440-66-6	Zirconium oxide				1314-23-4
5.0E+02	mg/m3	1hour	Critical	TEEL3	6.8E+01	mg/m3	1hour	Critical	TEEL3
4.0E+01	mg/m3	1hour	Marginal	TEEL2	1.4E+01	mg/m3	1hour	Marginal	TEEL2
6.0E+00	mg/m3	1hour	Negligible	TEEL1	1.4E+01	mg/m3	1hour	Negligible	TEEL1
Zirconium				7440-67-7	Zirconium oxychloride octahydrate				13520-92-8
5.0E+01	mg/m3	1hour	Critical	TEEL3	1.8E+02	mg/m3	1hour	Critical	TEEL3
1.0E+01	mg/m3	1hour	Marginal	TEEL2	3.5E+01	mg/m3	1hour	Marginal	TEEL2
1.0E+01	mg/m3	1hour	Negligible	TEEL1	3.5E+01	mg/m3	1hour	Negligible	TEEL1
5.0E+00	mg/m3	8hour	Negligible	TLV_TWA	Zirconium potassium fluoride				16923-95-8
1.2E+00	mg/m3	14day	Negligible	TLV_TWA	5.0E+02	mg/m3	1hour	Critical	TEEL3
1.2E+00	mg/m3	1year	Negligible	TLVadj	1.9E+02	mg/m3	1hour	Marginal	TEEL2
Zirconium boride				12045-64-6	1.1E+02	mg/m3	1hour	Negligible	TEEL1
6.2E+01	mg/m3	1hour	Critical	TEEL3					
6.2E+01	mg/m3	1hour	Marginal	TEEL2					
1.2E+01	mg/m3	1hour	Negligible	TEEL1					

Table C-1: Air Military Exposure Guidelines

CHEMICAL NAME					CASRN	CHEMICAL NAME					CASRN
MEG	Units	Timeframe	Severity	Basis		MEG	Units	Timeframe	Severity	Basis	
Zirconium silicate					10101-52-7						
1.0E+02	mg/m3	1hour	Critical	TEEL3							
5.1E+01	mg/m3	1hour	Marginal	TEEL2							
2.1E+01	mg/m3	1hour	Negligible	TEEL1							
Zirconyl chloride					7699-43-6						
9.8E+01	mg/m3	1hour	Critical	TEEL3							
9.8E+01	mg/m3	1hour	Marginal	TEEL2							
2.0E+01	mg/m3	1hour	Negligible	TEEL1							
Zirconyl nitrate					13826-66-9						
1.3E+02	mg/m3	1hour	Critical	TEEL3							
2.5E+01	mg/m3	1hour	Marginal	TEEL2							
2.5E+01	mg/m3	1hour	Negligible	TEEL1							
Zonyl FSN					65545-80-4						
5.0E+02	mg/m3	1hour	Critical	TEEL3							
5.0E+02	mg/m3	1hour	Marginal	TEEL2							
1.5E+02	mg/m3	1hour	Negligible	TEEL1							

Footnotes for Table C-1

*MEG derived outside default hierarchy
See Appendix B for acronym definitions

Table C-2: Water Military Exposure Guidelines

CHEMICAL NAME					CASRN	CHEMICAL NAME					CASRN
MEG	Units	Time-frame	Severity	Intake Rate	Basis	MEG	Units	Time-frame	Severity	Intake Rate	Basis
2,4,6-Tribromophenol					118-79-6	Alar					1596-84-5
1.3E+00	mg/L	1year	Negligible	5L	PPRTV_sub_nc	2.1E+00	mg/L	1year	Negligible	5L	IRIS_chr_nc
Acenaphthene					83-32-9	Aldicarb					116-06-3
8.4E+00	mg/L	1year	Negligible	5L	IRIS_sub_nc	1.4E-02	mg/L	7day	Negligible	5L	HA1d_adj
Acephate					30560-19-1	Aldicarb sulfone					1646-88-4
5.6E-02	mg/L	1year	Negligible	5L	HEAST_sub_nc	4.7E-03	mg/L	7day	Negligible	15L	HA1d_adj
Acetochlor					34256-82-1	Aldicarb sulfoxide					1646-87-3
2.8E-01	mg/L	1year	Negligible	5L	IRIS_chr_nc	1.4E-02	mg/L	7day	Negligible	5L	HA1d_adj
Acetone					67-64-1	Aldrin					309-00-2
3.8E+01	mg/L	1year	Negligible	5L	IRIS_sub_nc	5.6E-04	mg/L	1year	Negligible	5L	PPRTV_sub_nc
Acetone cyanohydrin					75-86-5	Allyl alcohol					107-18-6
4.2E-01	mg/L	1year	Negligible	5L	PPRTV_sub_nc	5.6E-02	mg/L	1year	Negligible	5L	PPRTV_sub_nc
Acetonitrile					75-05-8	Aluminum phosphide					20859-73-8
8.4E-01	mg/L	1year	Negligible	5L	HEAST_sub_nc	5.6E-03	mg/L	1year	Negligible	5L	HEAST_sub_nc
Acetophenone					98-86-2	Aluminum, elemental					7429-90-5
1.4E+01	mg/L	1year	Negligible	5L	IRIS_sub_nc	1.4E+01	mg/L	1year	Negligible	5L	MRL_inter_nc
Acifluorfen-sodium					62476-59-9	Amdro					67485-29-4
2.8E+00	mg/L	7day	Negligible	5L	HA1d_adj	4.2E-02	mg/L	1year	Negligible	5L	IRIS_sub_nc
2.8E+00	mg/L	14day	Negligible	5L	HA10d_adj	Ametryn					834-12-8
9.3E-01	mg/L	7day	Negligible	15L	HA1d_adj	1.3E+01	mg/L	7day	Negligible	5L	HA1d_adj
9.3E-01	mg/L	14day	Negligible	15L	HA10d_adj	4.2E+00	mg/L	7day	Negligible	15L	HA1d_adj
1.8E-01	mg/L	1year	Negligible	5L	IRIS_chr_nc	1.3E+01	mg/L	14day	Negligible	5L	HA10d_adj
Acrolein					107-02-8	Aminophenol, 3-					591-27-5
5.6E-02	mg/L	1year	Negligible	5L	MRL_inter_nc	4.2E+00	mg/L	1year	Negligible	5L	PPRTV_sub_nc
Acrylamide					79-06-1	Aminophenol, 4-					123-30-8
2.1E+00	mg/L	7day	Negligible	5L	HA1d_adj	2.8E+00	mg/L	1year	Negligible	5L	PPRTV_sub_nc
7.0E-01	mg/L	7day	Negligible	15L	HA1d_adj	Aminopyridine, 4-					504-24-5
4.2E-01	mg/L	14day	Negligible	5L	HA10d_adj	2.8E-03	mg/L	1year	Negligible	5L	HEAST_sub_nc
1.4E-01	mg/L	14day	Negligible	15L	HA10d_adj	Amitraz					33089-61-1
2.8E-02	mg/L	1year	Negligible	5L	MRL_inter_nc	3.5E-02	mg/L	1year	Negligible	5L	IRIS_chr_nc
Acrylic acid					79-10-7	Aminopyridine, 4-					504-24-5
7.0E+00	mg/L	1year	Negligible	5L	HEAST_sub_nc	Amitraz					33089-61-1
Acrylonitrile					107-13-1	Aminopyridine, 4-					504-24-5
1.4E+00	mg/L	7day	Negligible	5L	MRLoA_adj	Amitraz					33089-61-1
4.7E-01	mg/L	7day	Negligible	15L	MRLoA_adj	Amitraz					33089-61-1
1.4E+00	mg/L	14day	Negligible	5L	MRLoA_adj	Amitraz					33089-61-1
4.7E-01	mg/L	14day	Negligible	15L	MRLoA_adj	Amitraz					33089-61-1
1.4E-01	mg/L	1year	Negligible	5L	MRL_inter_nc	Amitraz					33089-61-1
Adipic acid					124-04-9	Amitraz					33089-61-1
2.8E+01	mg/L	1year	Negligible	5L	PPRTV_sub_nc	Amitraz					33089-61-1
Alachlor					15972-60-8	Amitraz					33089-61-1
1.4E-01	mg/L	7day	Negligible	5L	HA1d_adj	Amitraz					33089-61-1
4.7E-02	mg/L	7day	Negligible	15L	HA1d_adj	Amitraz					33089-61-1
1.4E-01	mg/L	14day	Negligible	5L	HA10d_adj	Amitraz					33089-61-1
4.7E-02	mg/L	14day	Negligible	15L	HA10d_adj	Amitraz					33089-61-1
1.4E-01	mg/L	1year	Negligible	5L	HEAST_sub_nc	Amitraz					33089-61-1

Table C-2: Water Military Exposure Guidelines

CHEMICAL NAME						CASRN	CHEMICAL NAME						CASRN
MEG	Units	Time-frame	Severity	Intake Rate	Basis		MEG	Units	Time-frame	Severity	Intake Rate	Basis	
Ammonium perchlorate						7790-98-9	Asulam						3337-71-1
9.8E-03	mg/L	1year	Negligible	5L	IRIS_chr_nc		7.0E-01	mg/L	1year	Negligible	5L	IRIS_chr_nc	
Ammonium sulfamate						7773-06-0	Atrazine						1912-24-9
2.8E+01	mg/L	7day	Negligible	5L	HA1d_adj		1.4E-01	mg/L	7day	Negligible	5L	MRLoA_adj	
9.3E+00	mg/L	7day	Negligible	15L	HA1d_adj		4.7E-02	mg/L	7day	Negligible	15L	MRLoA_adj	
2.8E+01	mg/L	14day	Negligible	5L	HA10d_adj		1.4E-01	mg/L	14day	Negligible	5L	MRLoA_adj	
9.3E+00	mg/L	14day	Negligible	15L	HA10d_adj		4.7E-02	mg/L	14day	Negligible	15L	MRLoA_adj	
2.8E+01	mg/L	1year	Negligible	5L	IRIS_sub_nc		4.2E-02	mg/L	1year	Negligible	5L	MRL_inter_nc	
Aniline						62-53-3	Avermectin B1						65195-55-3
1.7E+01	mg/L	1year	Negligible	5L	IRIS_ca		5.6E-03	mg/L	1year	Negligible	5L	IRIS_chr_nc	
Anthracene						120-12-7	Azinphos methyl						86-50-0
1.4E+01	mg/L	1year	Negligible	5L	PPRTV_sub_nc		1.4E-01	mg/L	7day	Negligible	5L	MRLoA_adj	
Antimony pentoxide						1314-60-9	Baygon						114-26-1
7.0E-03	mg/L	1year	Negligible	5L	HEAST_sub_nc		5.6E-02	mg/L	1year	Negligible	5L	IRIS_chr_nc	
Antimony potassium tartrate						28300-74-5	Bayleton						43121-43-3
1.3E-02	mg/L	1year	Negligible	5L	HEAST_sub_nc		4.2E-01	mg/L	1year	Negligible	5L	IRIS_chr_nc	
Antimony potassium tartrate anhydrous						11071-15-1	Baythroid						68359-37-5
5.6E-03	mg/L	1year	Negligible	5L	PPRTV_sub_nc		3.5E-01	mg/L	1year	Negligible	5L	IRIS_chr_nc	
Antimony tetroxide						1332-81-6	Benefin						1861-40-1
5.6E-03	mg/L	1year	Negligible	5L	HEAST_sub_nc		4.2E+00	mg/L	1year	Negligible	5L	HEAST_sub_nc	
Antimony trioxide						1309-64-4	Benomyl						17804-35-2
7.0E+00	mg/L	1year	Negligible	5L	PPRTV_sub_nc		7.0E-01	mg/L	1year	Negligible	5L	IRIS_chr_nc	
Antimony, elemental						7440-36-0	Bentazon						25057-89-0
1.4E-02	mg/L	7day	Negligible	5L	HA1d_adj		4.2E-01	mg/L	1year	Negligible	5L	IRIS_chr_nc	
6.0E-03	mg/L	7day	Negligible	15L	MCL*		Benzene						71-43-2
1.4E-02	mg/L	14day	Negligible	5L	HA10d_adj		2.8E-01	mg/L	7day	Negligible	5L	HA1d_adj	
6.0E-03	mg/L	14day	Negligible	15L	MCL*		9.3E-02	mg/L	7day	Negligible	15L	HA1d_adj	
6.0E-03	mg/L	1year	Negligible	5L	MCL*_		2.8E-01	mg/L	14day	Negligible	5L	HA10d_adj	
Apollo						74115-24-5	Benzenethiol						108-98-5
1.8E-01	mg/L	1year	Negligible	5L	IRIS_chr_nc		1.4E-03	mg/L	1year	Negligible	5L	HEAST_sub_nc	
Aramite						140-57-8	Benzidine						92-87-5
1.4E+00	mg/L	1year	Negligible	5L	HEAST_sub_nc		4.3E-04	mg/L	1year	Negligible	5L	IRIS_ca	
Aroclor 1016						12674-11-2	Benzo(a)pyrene						50-32-8
2.9E-03	mg/L	1year	Negligible	5L	IRIS_sub_nc		1.3E-02	mg/L	1year	Negligible	5L	IRIS_ca	
Aroclor 1254						11097-69-1	Benzoic acid						65-85-0
8.4E-04	mg/L	1year	Negligible	5L	IRIS_sub_nc		5.6E+01	mg/L	1year	Negligible	5L	PPRTV_sub_nc	
Arsenic, elemental						7440-38-2							
3.0E-01	mg/L	7day	Negligible	5L	TSFWS_ST5‡								
1.0E-01	mg/L	7day	Negligible	15L	TSFWS_ST15‡								
6.0E-02	mg/L	14day	Negligible	5L	TSFWS_LT5‡								
2.0E-02	mg/L	14day	Negligible	15L	TSFWS_LT15‡								
6.0E-02	mg/L	1year	Negligible	5L	TSFWS_LT5*_								
Asbestos						1332-21-4							
7.0E+06	fibers/	1year	Negligible	5L	MCL_								
Assure						76578-14-8							
1.3E-01	mg/L	1year	Negligible	5L	IRIS_chr_nc								

Table C-2: Water Military Exposure Guidelines

CHEMICAL NAME						CASRN	CHEMICAL NAME						CASRN
MEG	Units	Time-frame	Severity	Intake Rate	Basis		MEG	Units	Time-frame	Severity	Intake Rate	Basis	
Benzotrithloride						98-07-7	Bromate						15541-45-4
7.5E-03	mg/L	1year	Negligible	5L	IRIS_ca		5.6E-02	mg/L	1year	Negligible	5L	IRIS_chr_nc	
Beryllium, elemental						7440-41-7	Bromobenzene						108-86-1
4.2E+01	mg/L	7day	Negligible	5L	HA1d_adj		5.6E+00	mg/L	7day	Negligible	5L	HA1d_adj	
1.4E+01	mg/L	7day	Negligible	15L	HA1d_adj		1.9E+00	mg/L	7day	Negligible	15L	HA1d_adj	
4.2E+01	mg/L	14day	Negligible	5L	HA10d_adj		5.6E+00	mg/L	14day	Negligible	5L	HA10d_adj	
1.4E+01	mg/L	14day	Negligible	15L	HA10d_adj		2.8E-01	mg/L	1year	Negligible	5L	IRIS_sub_nc	
7.0E-02	mg/L	1year	Negligible	5L	HEAST_sub_nc		1.9E+00	mg/L	14day	Negligible	15L	HA10d_adj	
Bidrin						141-66-2	Bromochloromethane						74-97-5
1.4E-03	mg/L	1year	Negligible	5L	IRIS_chr_nc		7.0E+01	mg/L	7day	Negligible	5L	HA1d_adj	
Bifenox						42576-02-3	Bromodichloromethane						75-27-4
1.4E+01	mg/L	1year	Negligible	5L	PPRTV_sub_nc		2.3E+01	mg/L	7day	Negligible	15L	HA1d_adj	
Biphenthrin						82657-04-3	Bromoform						75-25-2
2.1E-01	mg/L	1year	Negligible	5L	IRIS_chr_nc		7.0E+00	mg/L	7day	Negligible	5L	HA1d_adj	
Biphenyl, 1,1-						92-52-4	Bromophos						2104-96-3
7.0E-01	mg/L	1year	Negligible	5L	HEAST_sub_nc		7.0E-01	mg/L	1year	Negligible	5L	HEAST_sub_nc	
Bis(2-chloro-1-methylethyl) ether						108-60-1	Bromoxynil						1689-84-5
5.6E-01	mg/L	1year	Negligible	5L	IRIS_chr_nc		2.8E-01	mg/L	1year	Negligible	5L	HEAST_sub_nc	
Bis(2-chloroethoxy)methane						111-91-1	Bromoxynil octanoate						1689-99-2
4.2E-01	mg/L	1year	Negligible	5L	PPRTV_sub_nc		2.8E-01	mg/L	1year	Negligible	5L	HEAST_sub_nc	
Bis(2-chloroethyl) ether						111-44-4	Busan						21564-17-0
8.9E-02	mg/L	1year	Negligible	5L	IRIS_ca		4.2E+00	mg/L	1year	Negligible	5L	HEAST_sub_nc	
Bis(2-chloroisopropyl) ether						39638-32-9	Butanol, 1-						71-36-3
5.6E+00	mg/L	7day	Negligible	5L	HA1d_adj		1.4E+01	mg/L	1year	Negligible	5L	IRIS_sub_nc	
1.9E+00	mg/L	7day	Negligible	15L	HA1d_adj		Butyl alcohol, sec-						78-92-2
5.6E+00	mg/L	14day	Negligible	5L	HA10d_adj		2.8E+01	mg/L	1year	Negligible	5L	PPRTV_sub_nc	
1.9E+00	mg/L	14day	Negligible	15L	HA10d_adj		Butyl benzyl phthalate						85-68-7
5.6E-01	mg/L	1year	Negligible	5L	HEAST_sub_nc		2.8E+01	mg/L	1year	Negligible	5L	IRIS_sub_nc	
Bis(2-ethylhexyl) phthalate						117-81-7	Butyl glycolyl butyl phthalate						85-70-1
2.8E+00	mg/L	1year	Negligible	5L	IRIS_sub_nc		1.4E+01	mg/L	1year	Negligible	5L	IRIS_chr_nc	
Bis(chloromethyl) ether						542-88-1	Butylate						2008-41-5
4.5E-04	mg/L	1year	Negligible	5L	IRIS_ca		2.8E+00	mg/L	7day	Negligible	5L	HA1d_adj	
Bisphenol A						80-05-7	Butyl benzyl phthalate						85-68-7
7.0E+00	mg/L	1year	Negligible	5L	IRIS_sub_nc		2.8E+01	mg/L	1year	Negligible	5L	IRIS_sub_nc	
Boron						7440-42-8	Butyl glycolyl butyl phthalate						85-70-1
5.6E+00	mg/L	7day	Negligible	5L	HA1d_adj*		1.4E+01	mg/L	1year	Negligible	5L	IRIS_chr_nc	
1.9E+00	mg/L	7day	Negligible	15L	HA1d_adj*		Butylate						2008-41-5
2.8E+00	mg/L	14day	Negligible	5L	IRIS_sub*		2.8E+00	mg/L	7day	Negligible	15L	HA1d_adj	
9.3E-01	mg/L	14day	Negligible	15L	IRIS_sub*		2.8E+00	mg/L	14day	Negligible	5L	HA10d_adj	
2.8E+00	mg/L	1year	Negligible	5L	IRIS_chr_nc		7.0E-01	mg/L	1year	Negligible	5L	HEAST_sub_nc	
Bromacil						314-40-9	Butylate						2008-41-5
7.0E+00	mg/L	7day	Negligible	5L	HA1d_adj		2.8E+00	mg/L	14day	Negligible	5L	HA10d_adj	
2.3E+00	mg/L	7day	Negligible	15L	HA1d_adj		7.0E-01	mg/L	1year	Negligible	5L	HEAST_sub_nc	
7.0E+00	mg/L	14day	Negligible	5L	HA10d_adj		9.3E-01	mg/L	14day	Negligible	15L	HA10d_adj	
2.3E+00	mg/L	14day	Negligible	15L	HA10d_adj								

Table C-2: Water Military Exposure Guidelines

CHEMICAL NAME					CASRN	CHEMICAL NAME					CASRN
MEG	Units	Time-frame	Severity	Intake Rate	Basis	MEG	Units	Time-frame	Severity	Intake Rate	Basis
Butyltin compounds					z-136	Carboxin					5234-68-4
4.2E-03	mg/L	1year	Negligible	5L	PPRTV_sub_nc	4.7E-01	mg/L	7day	Negligible	15L	HA1d_adj
BZ					53800-72-9	1.4E+00	mg/L	7day	Negligible	5L	HA1d_adj
7.0E-03	mg/L	7day	Negligible	5L	TSFWS_ST5‡	1.4E+00	mg/L	14day	Negligible	5L	HA10d_adj
2.3E-03	mg/L	7day	Negligible	15L	TSFWS_ST15‡	1.4E+00	mg/L	1year	Negligible	5L	IRIS_chr_nc
Cacodylic acid					75-60-5	4.7E-01	mg/L	14day	Negligible	15L	HA10d_adj
2.8E-01	mg/L	1year	Negligible	5L	MRL_chr_nc	Chloral					75-87-6
Cadmium, elemental					7440-43-9	2.8E-01	mg/L	1year	Negligible	5L	HEAST_sub_nc
5.6E-02	mg/L	7day	Negligible	5L	HA1d_adj	Chloral hydrate					302-17-0
1.9E-02	mg/L	7day	Negligible	15L	HA1d_adj	1.4E+00	mg/L	1year	Negligible	5L	IRIS_chr_nc
5.6E-02	mg/L	14day	Negligible	5L	HA10d_adj	Chloramben					133-90-4
7.0E-03	mg/L	1year	Negligible	5L	IRIS_chr_nc	1.4E+00	mg/L	7day	Negligible	15L	HA1d_adj
1.9E-02	mg/L	14day	Negligible	15L	HA10d_adj	4.2E+00	mg/L	7day	Negligible	5L	HA1d_adj
Calcium cyanide					592-01-8	4.2E+00	mg/L	14day	Negligible	5L	HA10d_adj
5.6E-01	mg/L	1year	Negligible	5L	HEAST_sub_nc	2.1E-01	mg/L	1year	Negligible	5L	IRIS_chr_nc
Caprolactam					105-60-2	1.4E+00	mg/L	14day	Negligible	15L	HA10d_adj
7.0E+00	mg/L	1year	Negligible	5L	HEAST_sub_nc	Chloranil					118-75-2
Captafol					2425-06-1	2.4E-01	mg/L	1year	Negligible	5L	HEAST_ca
2.8E-02	mg/L	1year	Negligible	5L	HEAST_sub_nc	Chlordane					57-74-9
Captan					133-06-2	2.8E-02	mg/L	7day	Negligible	15L	HA1d_adj
1.8E+00	mg/L	1year	Negligible	5L	HEAST_sub_nc	8.4E-02	mg/L	7day	Negligible	5L	HA1d_adj
Carbaryl					63-25-2	8.4E-02	mg/L	14day	Negligible	5L	HA10d_adj
1.4E+00	mg/L	7day	Negligible	5L	HA1d_adj	8.4E-03	mg/L	1year	Negligible	5L	MRL_inter_nc
4.7E-01	mg/L	7day	Negligible	15L	HA1d_adj	2.8E-02	mg/L	14day	Negligible	15L	HA10d_adj
1.4E+00	mg/L	14day	Negligible	5L	HA10d_adj	Chlordecone					143-50-0
1.4E+00	mg/L	1year	Negligible	5L	HEAST_sub_nc	4.7E-02	mg/L	7day	Negligible	15L	MRLoA_adj
4.7E-01	mg/L	14day	Negligible	15L	HA10d_adj	1.4E-01	mg/L	7day	Negligible	5L	MRLoA_adj
Carbazole					86-74-8	1.4E-01	mg/L	14day	Negligible	5L	MRLoA_adj
4.9E+00	mg/L	1year	Negligible	5L	HEAST_ca	7.0E-03	mg/L	1year	Negligible	5L	MRL_inter_nc
Carbofuran					1563-66-2	4.7E-02	mg/L	14day	Negligible	15L	MRLoA_adj
7.0E-02	mg/L	14day	Negligible	5L	HA10d_adj_chr	Chlorfenvinphos					470-90-6
7.0E-02	mg/L	1year	Negligible	5L	HEAST_sub_nc	9.3E-03	mg/L	7day	Negligible	15L	MRLoA_adj
2.3E-02	mg/L	14day	Negligible	15L	HA10d_adj_chr	2.8E-02	mg/L	7day	Negligible	5L	MRLoA_adj
Carbon disulfide					75-15-0	2.8E-02	mg/L	14day	Negligible	5L	MRLoA_adj
1.4E+00	mg/L	1year	Negligible	5L	HEAST_sub_nc	2.8E-02	mg/L	1year	Negligible	5L	MRL_inter_nc
Carbon tetrachloride					56-23-5	9.3E-03	mg/L	14day	Negligible	15L	MRLoA_adj
5.6E+00	mg/L	7day	Negligible	5L	HA1d_adj	Chloride					16887-00-6
1.9E+00	mg/L	7day	Negligible	15L	HA1d_adj	6.0E+02	mg/L	7day	Negligible	15L	TSFWS_ST15‡
2.8E-01	mg/L	14day	Negligible	5L	HA10d_adj	6.0E+02	mg/L	7day	Negligible	5L	TSFWS_ST5‡
1.7E-01	mg/L	1year	Negligible	5L	IRIS_sub_nc	6.0E+02	mg/L	14day	Negligible	5L	TSFWS_LT5‡
9.3E-02	mg/L	14day	Negligible	15L	HA10d_adj	6.0E+02	mg/L	14day	Negligible	15L	TSFWS_LT15‡
Carbosulfan					55285-14-8	Chlorimuron-ethyl					90982-32-4
1.4E-01	mg/L	1year	Negligible	5L	IRIS_chr_nc	2.8E-01	mg/L	1year	Negligible	5L	IRIS_chr_nc

Table C-2: Water Military Exposure Guidelines

CHEMICAL NAME						CASRN	CHEMICAL NAME						CASRN
MEG	Units	Time-frame	Severity	Intake Rate	Basis		MEG	Units	Time-frame	Severity	Intake Rate	Basis	
Chlorine						7782-50-5	Chlorobutane, 1-						109-69-3
4.0E+00	mg/L	7day	Negligible	15L	MRDL*		9.8E-01	mg/L	1year	Negligible	5L	PPRTV_sub_nc	
4.2E+00	mg/L	7day	Negligible	5L	HA1d_adj		Chloroform						67-66-3
4.2E+00	mg/L	14day	Negligible	5L	HA10d_adj		1.9E+00	mg/L	7day	Negligible	15L	HA1d_adj	
4.0E+00	mg/L	1year	Negligible	5L	MRDL*_		5.6E+00	mg/L	7day	Negligible	5L	HA1d_adj	
4.0E+00	mg/L	14day	Negligible	15L	MRDL*		5.6E+00	mg/L	14day	Negligible	5L	HA10d_adj	
Chlorite						14998-27-7	1.9E+00	mg/L	14day	Negligible	15L	HA10d_adj	
1.4E+00	mg/L	14day	Negligible	5L	MRL_inter_nc*		1.4E+00	mg/L	1year	Negligible	5L	MRL_inter_nc	
1.4E+00	mg/L	1year	Negligible	5L	MRL_inter_nc		Chloronaphthalene, beta-						91-58-7
1.0E+00	mg/L	14day	Negligible	15L	MCL*		2.8E+00	mg/L	1year	Negligible	5L	PPRTV_sub_nc	
Chlorite (sodium chlorite)						7758-19-2	Chloronitrobenzene, o-						88-73-3
3.7E-01	mg/L	7day	Negligible	15L	HA1d_adj		2.8E-01	mg/L	1year	Negligible	5L	PPRTV_sub_nc	
1.1E+00	mg/L	7day	Negligible	5L	HA1d_adj		Chlorophenol, 2-						95-57-8
1.1E+00	mg/L	14day	Negligible	5L	HA10d_adj		2.3E-01	mg/L	7day	Negligible	15L	HA1d_adj	
1.4E+00	mg/L	1year	Negligible	5L	MRL_inter_nc		7.0E-01	mg/L	7day	Negligible	5L	HA1d_adj	
3.7E-01	mg/L	14day	Negligible	15L	HA10d_adj		7.0E-01	mg/L	14day	Negligible	5L	HA10d_adj	
Chloro-1,3-butadiene						126-99-8	2.3E-01	mg/L	14day	Negligible	15L	HA10d_adj	
2.8E-01	mg/L	1year	Negligible	5L	HEAST_sub_nc		1.1E-01	mg/L	1year	Negligible	5L	PPRTV_sub_nc	
Chloro-2-methylaniline hydrochloride, 4-						3165-93-3	Chlorophenol, 4-						106-48-9
2.1E-01	mg/L	1year	Negligible	5L	HEAST_ca		4.7E-02	mg/L	7day	Negligible	15L	MRLoA_adj	
Chloro-2-methylaniline, 4-						95-69-2	1.4E-01	mg/L	7day	Negligible	5L	MRLoA_adj	
1.7E-01	mg/L	1year	Negligible	5L	HEAST_ca		1.4E-01	mg/L	14day	Negligible	5L	MRLoA_adj	
Chloroacetaldehyde						107-20-0	4.7E-02	mg/L	14day	Negligible	15L	MRLoA_adj	
3.6E-01	mg/L	1year	Negligible	5L	PPRTV_ca		Chlorothalonil						1897-45-6
3.6E-01	mg/L	1year	Negligible	5L	PPRTV_ca		9.3E-02	mg/L	7day	Negligible	15L	HA1d_adj	
Chloroacetaldehyde						107-20-0	2.8E-01	mg/L	7day	Negligible	5L	HA1d_adj	
3.6E-01	mg/L	1year	Negligible	5L	PPRTV_ca		2.8E-01	mg/L	14day	Negligible	5L	HA10d_adj	
3.6E-01	mg/L	1year	Negligible	5L	PPRTV_ca		9.3E-02	mg/L	14day	Negligible	15L	HA10d_adj	
Chloroacetic acid						79-11-8	2.1E-01	mg/L	1year	Negligible	5L	HEAST_sub_nc	
9.3E-02	mg/L	7day	Negligible	15L	HA1d_adj		Chlorotoluene, o-						95-49-8
2.8E-01	mg/L	7day	Negligible	5L	HA1d_adj		9.3E-01	mg/L	7day	Negligible	15L	HA1d_adj	
2.8E-01	mg/L	14day	Negligible	5L	HA10d_adj		2.8E+00	mg/L	7day	Negligible	5L	HA1d_adj	
9.3E-02	mg/L	14day	Negligible	15L	HA10d_adj		2.8E+00	mg/L	14day	Negligible	5L	HA10d_adj	
2.8E-01	mg/L	1year	Negligible	5L	HEAST_sub_nc		9.3E-01	mg/L	14day	Negligible	15L	HA10d_adj	
Chloroaniline, 4-						106-47-8	2.8E+00	mg/L	1year	Negligible	5L	IRIS_sub_nc	
7.0E-03	mg/L	1year	Negligible	5L	PPRTV_sub_nc		Chlorotoluene, p-						106-43-4
Chlorobenzene						108-90-7	9.8E+00	mg/L	1year	Negligible	5L	PPRTV_sub_nc	
1.9E+00	mg/L	7day	Negligible	15L	HA1d_adj		Chlorpropham						101-21-3
5.6E+00	mg/L	7day	Negligible	5L	HA1d_adj		2.8E+00	mg/L	1year	Negligible	5L	IRIS_chr_nc	
5.6E+00	mg/L	14day	Negligible	5L	HA10d_adj		Chlorpyrifos						2921-88-2
1.9E+00	mg/L	14day	Negligible	15L	HA10d_adj		1.4E-02	mg/L	7day	Negligible	15L	HA1d_adj	
9.8E-01	mg/L	1year	Negligible	5L	PPRTV_sub_nc		4.2E-02	mg/L	7day	Negligible	5L	HA1d_adj	
Chlorobenzilate						510-15-6	4.2E-02	mg/L	14day	Negligible	5L	HA10d_adj	
2.8E-01	mg/L	1year	Negligible	5L	HEAST_sub_nc		1.4E-02	mg/L	14day	Negligible	15L	HA10d_adj	
Chlorobenzotrifluoride, 4-						98-56-6	4.2E-02	mg/L	1year	Negligible	5L	MRL_inter_nc	
4.2E-01	mg/L	1year	Negligible	5L	PPRTV_sub_nc								

Table C-2: Water Military Exposure Guidelines

CHEMICAL NAME						CASRN	CHEMICAL NAME						CASRN
MEG	Units	Time-frame	Severity	Intake Rate	Basis		MEG	Units	Time-frame	Severity	Intake Rate	Basis	
Chlorpyrifos methyl						5598-13-0	Cyanazine						21725-46-2
1.4E-01	mg/L	1year	Negligible	5L	HEAST_sub_nc		4.7E-02	mg/L	7day	Negligible	15L	HA1d_adj	
Chlorsulfuron						64902-72-3	Cyanide						57-12-5
7.0E-01	mg/L	1year	Negligible	5L	IRIS_chr_nc		2.0E+00	mg/L	7day	Negligible	15L	TSFWS_ST15‡	
Chlorthal						2136-79-0	Cyanogen						460-19-5
4.7E+01	mg/L	7day	Negligible	15L	HA1d_adj		6.0E+00	mg/L	7day	Negligible	5L	TSFWS_ST5‡	
1.4E+02	mg/L	7day	Negligible	5L	HA1d_adj		6.0E+00	mg/L	14day	Negligible	5L	TSFWS_LT5‡	
1.4E+02	mg/L	14day	Negligible	5L	HA10d_adj		2.0E+00	mg/L	14day	Negligible	15L	TSFWS_LT15‡	
4.7E+01	mg/L	14day	Negligible	15L	HA10d_adj		Cyanogen bromide						506-68-3
Chlorthiophos						60238-56-4	Cyanogen chloride						506-77-4
1.1E-02	mg/L	1year	Negligible	5L	HEAST_sub_nc		Cyclohexanone						108-94-1
Chromium (III)						16065-83-1	Cyclohexylamine						108-91-8
2.1E+01	mg/L	1year	Negligible	5L	HEAST_sub_nc		Cyhalothrin						68085-85-8
Chromium (VI)						18540-29-9	Cypermethrin						52315-07-8
1.3E-01	mg/L	1year	Negligible	5L	IRIS_sub_nc		Cyromazine						66215-27-8
Chromium, elemental						7440-47-3	Dacthal						1861-32-1
4.7E-01	mg/L	7day	Negligible	15L	HA1d_adj		Cobalt						7440-48-4
1.4E+00	mg/L	7day	Negligible	5L	HA1d_adj		Copper compounds						Cu cmpds
1.4E+00	mg/L	14day	Negligible	5L	HA10d_adj		Copper cyanide						544-92-3
4.7E-01	mg/L	14day	Negligible	15L	HA10d_adj		Cresol, m-						108-39-4
Copper compounds						Cu cmpds	Cresol, o-						95-48-7
4.7E-02	mg/L	7day	Negligible	15L	MRLoA_adj		Cresol, p-						106-44-5
1.4E-01	mg/L	7day	Negligible	5L	MRLoA_adj		Crotonaldehyde, trans-						123-73-9
1.4E-01	mg/L	14day	Negligible	5L	MRLoA_adj		Cumene						98-82-8
4.7E-02	mg/L	14day	Negligible	15L	MRLoA_adj		Cumene						98-82-8
1.4E-01	mg/L	1year	Negligible	5L	MRL_inter_nc		Cumene						98-82-8
Copper cyanide						544-92-3	Cumene						98-82-8
7.0E-01	mg/L	1year	Negligible	5L	IRIS_sub_nc		Cumene						98-82-8
Cresol, m-						108-39-4	Cumene						98-82-8
7.0E+00	mg/L	1year	Negligible	5L	IRIS_sub_nc		Cumene						98-82-8
Cresol, o-						95-48-7	Cumene						98-82-8
7.0E+00	mg/L	1year	Negligible	5L	IRIS_sub_nc		Cumene						98-82-8
Cresol, p-						106-44-5	Cumene						98-82-8
7.0E-02	mg/L	1year	Negligible	5L	HEAST_sub_nc		Cumene						98-82-8
Crotonaldehyde, trans-						123-73-9	Cumene						98-82-8
5.2E-02	mg/L	1year	Negligible	5L	HEAST_ca		Cumene						98-82-8
Cumene						98-82-8	Cumene						98-82-8
5.1E+00	mg/L	7day	Negligible	15L	HA1d_adj		Cumene						98-82-8
1.5E+01	mg/L	7day	Negligible	5L	HA1d_adj		Cumene						98-82-8
1.5E+01	mg/L	14day	Negligible	5L	HA10d_adj		Cumene						98-82-8
5.1E+00	mg/L	14day	Negligible	15L	HA10d_adj		Cumene						98-82-8
4.2E+00	mg/L	1year	Negligible	5L	IRIS_sub_nc		Cumene						98-82-8

Table C-2: Water Military Exposure Guidelines

CHEMICAL NAME						CASRN	CHEMICAL NAME						CASRN
MEG	Units	Time-frame	Severity	Intake Rate	Basis		MEG	Units	Time-frame	Severity	Intake Rate	Basis	
Dalapon						75-99-0	Dibromochloromethane						124-48-1
1.4E+00	mg/L	7day	Negligible	15L	HA1d_adj		9.8E-01	mg/L	1year	Negligible	5L	PPRTV_sub_nc	
4.2E+00	mg/L	7day	Negligible	5L	HA1d_adj		Dibromoethane, 1,2-						106-93-4
4.2E+00	mg/L	14day	Negligible	5L	HA10d_adj		4.9E-02	mg/L	1year	Negligible	5L	IRIS_ca	
1.4E+00	mg/L	14day	Negligible	15L	HA10d_adj		Dibromomethane						74-95-3
4.2E-01	mg/L	1year	Negligible	5L	HEAST_sub_nc		1.3E-01	mg/L	1year	Negligible	5L	PPRTV_sub_nc	
Danitol						39515-41-8	Dibutyl phthalate						84-74-2
3.5E-01	mg/L	1year	Negligible	5L	IRIS_chr_nc		1.4E+01	mg/L	1year	Negligible	5L	IRIS_sub_nc	
DDD						72-54-8	Dibutyl tin dichloride						683-18-1
4.1E-01	mg/L	1year	Negligible	5L	IRIS_ca		7.0E-02	mg/L	1year	Negligible	5L	MRL_inter_nc	
DDE						72-55-9	Dicamba						1918-00-9
2.9E-01	mg/L	1year	Negligible	5L	IRIS_ca		4.2E-01	mg/L	1year	Negligible	5L	HEAST_sub_nc	
DDT						50-29-3	Dichloroacetic acid						79-43-6
2.3E-03	mg/L	7day	Negligible	15L	MRLoA_adj		2.3E+00	mg/L	7day	Negligible	15L	HA1d_adj	
7.0E-03	mg/L	7day	Negligible	5L	MRLoA_adj		7.0E+00	mg/L	7day	Negligible	5L	HA1d_adj	
7.0E-03	mg/L	14day	Negligible	5L	MRLoA_adj		7.0E+00	mg/L	14day	Negligible	5L	HA10d_adj	
2.3E-03	mg/L	14day	Negligible	15L	MRLoA_adj		2.3E+00	mg/L	14day	Negligible	15L	HA10d_adj	
7.0E-03	mg/L	1year	Negligible	5L	MRL_inter_nc		1.7E-01	mg/L	1year	Negligible	5L	IRIS_sub_nc	
Decabromodiphenyl ether						1163-19-5	Dichlorobenzene, 1,2-						95-50-1
2.9E-01	mg/L	1year	Negligible	5L	IRIS_sub_nc		4.2E+00	mg/L	7day	Negligible	15L	HA1d_adj	
Demeton						8065-48-3	Dichlorobenzene, 1,3-						541-73-1
5.6E-04	mg/L	1year	Negligible	5L	IRIS_chr_nc		1.3E+01	mg/L	7day	Negligible	5L	HA1d_adj	
Di(2-ethylhexyl)adipate						103-23-1	1.3E+01	mg/L	14day	Negligible	5L	HA10d_adj	
9.3E+00	mg/L	7day	Negligible	15L	HA1d_adj		4.2E+00	mg/L	14day	Negligible	15L	HA10d_adj	
2.8E+01	mg/L	7day	Negligible	5L	HA1d_adj		8.4E+00	mg/L	1year	Negligible	5L	MRL_inter_nc	
2.8E+01	mg/L	14day	Negligible	5L	HA10d_adj		Dichlorobenzene, 1,4-						106-46-7
9.3E+00	mg/L	14day	Negligible	15L	HA10d_adj		5.1E+00	mg/L	7day	Negligible	15L	HA1d_adj	
8.4E+00	mg/L	1year	Negligible	5L	IRIS_chr_nc		1.5E+01	mg/L	7day	Negligible	5L	HA1d_adj	
Diallate						2303-16-4	1.5E+01	mg/L	14day	Negligible	5L	HA10d_adj	
1.6E+00	mg/L	1year	Negligible	5L	HEAST_ca		5.1E+00	mg/L	14day	Negligible	15L	HA10d_adj	
Diazinon						333-41-5	2.8E-01	mg/L	1year	Negligible	5L	MRL_inter_nc	
9.3E-03	mg/L	7day	Negligible	15L	HA1d_adj		Dichlorobenzidine, 3,3'-						91-94-1
2.8E-02	mg/L	7day	Negligible	5L	HA1d_adj		2.2E-01	mg/L	1year	Negligible	5L	IRIS_ca	
2.8E-02	mg/L	14day	Negligible	5L	HA10d_adj		Dichlorodifluoromethane						75-71-8
9.3E-03	mg/L	14day	Negligible	15L	HA10d_adj		1.9E+01	mg/L	7day	Negligible	15L	HA1d_adj	
2.8E-02	mg/L	1year	Negligible	5L	MRL_inter_nc		5.6E+01	mg/L	7day	Negligible	5L	HA1d_adj	
Dibenzofuran						132-64-9	5.6E+01	mg/L	14day	Negligible	5L	HA10d_adj	
5.6E-02	mg/L	1year	Negligible	5L	PPRTV_sub_nc		1.9E+01	mg/L	14day	Negligible	15L	HA10d_adj	
Dibromo-3-chloropropane, 1,2-						96-12-8	1.3E+01	mg/L	1year	Negligible	5L	HEAST_sub_nc	
9.3E-02	mg/L	7day	Negligible	15L	HA1d_adj		Dichloroethane, 1,1-						75-34-3
2.8E-01	mg/L	7day	Negligible	5L	HA1d_adj		2.8E+01	mg/L	1year	Negligible	5L	PPRTV_sub_nc	
7.0E-02	mg/L	14day	Negligible	5L	HA10d_adj								
2.3E-02	mg/L	14day	Negligible	15L	HA10d_adj								
2.8E-02	mg/L	1year	Negligible	5L	PPRTV_sub_nc								
Dibromobenzene, 1,4-						106-37-6							
1.4E+00	mg/L	1year	Negligible	5L	IRIS_sub_nc								

Table C-2: Water Military Exposure Guidelines

CHEMICAL NAME						CASRN	CHEMICAL NAME						CASRN
MEG	Units	Time-frame	Severity	Intake Rate	Basis		MEG	Units	Time-frame	Severity	Intake Rate	Basis	
Dichloroethane, 1,2-						107-06-2	Dicyclopentadiene						77-73-6
1.1E+00	mg/L	1year	Negligible	5L	IRIS_ca		1.1E+00	mg/L	1year	Negligible	5L	PPRTV_sub_nc	
Dichloroethylene, 1,1-						75-35-4	Dieldrin						60-57-1
9.3E-01	mg/L	7day	Negligible	15L	HA1d_adj		1.4E-03	mg/L	1year	Negligible	5L	MRL_inter_nc	
2.8E+00	mg/L	7day	Negligible	5L	HA1d_adj		Diethyl phthalate						84-66-2
1.4E+00	mg/L	14day	Negligible	5L	HA10d_adj		1.1E+02	mg/L	1year	Negligible	5L	IRIS_sub_nc	
4.7E-01	mg/L	14day	Negligible	15L	HA10d_adj		Diethylene glycol monobutyl ether						112-34-5
1.3E-01	mg/L	1year	Negligible	5L	HEAST_sub_nc		4.2E+00	mg/L	1year	Negligible	5L	PPRTV_sub_nc	
Dichloroethylene, 1,2-						540-59-0	Diethylene glycol monoethyl ether						111-90-0
1.3E-01	mg/L	1year	Negligible	5L	HEAST_sub_nc		8.4E+00	mg/L	1year	Negligible	5L	PPRTV_sub_nc	
Dichloroethylene, cis-1,2-						156-59-2	Diethylformamide						617-84-5
1.9E+00	mg/L	7day	Negligible	15L	HA1d_adj		1.4E-02	mg/L	1year	Negligible	5L	PPRTV_sub_nc	
5.6E+00	mg/L	7day	Negligible	5L	HA1d_adj		Diethylstilbestrol						56-53-1
1.4E+00	mg/L	14day	Negligible	5L	HA10d_adj		2.1E+01	mg/L	1year	Negligible	5L	HEAST_ca	
4.7E-01	mg/L	14day	Negligible	15L	HA10d_adj		Difenzoquat						43222-48-6
1.4E+00	mg/L	1year	Negligible	5L	PPRTV_sub_nc		1.1E+00	mg/L	1year	Negligible	5L	IRIS_chr_nc	
Dichloroethylene, trans-						156-60-5	Diflubenzuron						35367-38-5
9.3E+00	mg/L	7day	Negligible	15L	HA1d_adj		2.8E-01	mg/L	1year	Negligible	5L	IRIS_chr_nc	
2.8E+01	mg/L	7day	Negligible	5L	HA1d_adj		Diisopropyl methylphosphonate						1445-75-6
2.8E+00	mg/L	1year	Negligible	5L	IRIS_sub_nc		1.1E+01	mg/L	1year	Negligible	5L	IRIS_sub_nc	
Dichlorophenol, 2,4-						120-83-2	Dimethipin						55290-64-7
2.8E-01	mg/L	1year	Negligible	5L	PPRTV_sub_nc		2.8E-01	mg/L	1year	Negligible	5L	IRIS_chr_nc	
Dichlorophenoxy acetic acid, 2,4-						94-75-7	Dimethoate						60-51-5
4.7E-01	mg/L	7day	Negligible	15L	HA1d_adj		2.8E-03	mg/L	1year	Negligible	5L	HEAST_sub_nc	
1.4E+00	mg/L	7day	Negligible	5L	HA1d_adj		Dimethoxybenzidine, 3,3¹-						119-90-4
4.2E-01	mg/L	14day	Negligible	5L	HA10d_adj		7.0E+00	mg/L	1year	Negligible	5L	HEAST_ca	
1.4E-01	mg/L	14day	Negligible	15L	HA10d_adj		Dimethrin						70-38-2
1.4E-01	mg/L	1year	Negligible	5L	HEAST_sub_nc		4.7E+00	mg/L	7day	Negligible	15L	HA1d_adj	
Dichlorophenoxybutyric acid, 2,4-						94-82-6	1.4E+01	mg/L	7day	Negligible	5L	HA1d_adj	
1.1E+00	mg/L	1year	Negligible	5L	IRIS_sub_nc		1.4E+01	mg/L	14day	Negligible	5L	HA10d_adj	
Dichloropropane, 1,2-						78-87-5	4.7E+00	mg/L	14day	Negligible	15L	HA10d_adj	
4.7E-01	mg/L	7day	Negligible	15L	MRLoA_adj		Dimethyl methylphosphonate						756-79-6
1.4E+00	mg/L	7day	Negligible	5L	MRLoA_adj		9.3E-01	mg/L	7day	Negligible	15L	HA1d_adj	
9.8E-01	mg/L	1year	Negligible	5L	MRL_inter_nc		2.8E+00	mg/L	7day	Negligible	5L	HA1d_adj	
Dichloropropane, 1,3-						142-28-9	2.8E+00	mg/L	14day	Negligible	5L	HA10d_adj	
2.8E+00	mg/L	1year	Negligible	5L	PPRTV_sub_nc		9.3E-01	mg/L	14day	Negligible	15L	HA10d_adj	
Dichloropropanol, 2,3-						616-23-9	8.4E-01	mg/L	1year	Negligible	5L	PPRTV_sub_nc	
4.2E-02	mg/L	1year	Negligible	5L	IRIS_chr_nc		Dimethyl terephthalate						120-61-6
Dichloropropene, 1,3-						542-75-6	1.4E+00	mg/L	1year	Negligible	5L	HEAST_sub_nc	
5.6E-01	mg/L	1year	Negligible	5L	MRL_inter_nc		Dimethylaniline hydrochloride, 2,4-						21436-96-4
Dichlorvos						62-73-7	1.7E-01	mg/L	1year	Negligible	5L	HEAST_ca	
1.9E-02	mg/L	7day	Negligible	15L	MRLoA_adj		Dimethylaniline, 2,4-						95-68-1
5.6E-02	mg/L	7day	Negligible	5L	MRLoA_adj		1.3E-01	mg/L	1year	Negligible	5L	HEAST_ca	
5.6E-02	mg/L	14day	Negligible	5L	MRLoA_adj		Dimethylaniline, N,N-						121-69-7
1.9E-02	mg/L	14day	Negligible	15L	MRLoA_adj		2.8E-01	mg/L	1year	Negligible	5L	IRIS_sub_nc	
4.2E-02	mg/L	1year	Negligible	5L	MRL_inter_nc								

Table C-2: Water Military Exposure Guidelines

CHEMICAL NAME					CASRN	CHEMICAL NAME					CASRN
MEG	Units	Time-frame	Severity	Intake Rate	Basis	MEG	Units	Time-frame	Severity	Intake Rate	Basis
Dimethylbenzidine, 3,3'-					119-93-7	Di-n-octyl phthalate					117-84-0
8.9E-03	mg/L	1year	Negligible	5L	PPRTV_ca	1.4E+01	mg/L	7day	Negligible	15L	MRLoA_adj
Dimethylformamide					68-12-2	Dinoseb					88-85-7
4.2E+00	mg/L	1year	Negligible	5L	PPRTV_sub_nc	4.2E+01	mg/L	7day	Negligible	5L	MRLoA_adj
Dimethylhydrazine, 1,2-					540-73-8	Dioxane, 1,4-					123-91-1
1.1E-02	mg/L	1year	Negligible	5L	MRL_inter_nc	8.4E+00	mg/L	1year	Negligible	5L	MRL_inter_nc
Dimethylphenol, 2,4-					105-67-9	Diphenamid					957-51-7
7.0E-01	mg/L	1year	Negligible	5L	PPRTV_sub_nc	1.4E-01	mg/L	7day	Negligible	15L	HA1d_adj
Dimethylphenol, 2,6-					576-26-1	Diphenylamine					122-39-4
8.4E-02	mg/L	1year	Negligible	5L	IRIS_sub_nc	3.5E-01	mg/L	1year	Negligible	5L	HEAST_sub_nc
Dimethylphenol, 3,4-					95-65-8	Diphenylhydrazine, 1,2-					122-66-7
1.4E-01	mg/L	1year	Negligible	5L	IRIS_sub_nc	1.2E-01	mg/L	1year	Negligible	5L	IRIS_ca
Dinitrobenzene, 1,2-					528-29-0	Diquat					85-00-7
1.4E-02	mg/L	1year	Negligible	5L	PPRTV_sub_nc	3.1E-02	mg/L	1year	Negligible	5L	IRIS_chr_nc
Dinitrobenzene, 1,3-					99-65-0	Direct black 38					1937-37-7
1.9E-02	mg/L	7day	Negligible	15L	HA1d_adj	1.1E-02	mg/L	1year	Negligible	5L	HEAST_ca
5.6E-02	mg/L	7day	Negligible	5L	HA1d_adj	Direct blue 6					2602-46-2
5.6E-02	mg/L	14day	Negligible	5L	HA10d_adj	Direct brown 95					16071-86-6
1.9E-02	mg/L	14day	Negligible	15L	HA10d_adj	Disulfoton					298-04-4
1.4E-02	mg/L	1year	Negligible	5L	IRIS_sub_nc	4.7E-03	mg/L	7day	Negligible	15L	HA1d_adj
Dinitro-o-cresol, 4,6-					534-52-1	Dithiane, 1,4-					505-29-3
1.9E-02	mg/L	7day	Negligible	15L	MRLoA_adj	1.4E+00	mg/L	1year	Negligible	5L	IRIS_sub_nc
5.6E-02	mg/L	7day	Negligible	5L	MRLoA_adj	Diuron					330-54-1
5.6E-02	mg/L	14day	Negligible	5L	MRLoA_adj	4.7E-01	mg/L	7day	Negligible	15L	HA1d_adj
1.9E-02	mg/L	14day	Negligible	15L	MRLoA_adj	1.4E+00	mg/L	7day	Negligible	5L	HA1d_adj
5.6E-02	mg/L	1year	Negligible	5L	MRL_inter_nc	1.4E+00	mg/L	14day	Negligible	5L	HA10d_adj
Dinitro-o-cyclohexyl phenol, 4,6-					131-89-5	Dithiane, 1,4-					505-29-3
2.8E-01	mg/L	1year	Negligible	5L	IRIS_sub_nc	1.4E-01	mg/L	14day	Negligible	15L	HA10d_adj
Dinitrophenol, 2,4-					51-28-5	Diuron					330-54-1
2.8E-01	mg/L	1year	Negligible	5L	PPRTV_sub_nc	4.7E-01	mg/L	7day	Negligible	15L	HA1d_adj
Dinitrotoluene					25321-14-6	Dithiane, 1,4-					505-29-3
1.4E-01	mg/L	1year	Negligible	5L	IRIS_ca	1.4E+00	mg/L	14day	Negligible	5L	HA10d_adj
Dinitrotoluene, 2,4-					121-14-2	Dithiane, 1,4-					505-29-3
2.3E-01	mg/L	7day	Negligible	15L	HA1d_adj	1.4E-01	mg/L	14day	Negligible	15L	HA10d_adj
7.0E-01	mg/L	7day	Negligible	5L	HA1d_adj	2.8E-02	mg/L	1year	Negligible	5L	IRIS_chr_nc
7.0E-01	mg/L	14day	Negligible	5L	HA10d_adj	Dithiane, 1,4-					505-29-3
2.3E-01	mg/L	14day	Negligible	15L	HA10d_adj	Diuron					330-54-1
2.8E-02	mg/L	1year	Negligible	5L	HEAST_sub_nc	4.7E-01	mg/L	7day	Negligible	15L	HA1d_adj
Dinitrotoluene, 2,6-					606-20-2	Dithiane, 1,4-					505-29-3
1.9E-01	mg/L	7day	Negligible	15L	HA1d_adj	1.4E+00	mg/L	14day	Negligible	5L	HA10d_adj
5.6E-01	mg/L	7day	Negligible	5L	HA1d_adj	4.7E-01	mg/L	7day	Negligible	15L	HA1d_adj
5.6E-01	mg/L	14day	Negligible	5L	HA10d_adj	1.4E+00	mg/L	14day	Negligible	5L	HA10d_adj
1.9E-01	mg/L	14day	Negligible	15L	HA10d_adj	4.7E-01	mg/L	7day	Negligible	15L	HA1d_adj
1.4E-01	mg/L	1year	Negligible	5L	PPRTV_sub_nc	2.8E-02	mg/L	1year	Negligible	5L	IRIS_chr_nc

Table C-2: Water Military Exposure Guidelines

CHEMICAL NAME						CASRN	CHEMICAL NAME						CASRN
MEG	Units	Time-frame	Severity	Intake Rate	Basis		MEG	Units	Time-frame	Severity	Intake Rate	Basis	
Dodine						2439-10-3	Ethyl p-nitrophenyl phenylphosphorothioate						2104-64-5
5.6E-02	mg/L	1year	Negligible	5L	IRIS_chr_nc		1.4E-03	mg/L	1year	Negligible	5L	IRIS_sub_nc	
EA 2192						73207-98-4	Ethylbenzene						100-41-4
8.4E-06	mg/L	1year	Negligible	5L	Munro_nc		7.0E+00	mg/L	1year	Negligible	5L	MRL_inter_nc	
EMPA						1832-53-7	Ethylene cyanohydrin						109-78-4
3.5E-01	mg/L	1year	Negligible	5L	Munro_nc		1.4E+00	mg/L	1year	Negligible	5L	PPRTV_sub_nc	
Endosulfan						115-29-7	Ethylene diamine						107-15-3
7.0E-02	mg/L	1year	Negligible	5L	MRL_inter_nc		2.8E+00	mg/L	1year	Negligible	5L	PPRTV_sub_nc	
Endothall						145-73-3	Ethylene glycol						107-21-1
3.7E-01	mg/L	7day	Negligible	15L	HA1d_adj		9.3E+00	mg/L	7day	Negligible	15L	HA1d_adj	
1.1E+00	mg/L	7day	Negligible	5L	HA1d_adj		2.8E+01	mg/L	7day	Negligible	5L	HA1d_adj	
1.1E+00	mg/L	14day	Negligible	5L	HA10d_adj		1.1E+01	mg/L	1year	Negligible	5L	MRL_inter_nc	
3.7E-01	mg/L	14day	Negligible	15L	HA10d_adj		Ethylene glycol monobutyl ether						111-76-2
2.8E-01	mg/L	1year	Negligible	5L	HEAST_sub_nc		1.9E+00	mg/L	7day	Negligible	15L	MRLoA_adj	
Endrin						72-20-8	Ethylene oxide						75-21-8
9.3E-03	mg/L	7day	Negligible	15L	HA1d_adj		5.6E+00	mg/L	7day	Negligible	5L	MRLoA_adj	
2.8E-02	mg/L	7day	Negligible	5L	HA1d_adj		5.6E+00	mg/L	14day	Negligible	5L	MRLoA_adj	
2.8E-02	mg/L	1year	Negligible	5L	MRL_inter_nc		1.9E+00	mg/L	14day	Negligible	15L	MRLoA_adj	
Epichlorohydrin						106-89-8	Ethylene thiourea						96-45-7
4.7E-02	mg/L	7day	Negligible	15L	HA1d_adj		1.4E-01	mg/L	7day	Negligible	15L	HA1d_adj	
1.4E-01	mg/L	7day	Negligible	5L	HA1d_adj		4.2E-01	mg/L	7day	Negligible	5L	HA1d_adj	
1.4E-01	mg/L	14day	Negligible	5L	HA10d_adj		4.2E-01	mg/L	14day	Negligible	5L	HA10d_adj	
4.7E-02	mg/L	14day	Negligible	15L	HA10d_adj		1.4E-01	mg/L	14day	Negligible	15L	HA10d_adj	
8.4E-02	mg/L	1year	Negligible	5L	PPRTV_sub_nc		1.1E-03	mg/L	1year	Negligible	5L	HEAST_sub_nc	
EPTC						759-94-4	Ethylphthalyl ethyl glycolate						84-72-0
3.5E-01	mg/L	1year	Negligible	5L	HEAST_sub_nc		4.2E+01	mg/L	1year	Negligible	5L	IRIS_chr_nc	
Ethephon						16672-87-0	Express						101200-48-0
7.0E-02	mg/L	1year	Negligible	5L	IRIS_chr_nc		1.1E-01	mg/L	1year	Negligible	5L	IRIS_chr_nc	
Ethion						563-12-2	Fenamiphos						22224-92-6
9.3E-03	mg/L	7day	Negligible	15L	MRLoA_adj		4.2E-03	mg/L	7day	Negligible	15L	HA1d_adj	
2.8E-02	mg/L	7day	Negligible	5L	MRLoA_adj		1.3E-02	mg/L	7day	Negligible	5L	HA1d_adj	
2.8E-02	mg/L	14day	Negligible	5L	MRLoA_adj		1.3E-02	mg/L	14day	Negligible	5L	HA10d_adj	
9.3E-03	mg/L	14day	Negligible	15L	MRLoA_adj		4.2E-03	mg/L	14day	Negligible	15L	HA10d_adj	
2.8E-02	mg/L	1year	Negligible	5L	MRL_inter_nc		3.5E-03	mg/L	1year	Negligible	5L	IRIS_chr_nc	
Ethoxyethanol, 2-						110-80-5	Fluometuron						2164-17-2
7.0E+00	mg/L	1year	Negligible	5L	HEAST_sub_nc		9.3E-01	mg/L	7day	Negligible	15L	HA1d_adj	
Ethyl acetate						141-78-6	Fluoranthene						206-44-0
1.3E+02	mg/L	1year	Negligible	5L	IRIS_sub_nc		5.6E+00	mg/L	1year	Negligible	5L	MRL_inter_nc	
Ethyl acrylate						140-88-5	Fluorene						86-73-7
2.0E+00	mg/L	1year	Negligible	5L	HEAST_ca		5.6E+00	mg/L	1year	Negligible	5L	IRIS_sub_nc	
Ethyl chloride						75-00-3							
1.4E+00	mg/L	1year	Negligible	5L	PPRTV_sub_nc								
Ethyl ether						60-29-7							
7.0E+00	mg/L	1year	Negligible	5L	PPRTV_sub_nc								
Ethyl methacrylate						97-63-2							
1.3E+00	mg/L	1year	Negligible	5L	HEAST_sub_nc								

Table C-2: Water Military Exposure Guidelines

CHEMICAL NAME						CASRN	CHEMICAL NAME						CASRN
MEG	Units	Time-frame	Severity	Intake Rate	Basis		MEG	Units	Time-frame	Severity	Intake Rate	Basis	
Fluoride						16984-48-8	GB						107-44-8
4.0E+00	mg/L	1year	Negligible	5L	IRIS_chr*_		9.3E-03	mg/L	7day	Negligible	15L	TSFWS_ST15‡	
Fluorine						7782-41-4	2.8E-02 mg/L 7day Negligible 5L TSFWS_ST5‡						
8.4E-01	mg/L	1year	Negligible	5L	HEAST_sub_nc		GD						96-64-0
Fluridone						59756-60-4	4.0E-03 mg/L 7day Negligible 15L TSFWS_ST15‡						
1.1E+00	mg/L	1year	Negligible	5L	HEAST_sub_nc		1.2E-02 mg/L 7day Negligible 5L TSFWS_ST5‡						
Flurprimidol						56425-91-3	Glufosinate ammonium						77182-82-2
2.8E-01	mg/L	1year	Negligible	5L	IRIS_chr_nc		5.6E-02 mg/L 1year Negligible 5L IRIS_sub_nc						
Flutolanil						66332-96-5	Glycidaldehyde						765-34-4
8.4E-01	mg/L	1year	Negligible	5L	IRIS_chr_nc		5.6E-02 mg/L 1year Negligible 5L IRIS_sub_nc						
Fluvalinate						69409-94-5	Glyphosate						1071-83-6
1.4E-01	mg/L	1year	Negligible	5L	IRIS_chr_nc		9.3E+00 mg/L 7day Negligible 15L HA1d_adj						
Folpet						133-07-3	2.8E+01 mg/L 7day Negligible 5L HA1d_adj						
1.4E+00	mg/L	1year	Negligible	5L	HEAST_sub_nc		2.8E+01 mg/L 14day Negligible 5L HA10d_adj						
Fomesafen						72178-02-0	9.3E+00 mg/L 14day Negligible 15L HA10d_adj						
5.2E-01	mg/L	1year	Negligible	5L	IRIS_ca		1.4E+00 mg/L 1year Negligible 5L IRIS_chr_nc						
Fonofos						944-22-9	Haloxypop-methyl						69806-40-2
9.3E-03	mg/L	7day	Negligible	15L	HA1d_adj		7.0E-04 mg/L 1year Negligible 5L IRIS_chr_nc						
2.8E-02	mg/L	7day	Negligible	5L	HA1d_adj		Harmony						79277-27-3
2.8E-02	mg/L	14day	Negligible	5L	HA10d_adj		1.8E-01 mg/L 1year Negligible 5L IRIS_chr_nc						
9.3E-03	mg/L	14day	Negligible	15L	HA10d_adj		HD						505-60-2
2.8E-02	mg/L	1year	Negligible	5L	IRIS_chr_nc		4.7E-02 mg/L 7day Negligible 15L TSFWS_ST15‡						
Formaldehyde						50-00-0	1.4E-01 mg/L 7day Negligible 5L TSFWS_ST5‡						
4.7E+00	mg/L	7day	Negligible	15L	HA1d_adj		1.4E-01 mg/L 14day Negligible 5L TSFWS_ST5‡*						
1.4E+01	mg/L	7day	Negligible	5L	HA1d_adj		4.7E-02 mg/L 14day Negligible 15L TSFWS_ST5‡*						
7.0E+00	mg/L	14day	Negligible	5L	HA10d_adj		9.8E-04 mg/L 1year Negligible 5L MRL_inter_nc						
2.3E+00	mg/L	14day	Negligible	15L	HA10d_adj		Heptachlor						76-44-8
4.2E+00	mg/L	1year	Negligible	5L	MRL_inter_nc		4.7E-03 mg/L 7day Negligible 15L HA1d_adj						
Fosetyl-aluminum						39148-24-8	1.4E-02 mg/L 7day Negligible 5L HA1d_adj						
4.2E+01	mg/L	1year	Negligible	5L	IRIS_chr_nc		1.4E-02 mg/L 14day Negligible 5L HA10d_adj						
Furan						110-00-9	4.7E-03 mg/L 14day Negligible 15L HA10d_adj						
1.4E-01	mg/L	1year	Negligible	5L	IRIS_sub_nc		1.4E-03 mg/L 1year Negligible 5L MRL_inter_nc						
Furazolidone						67-45-8	Heptachlor epoxide						1024-57-3
2.6E-02	mg/L	1year	Negligible	5L	HEAST_ca		4.7E-03 mg/L 7day Negligible 15L HA1d_adj						
Furfural						98-01-1	1.4E-02 mg/L 7day Negligible 5L HA1d_adj						
4.2E-01	mg/L	1year	Negligible	5L	IRIS_sub_nc		1.4E-02 mg/L 14day Negligible 5L HA10d_adj						
Furium						531-82-8	4.7E-03 mg/L 14day Negligible 15L HA10d_adj						
2.0E-03	mg/L	1year	Negligible	5L	HEAST_ca		1.4E-03 mg/L 1year Negligible 5L MRL_inter_nc						
Furmecyclox						60568-05-0	Hexabromobenzene						87-82-1
3.3E+00	mg/L	1year	Negligible	5L	IRIS_ca		2.8E-01 mg/L 1year Negligible 5L IRIS_sub_nc						
Fusariotoxin T2						21259-20-1	Hexachlorobenzene						118-74-1
8.7E-03	mg/L	7day	Negligible	15L	TSFWS_ST15‡		2.3E-02 mg/L 7day Negligible 15L HA1d_adj						
2.6E-02	mg/L	7day	Negligible	5L	TSFWS_ST5‡		7.0E-02 mg/L 7day Negligible 5L HA1d_adj						
GA						77-81-6	7.0E-02 mg/L 14day Negligible 5L HA10d_adj						
4.6E-02	mg/L	7day	Negligible	15L	TSFWS_ST15‡		2.3E-02 mg/L 14day Negligible 15L HA10d_adj						
1.4E-01	mg/L	7day	Negligible	5L	TSFWS_ST5‡		1.4E-03 mg/L 1year Negligible 5L MRL_inter_nc						

Table C-2: Water Military Exposure Guidelines

CHEMICAL NAME						CASRN	CHEMICAL NAME						CASRN
MEG	Units	Time-frame	Severity	Intake Rate	Basis		MEG	Units	Time-frame	Severity	Intake Rate	Basis	
Hexachlorobutadiene						87-68-3	Hydrazine						302-01-2
1.4E-01	mg/L	7day	Negligible	15L	HA1d_adj		3.3E-02	mg/L	1year	Negligible	5L	IRIS_ca	
4.2E-01	mg/L	7day	Negligible	5L	HA1d_adj		Hydrogen cyanide						74-90-8
4.2E-01	mg/L	14day	Negligible	5L	HA10d_adj		2.0E-03	mg/L	7day	Negligible	15L	TSFWS_ST15‡	
1.4E-01	mg/L	14day	Negligible	15L	HA10d_adj		6.0E-03	mg/L	7day	Negligible	5L	TSFWS_ST5‡	
1.4E-02	mg/L	1year	Negligible	5L	PPRTV_sub_nc		6.0E-03	mg/L	14day	Negligible	5L	TSFWS_LT5‡	
Hexachlorocyclohexane, alpha-						319-84-6	2.0E-03	mg/L	14day	Negligible	15L	TSFWS_LT15‡	
1.6E-02	mg/L	1year	Negligible	5L	IRIS_ca		Hydrogen sulfide						7783-06-4
Hexachlorocyclohexane, beta-						319-85-7	4.2E-01	mg/L	1year	Negligible	5L	HEAST_sub_nc	
2.3E-01	mg/L	7day	Negligible	15L	MRLoA_adj		Hydroquinone						123-31-9
7.0E-01	mg/L	7day	Negligible	5L	MRLoA_adj		1.6E+00	mg/L	1year	Negligible	5L	PPRTV_ca	
7.0E-01	mg/L	14day	Negligible	5L	MRLoA_adj		Imazalil						35554-44-0
2.3E-01	mg/L	14day	Negligible	15L	MRLoA_adj		1.8E-01	mg/L	1year	Negligible	5L	IRIS_chr_nc	
8.4E-03	mg/L	1year	Negligible	5L	MRL_inter_nc		Imazaquin						81335-37-7
Hexachlorocyclohexane, technical						608-73-1	3.5E+00	mg/L	1year	Negligible	5L	IRIS_chr_nc	
5.4E-02	mg/L	1year	Negligible	5L	IRIS_ca		Iodine						7553-56-2
Hexachlorocyclopentadiene						77-47-4	4.7E-02	mg/L	7day	Negligible	15L	MRLoA_adj	
2.5E-01	mg/L	1year	Negligible	5L	IRIS_sub_nc		1.4E-01	mg/L	7day	Negligible	5L	MRLoA_adj	
Hexachloroethane						67-72-1	1.4E-01	mg/L	14day	Negligible	5L	MRLoA_adj	
2.3E+00	mg/L	7day	Negligible	15L	HA1d_adj		4.7E-02	mg/L	14day	Negligible	15L	MRLoA_adj	
7.0E+00	mg/L	7day	Negligible	5L	HA1d_adj		1.4E-01	mg/L	1year	Negligible	5L	MRL_chr_nc	
7.0E+00	mg/L	14day	Negligible	5L	HA10d_adj		Iprodione						36734-19-7
2.3E+00	mg/L	14day	Negligible	15L	HA10d_adj		5.6E-01	mg/L	1year	Negligible	5L	IRIS_chr_nc	
1.4E-01	mg/L	1year	Negligible	5L	IRIS_sub_nc		Iron						7439-89-6
Hexachlorophene						70-30-4	9.8E+00	mg/L	1year	Negligible	5L	PPRTV_sub_nc	
1.3E-02	mg/L	1year	Negligible	5L	IRIS_sub_nc		Isobutyl alcohol						78-83-1
Hexane, commercial						110-54-3	4.2E+01	mg/L	1year	Negligible	5L	IRIS_sub_nc	
4.7E+00	mg/L	7day	Negligible	15L	HA1d_adj		Isophorone						78-59-1
1.4E+01	mg/L	7day	Negligible	5L	HA1d_adj		2.8E+01	mg/L	1year	Negligible	5L	IRIS_sub_nc	
5.6E+00	mg/L	14day	Negligible	5L	HA10d_adj		Isopropalin						33820-53-0
1.9E+00	mg/L	14day	Negligible	15L	HA10d_adj		2.1E+00	mg/L	1year	Negligible	5L	IRIS_sub_nc	
4.2E+00	mg/L	1year	Negligible	5L	PPRTV_sub_nc		Isopropyl methyl phosphonic acid						1832-54-8
Hexanone, 2-						591-78-6	1.4E+01	mg/L	7day	Negligible	15L	HA1d_adj	
7.0E-02	mg/L	1year	Negligible	5L	IRIS_chr_nc		4.2E+01	mg/L	7day	Negligible	5L	HA1d_adj	
Hexazinone						51235-04-2	4.2E+01	mg/L	14day	Negligible	5L	HA10d_adj	
1.4E+00	mg/L	7day	Negligible	15L	HA1d_adj		1.4E+01	mg/L	14day	Negligible	15L	HA10d_adj	
4.2E+00	mg/L	7day	Negligible	5L	HA1d_adj		1.4E+01	mg/L	1year	Negligible	5L	IRIS_sub_nc	
2.8E+00	mg/L	14day	Negligible	5L	HA10d_adj		Isoxaben						82558-50-7
9.3E-01	mg/L	14day	Negligible	15L	HA10d_adj		7.0E-01	mg/L	1year	Negligible	5L	IRIS_chr_nc	
4.6E-01	mg/L	1year	Negligible	5L	IRIS_chr_nc		Lactofen						77501-63-4
HMX						2691-41-0	2.8E-02	mg/L	1year	Negligible	5L	IRIS_chr_nc	
2.3E+00	mg/L	7day	Negligible	15L	HA1d_adj		Lead						7439-92-1
7.0E+00	mg/L	7day	Negligible	5L	HA1d_adj		1.5E-02	mg/L	1year	Negligible	5L	RD-230 Sec. 5.5.1	
7.0E+00	mg/L	14day	Negligible	5L	HA10d_adj		Lewisite						541-25-3
2.3E+00	mg/L	14day	Negligible	15L	HA10d_adj		2.7E-02	mg/L	7day	Negligible	15L	TSFWS_ST15‡	
7.0E+00	mg/L	1year	Negligible	5L	IRIS_sub_nc		8.0E-02	mg/L	7day	Negligible	5L	TSFWS_ST5‡	

Table C-2: Water Military Exposure Guidelines

CHEMICAL NAME						CASRN	CHEMICAL NAME						CASRN
MEG	Units	Time-frame	Severity	Intake Rate	Basis		MEG	Units	Time-frame	Severity	Intake Rate	Basis	
Lewisite oxide						3088-37-7	MCPA						94-74-6
4.2E-03	mg/L	1year	Negligible	5L	Munro_nc		4.7E-02	mg/L	7day	Negligible	15L	HA1d_adj	
Lindane						58-89-9	1.4E-01 mg/L 7day Negligible 5L HA1d_adj						
2.0E-01	mg/L	7day	Negligible	15L	TSFWS_ST15‡		1.4E-01 mg/L 14day Negligible 5L HA10d_adj						
6.0E-01 mg/L 7day Negligible 5L TSFWS_ST5‡							4.7E-02 mg/L 14day Negligible 15L HA10d_adj						
6.0E-01 mg/L 14day Negligible 5L TSFWS_LT5‡							7.0E-03 mg/L 1year Negligible 5L HEAST_sub_nc						
2.0E-01 mg/L 14day Negligible 15L TSFWS_LT15‡							MCPB						94-81-5
4.2E-02 mg/L 1year Negligible 5L IRIS_sub_nc							1.4E+00 mg/L 1year Negligible 5L HEAST_sub_nc						
Linuron						330-55-2	MCPP						93-65-2
2.8E-02 mg/L 1year Negligible 5L HEAST_sub_nc							1.4E-01 mg/L 1year Negligible 5L IRIS_sub_nc						
Lithium						7439-93-2	Mepfosfolan						950-10-7
2.8E-02 mg/L 1year Negligible 5L PPRTV_sub_nc							1.3E-02 mg/L 1year Negligible 5L HEAST_sub_nc						
Londax						83055-99-6	Mepiquat chloride						24307-26-4
2.8E+00 mg/L 1year Negligible 5L IRIS_chr_nc							4.2E+00 mg/L 1year Negligible 5L IRIS_sub_nc						
Lutetium						7439-94-3	Mercuric chloride						7487-94-7
7.0E+00 mg/L 1year Negligible 5L PPRTV_sub_nc							4.2E-02 mg/L 1year Negligible 5L IRIS_sub_nc						
Magnesium						7439-95-4	Mercuric sulfide						1344-48-5
3.0E+01 mg/L 7day Negligible 15L TSFWS_ST15‡							4.2E-03 mg/L 1year Negligible 5L PPRTV_chr_nc						
1.0E+02 mg/L 7day Negligible 5L TSFWS_ST5‡							Merphos						150-50-5
1.0E+02 mg/L 14day Negligible 5L TSFWS_LT5‡							4.2E-03 mg/L 1year Negligible 5L IRIS_sub_nc						
3.0E+01 mg/L 14day Negligible 15L TSFWS_LT15‡							Merphos oxide						78-48-8
Malathion						121-75-5	4.2E-03 mg/L 1year Negligible 5L IRIS_sub_nc						
9.3E-02 mg/L 7day Negligible 15L HA1d_adj							Metalaxyl						57837-19-1
2.8E-01 mg/L 7day Negligible 5L HA1d_adj							8.4E-01 mg/L 1year Negligible 5L IRIS_chr_nc						
2.8E-01 mg/L 14day Negligible 5L HA10d_adj							Methacrylonitrile						126-98-7
9.3E-02 mg/L 14day Negligible 15L HA10d_adj							1.4E-02 mg/L 1year Negligible 5L IRIS_sub_nc						
2.8E-01 mg/L 1year Negligible 5L MRL_inter_nc							Methamidophos						10265-92-6
Maleic anhydride						108-31-6	7.0E-04 mg/L 1year Negligible 5L IRIS_chr_nc						
1.4E+00 mg/L 1year Negligible 5L HEAST_sub_nc							Methanol						67-56-1
Maleic hydrazide						123-33-1	7.0E+01 mg/L 1year Negligible 5L IRIS_sub_nc						
4.7E+00 mg/L 7day Negligible 15L HA1d_adj							Methidathion						950-37-8
1.4E+01 mg/L 7day Negligible 5L HA1d_adj							1.4E-02 mg/L 1year Negligible 5L IRIS_chr_nc						
1.4E+01 mg/L 14day Negligible 5L HA10d_adj							Methomyl						16752-77-5
4.7E+00 mg/L 14day Negligible 15L HA10d_adj							1.4E-01 mg/L 7day Negligible 15L HA1d_adj						
7.0E+00 mg/L 1year Negligible 5L HEAST_sub_nc							4.2E-01 mg/L 7day Negligible 5L HA1d_adj						
Malononitrile						109-77-3	4.2E-01 mg/L 14day Negligible 5L HA10d_adj						
1.4E-02 mg/L 1year Negligible 5L PPRTV_sub_nc							1.4E-01 mg/L 14day Negligible 15L HA10d_adj						
Mancozeb						8018-01-7	3.5E-01 mg/L 1year Negligible 5L HEAST_sub_nc						
4.2E-01 mg/L 1year Negligible 5L HEAST_sub_nc							Methoxy-5-nitroaniline, 2-						99-59-2
Maneb						12427-38-2	2.1E+00 mg/L 1year Negligible 5L HEAST_ca						
7.0E-01 mg/L 1year Negligible 5L IRIS_sub_nc							Methoxychlor						72-43-5
Manganese						7439-96-5	4.0E-02 mg/L 7day Negligible 15L MCL*						
2.0E+00 mg/L 1year Negligible 5L HEAST_sub_nc							7.0E-02 mg/L 7day Negligible 5L HA1d_adj						
							7.0E-02 mg/L 14day Negligible 5L HA10d_adj						
							4.0E-02 mg/L 14day Negligible 15L MCL*						
							7.0E-02 mg/L 1year Negligible 5L MRL_inter_nc						

Table C-2: Water Military Exposure Guidelines

CHEMICAL NAME						CASRN	CHEMICAL NAME						CASRN
MEG	Units	Time-frame	Severity	Intake Rate	Basis		MEG	Units	Time-frame	Severity	Intake Rate	Basis	
Methoxyethanol, 2-						109-86-4	Methylene chloride						75-09-2
1.4E-01	mg/L	1year	Negligible	5L	HEAST_sub_nc		4.7E+00	mg/L	7day	Negligible	15L	HA1d_adj	
Methoxyethyl acetate, 2-						110-49-6	Methylene-bis(2-chloroaniline), 4,4'-						101-14-4
2.8E-01	mg/L	1year	Negligible	5L	HEAST_sub_nc		2.8E+00	mg/L	7day	Negligible	5L	HA1d_adj	
Methyl acetate						79-20-9	Methylenebis(N,N'-dimethyl)aniline, 4,4'-						101-61-1
1.4E+02	mg/L	1year	Negligible	5L	HEAST_sub_nc		2.1E+00	mg/L	14day	Negligible	5L	HA10d_adj	
Methyl acrylate						96-33-3	Methylenedianiline, 4,4'-						101-77-9
4.2E-01	mg/L	1year	Negligible	5L	HEAST_sub_nc		9.3E-01	mg/L	7day	Negligible	15L	MRLoA_adj	
Methyl bromide						74-83-9	Methylmercury						22967-92-6
4.7E-02	mg/L	7day	Negligible	15L	HA1d_adj		1.4E-03	mg/L	7day	Negligible	5L	HA1d_adj	
1.4E-01	mg/L	7day	Negligible	5L	HA1d_adj		Methylnaphthalene, 1-						90-12-0
1.4E-01	mg/L	14day	Negligible	5L	HA10d_adj		9.8E-01	mg/L	1year	Negligible	5L	MRL_chr_nc	
4.7E-02	mg/L	14day	Negligible	15L	HA10d_adj		Methylnaphthalene, 2-						91-57-6
7.0E-02	mg/L	1year	Negligible	5L	PPRTV_sub_nc		5.6E-02	mg/L	1year	Negligible	5L	PPRTV_sub_nc	
Methyl chloride						74-87-3	Methylstyrene, alpha-						98-83-9
4.2E+00	mg/L	7day	Negligible	15L	HA1d_adj		9.8E+00	mg/L	1year	Negligible	5L	HEAST_sub_nc	
1.3E+01	mg/L	7day	Negligible	5L	HA1d_adj		Metolachlor						51218-45-2
7.5E+00	mg/L	1year	Negligible	5L	HEAST_ca		9.3E-01	mg/L	7day	Negligible	15L	HA1d_adj	
Methyl ethyl ketone						78-93-3	Methylstyrene, alpha-						98-83-9
3.5E+01	mg/L	7day	Negligible	15L	HA1d_adj		2.8E+00	mg/L	7day	Negligible	5L	HA1d_adj	
1.1E+02	mg/L	7day	Negligible	5L	HA1d_adj		2.8E+00	mg/L	14day	Negligible	5L	HA10d_adj	
2.8E+01	mg/L	1year	Negligible	5L	HEAST_sub_nc		9.3E-01	mg/L	14day	Negligible	15L	HA10d_adj	
Methyl isobutyl ketone						108-10-1	Methylstyrene, alpha-						98-83-9
1.1E+01	mg/L	1year	Negligible	5L	HEAST_sub_nc		2.1E+00	mg/L	1year	Negligible	5L	HEAST_sub_nc	
Methyl methacrylate						80-62-6	Metribuzin						21087-64-9
1.1E+00	mg/L	1year	Negligible	5L	HEAST_sub_nc		2.3E+00	mg/L	7day	Negligible	15L	HA1d_adj	
Methyl parathion						298-00-0	Metribuzin						21087-64-9
1.4E-01	mg/L	7day	Negligible	15L	HA1d_adj		7.0E+00	mg/L	7day	Negligible	5L	HA1d_adj	
4.2E-01	mg/L	7day	Negligible	5L	HA1d_adj		7.0E+00	mg/L	14day	Negligible	5L	HA10d_adj	
4.2E-01	mg/L	14day	Negligible	5L	HA10d_adj		2.3E+00	mg/L	14day	Negligible	15L	HA10d_adj	
1.4E-01	mg/L	14day	Negligible	15L	HA10d_adj		3.5E-01	mg/L	1year	Negligible	5L	IRIS_chr_nc	
9.8E-03	mg/L	1year	Negligible	5L	MRL_inter_nc		Mineral oil, white						8042-47-5
Methyl tertiary butyl ether						1634-04-4	Mineral oil, white						8042-47-5
1.9E+00	mg/L	7day	Negligible	15L	MRLoA_adj		4.2E+02	mg/L	1year	Negligible	5L	PPRTV_sub_nc	
5.6E+00	mg/L	7day	Negligible	5L	MRLoA_adj		Mirex						2385-85-5
5.6E+00	mg/L	14day	Negligible	5L	MRLoA_adj		2.8E-03	mg/L	1year	Negligible	5L	HEAST_sub_nc	
1.9E+00	mg/L	14day	Negligible	15L	MRLoA_adj		Molinate						2212-67-1
4.2E+00	mg/L	1year	Negligible	5L	MRL_inter_nc		2.8E-02	mg/L	1year	Negligible	5L	HEAST_sub_nc	
Methyl-5-nitroaniline, 2-						99-55-8	Molinate						2212-67-1
3.0E+00	mg/L	1year	Negligible	5L	HEAST_ca		Molinate						2212-67-1
Methylaniline hydrochloride, 2-						636-21-5	Molinate						2212-67-1
5.4E-01	mg/L	1year	Negligible	5L	HEAST_ca		Molinate						2212-67-1
Methylaniline, 2-						95-53-4	Molinate						2212-67-1
4.1E-01	mg/L	1year	Negligible	5L	HEAST_ca		Molinate						2212-67-1
Methylcyclopentane						96-37-7	Molinate						2212-67-1
5.6E+00	mg/L	1year	Negligible	5L	PPRTV_sub_nc		Molinate						2212-67-1

Table C-2: Water Military Exposure Guidelines

CHEMICAL NAME						CASRN	CHEMICAL NAME						CASRN
MEG	Units	Time-frame	Severity	Intake Rate	Basis		MEG	Units	Time-frame	Severity	Intake Rate	Basis	
Molybdenum						7439-98-7	Nitrosodimethylamine, N-						62-75-9
3.7E-02	mg/L	7day	Negligible	15L	HA1d_adj		1.1E-04	mg/L	1year	Negligible	5L	PPRTV_sub_nc	
1.1E-01	mg/L	7day	Negligible	5L	HA1d_adj		Nitroso-di-n-butylamine, N-						924-16-3
1.1E-01	mg/L	14day	Negligible	5L	HA10d_adj		1.8E-02	mg/L	1year	Negligible	5L	IRIS_ca	
3.7E-02	mg/L	14day	Negligible	15L	HA10d_adj		Nitrosodiphenylamine, N-						86-30-6
7.0E-02	mg/L	1year	Negligible	5L	HEAST_sub_nc		2.0E+01	mg/L	1year	Negligible	5L	IRIS_ca	
Monochloramine						10599-90-3	Nitrosodipropylamine, N-						621-64-7
4.0E+00	mg/L	1year	Negligible	5L	MCL*_		4.4E-01	mg/L	7day	Negligible	15L	MRLoA_adj	
Naled						300-76-5	1.3E+00	mg/L	7day	Negligible	5L	MRLoA_adj	
2.8E-02	mg/L	1year	Negligible	5L	IRIS_chr_nc		1.3E+00	mg/L	14day	Negligible	5L	MRLoA_adj	
Naphthalene						91-20-3	4.4E-01	mg/L	14day	Negligible	15L	MRLoA_adj	
2.8E+00	mg/L	1year	Negligible	5L	IRIS_sub_nc		1.4E-02	mg/L	1year	Negligible	5L	IRIS_ca	
Napropamide						15299-99-7	Nitroso-N-ethylurea, N-						759-73-9
1.4E+00	mg/L	1year	Negligible	5L	IRIS_chr_nc		7.0E-04	mg/L	1year	Negligible	5L	HEAST_ca	
Nickel						7440-02-0	Nitroso-N-methylethylamine, N-						10595-95-6
4.7E-01	mg/L	7day	Negligible	15L	HA1d_adj		4.5E-03	mg/L	1year	Negligible	5L	IRIS_ca	
1.4E+00	mg/L	7day	Negligible	5L	HA1d_adj		Nitrosopyrrolidine, N-						930-55-2
1.4E+00	mg/L	14day	Negligible	5L	HA10d_adj		4.7E-02	mg/L	1year	Negligible	5L	IRIS_ca	
4.7E-01	mg/L	14day	Negligible	15L	HA10d_adj		Nitrotoluene, m-						99-08-1
Nickel, soluble salts						Ni sol salts	1.4E-02	mg/L	1year	Negligible	5L	PPRTV_sub_nc	
2.8E-01	mg/L	1year	Negligible	5L	HEAST_sub_nc		Nitrotoluene, o-						88-72-2
Nitrobenzene						98-95-3	1.4E-01	mg/L	1year	Negligible	5L	PPRTV_sub_nc	
8.4E-02	mg/L	1year	Negligible	5L	IRIS_sub_nc		Nitrotoluene, p-						99-99-0
Nitrocellulose						9004-70-0	5.6E-02	mg/L	1year	Negligible	5L	PPRTV_sub_nc	
4.2E+04	mg/L	1year	Negligible	5L	PPRTV_sub_nc		Nonane						111-84-2
Nitrofurantoin						67-20-9	4.2E-02	mg/L	1year	Negligible	5L	PPRTV_sub_nc	
9.8E+00	mg/L	1year	Negligible	5L	HEAST_sub_nc		Norflurazon						27314-13-2
Nitrofurazone						59-87-0	5.6E-01	mg/L	1year	Negligible	5L	IRIS_chr_nc	
6.5E-02	mg/L	1year	Negligible	5L	HEAST_ca		NuStar						85509-19-9
Nitroglycerin						55-63-0	9.8E-03	mg/L	1year	Negligible	5L	IRIS_chr_nc	
2.3E-03	mg/L	7day	Negligible	15L	HA1d_adj		Octabromodiphenyl ether						32536-52-0
7.0E-03	mg/L	7day	Negligible	5L	HA1d_adj		4.2E-01	mg/L	1year	Negligible	5L	IRIS_sub_nc	
7.0E-03	mg/L	14day	Negligible	5L	HA10d_adj		Octamethylpyrophosphoramidate						152-16-9
2.3E-03	mg/L	14day	Negligible	15L	HA10d_adj		2.8E-02	mg/L	1year	Negligible	5L	HEAST_sub_nc	
1.4E-03	mg/L	1year	Negligible	5L	PPRTV_sub_nc		Oryzalin						19044-88-3
Nitroguanidine						556-88-7	7.0E-01	mg/L	1year	Negligible	5L	IRIS_chr_nc	
4.7E+00	mg/L	7day	Negligible	15L	HA1d_adj		Oxadiazon						19666-30-9
1.4E+01	mg/L	7day	Negligible	5L	HA1d_adj		7.0E-02	mg/L	1year	Negligible	5L	IRIS_chr_nc	
1.4E+01	mg/L	14day	Negligible	5L	HA10d_adj		Oxamyl						23135-22-0
4.7E+00	mg/L	14day	Negligible	15L	HA10d_adj		3.5E-01	mg/L	14day	Negligible	5L	IRIS_chr*	
1.4E+00	mg/L	1year	Negligible	5L	PPRTV_sub_nc		2.0E-01	mg/L	14day	Negligible	15L	MCL*	
Nitrosodiethanolamine, N-						1116-54-7	3.5E-01	mg/L	1year	Negligible	5L	IRIS_chr_nc	
3.5E-02	mg/L	1year	Negligible	5L	IRIS_ca		Oxyfluorfen						42874-03-3
Nitrosodiethylamine, N-						55-18-5	4.2E-02	mg/L	1year	Negligible	5L	IRIS_chr_nc	
6.5E-04	mg/L	1year	Negligible	5L	IRIS_ca		Paclobutrazol						76738-62-0
							1.8E+00	mg/L	1year	Negligible	5L	IRIS_sub_nc	

Table C-2: Water Military Exposure Guidelines

CHEMICAL NAME						CASRN	CHEMICAL NAME						CASRN
MEG	Units	Time-frame	Severity	Intake Rate	Basis		MEG	Units	Time-frame	Severity	Intake Rate	Basis	
Paraquat dichloride						1910-42-5	Phenol						108-95-2
4.7E-02	mg/L	7day	Negligible	15L	HA1d_adj		2.8E+00	mg/L	7day	Negligible	15L	HA1d_adj	
1.4E-01	mg/L	7day	Negligible	5L	HA1d_adj		8.4E+00	mg/L	7day	Negligible	5L	HA1d_adj	
1.4E-01	mg/L	14day	Negligible	5L	HA10d_adj		8.4E+00	mg/L	14day	Negligible	5L	HA10d_adj	
4.7E-02	mg/L	14day	Negligible	15L	HA10d_adj		2.8E+00	mg/L	14day	Negligible	15L	HA10d_adj	
6.3E-02	mg/L	1year	Negligible	5L	IRIS_chr_nc		8.4E+00	mg/L	1year	Negligible	5L	HEAST_sub_nc	
Parathion						56-38-2	Phenyl isothiocyanate						103-72-0
8.4E-02	mg/L	1year	Negligible	5L	HEAST_sub_nc		2.8E-02	mg/L	1year	Negligible	5L	PPRTV_sub_nc	
Pebulate						1114-71-2	Phenylenediamine, m-						108-45-2
7.0E-01	mg/L	1year	Negligible	5L	HEAST_sub_nc		8.4E-01	mg/L	1year	Negligible	5L	IRIS_sub_nc	
Pendimethalin						40487-42-1	Phenylenediamine, o-						95-54-5
5.6E-01	mg/L	1year	Negligible	5L	HEAST_sub_nc		2.1E+00	mg/L	1year	Negligible	5L	HEAST_ca	
Pentabromo-6-chlorocyclohexane, 1,2,3,4,5-						87-84-3	Phenylenediamine, p-						106-50-3
4.3E+00	mg/L	1year	Negligible	5L	HEAST_ca		2.7E+00	mg/L	1year	Negligible	5L	HEAST_chr_nc	
Pentabromodiphenyl ether						32534-81-9	Phenylmercuric acetate						62-38-4
2.8E-01	mg/L	1year	Negligible	5L	IRIS_sub_nc		1.1E-03	mg/L	1year	Negligible	5L	HEAST_sub_nc	
Pentachlorobenzene						608-93-5	Phenylphenol, 2-						90-43-7
1.1E-01	mg/L	1year	Negligible	5L	IRIS_sub_nc		5.1E+01	mg/L	1year	Negligible	5L	HEAST_ca	
Pentachloroethane						76-01-7	Phorate						298-02-2
1.1E+00	mg/L	1year	Negligible	5L	PPRTV_ca		2.8E-03	mg/L	1year	Negligible	5L	HEAST_sub_nc	
Pentachloronitrobenzene						82-68-8	Phosmet						732-11-6
4.2E-02	mg/L	1year	Negligible	5L	HEAST_sub_nc		2.8E-01	mg/L	1year	Negligible	5L	IRIS_chr_nc	
Pentachlorophenol						87-86-5	Phosphine						7803-51-2
4.7E-01	mg/L	7day	Negligible	15L	HA1d_adj		4.2E-03	mg/L	1year	Negligible	5L	HEAST_sub_nc	
1.4E+00	mg/L	7day	Negligible	5L	HA1d_adj		Phosphorus, white						12185-10-3
4.2E-01	mg/L	14day	Negligible	5L	HA10d_adj		2.8E-03	mg/L	1year	Negligible	5L	MRL_inter_nc	
1.4E-01	mg/L	14day	Negligible	15L	HA10d_adj		Phthalic anhydride						85-44-9
1.4E-02	mg/L	1year	Negligible	5L	MRL_inter_nc		2.8E+01	mg/L	1year	Negligible	5L	HEAST_sub_nc	
Perchloroethylene						127-18-4	Picloram						1918-02-1
9.3E-01	mg/L	7day	Negligible	15L	HA1d_adj		9.3E+00	mg/L	7day	Negligible	15L	HA1d_adj	
2.8E+00	mg/L	7day	Negligible	5L	HA1d_adj		2.8E+01	mg/L	7day	Negligible	5L	HA1d_adj	
2.8E+00	mg/L	14day	Negligible	5L	HA10d_adj		2.8E+01	mg/L	14day	Negligible	5L	HA10d_adj	
9.3E-01	mg/L	14day	Negligible	15L	HA10d_adj		9.3E+00	mg/L	14day	Negligible	15L	HA10d_adj	
1.4E+00	mg/L	1year	Negligible	5L	IRIS_sub_nc		9.8E-01	mg/L	1year	Negligible	5L	IRIS_chr_nc	
Permethrin						52645-53-1	Pirimiphos-methyl						29232-93-7
1.4E+00	mg/L	7day	Negligible	15L	MRLoA_adj		1.4E-01	mg/L	1year	Negligible	5L	IRIS_chr_nc	
4.2E+00	mg/L	7day	Negligible	5L	MRLoA_adj		Polybrominated biphenyl						36355-01-8
4.2E+00	mg/L	14day	Negligible	5L	MRLoA_adj		9.8E-04	mg/L	1year	Negligible	5L	HEAST_sub_nc	
1.4E+00	mg/L	14day	Negligible	15L	MRLoA_adj		Polybrominated biphenyl mixture						67774-32-7
2.8E+00	mg/L	1year	Negligible	5L	MRL_inter_nc		4.7E-02	mg/L	7day	Negligible	15L	MRLoA_adj	
Phenmedipham						13684-63-4	1.4E-01	mg/L	7day	Negligible	5L	MRLoA_adj	
3.5E+00	mg/L	1year	Negligible	5L	IRIS_chr_nc		1.4E-01	mg/L	14day	Negligible	5L	MRLoA_adj	
							4.7E-02	mg/L	14day	Negligible	15L	MRLoA_adj	
							Polychlorinated biphenyl (Aroclor 1016/1242): (Chl						z-0042
							2.9E-03	mg/L	1year	Negligible	5L	IRIS_sub_nc	

Table C-2: Water Military Exposure Guidelines

CHEMICAL NAME						CASRN	CHEMICAL NAME						CASRN
MEG	Units	Time-frame	Severity	Intake Rate	Basis		MEG	Units	Time-frame	Severity	Intake Rate	Basis	
Polychlorinated biphenyls						1336-36-3	Propylene glycol monoethyl ether						1569-02-4
8.4E-04	mg/L	1year	Negligible	5L	IRIS_sub*_		9.8E+01	mg/L	1year	Negligible	5L	HEAST_sub_nc	
Potassium cyanide						151-50-8	Propylene glycol monomethyl ether						107-98-2
7.0E-01	mg/L	1year	Negligible	5L	HEAST_sub_nc		9.8E+01	mg/L	1year	Negligible	5L	HEAST_sub_nc	
Potassium perchlorate						7778-74-7	Propylene oxide						75-56-9
9.8E-03	mg/L	1year	Negligible	5L	MRL_chr_nc		4.1E-01	mg/L	1year	Negligible	5L	IRIS_ca	
Potassium silver cyanide						506-61-6	Pursuit						81335-77-5
2.8E+00	mg/L	1year	Negligible	5L	HEAST_sub_nc		3.5E+00	mg/L	1year	Negligible	5L	IRIS_chr_nc	
Praseodymium chloride, stable, nonradioactive						10361-79-2	Pydrin						51630-58-1
1.1E+01	mg/L	1year	Negligible	5L	PPRTV_sub_nc		3.5E-01	mg/L	1year	Negligible	5L	IRIS_chr_nc	
Prochloraz						67747-09-5	Pyrene						129-00-0
1.3E-01	mg/L	1year	Negligible	5L	IRIS_chr_nc		4.2E+00	mg/L	1year	Negligible	5L	PPRTV_sub_nc	
Profluralin						26399-36-0	Pyridine						110-86-1
8.4E-02	mg/L	1year	Negligible	5L	HEAST_sub_nc		1.4E-01	mg/L	1year	Negligible	5L	IRIS_sub_nc	
Prometon						1610-18-0	Quinalphos						13593-03-8
2.1E+00	mg/L	1year	Negligible	5L	IRIS_sub_nc		7.0E-03	mg/L	1year	Negligible	5L	IRIS_chr_nc	
Prometryn						7287-19-6	Quinoline						91-22-5
5.6E-02	mg/L	1year	Negligible	5L	IRIS_chr_nc		3.3E-02	mg/L	1year	Negligible	5L	IRIS_ca	
Pronamide						23950-58-5	RDX						121-82-4
3.7E-01	mg/L	7day	Negligible	15L	HA1d_adj		4.2E-01	mg/L	1year	Negligible	5L	MRL_inter_nc	
1.1E+00	mg/L	7day	Negligible	5L	HA1d_adj		Resmethrin						10453-86-8
1.1E+00	mg/L	14day	Negligible	5L	HA10d_adj		4.2E-01	mg/L	1year	Negligible	5L	IRIS_chr_nc	
3.7E-01	mg/L	14day	Negligible	15L	HA10d_adj		Ronnel						299-84-3
1.1E+00	mg/L	1year	Negligible	5L	HEAST_sub_nc		7.0E-01	mg/L	1year	Negligible	5L	HEAST_sub_nc	
Propachlor						1918-16-7	Rotenone						83-79-4
1.8E+00	mg/L	1year	Negligible	5L	IRIS_sub_nc		5.6E-02	mg/L	1year	Negligible	5L	IRIS_chr_nc	
Propanil						709-98-8	Samarium chloride, stable, nonradioactive						10361-82-7
7.0E-02	mg/L	1year	Negligible	5L	IRIS_chr_nc		1.3E+01	mg/L	1year	Negligible	5L	PPRTV_sub_nc	
Propargite						2312-35-8	Savey						78587-05-0
2.8E-01	mg/L	1year	Negligible	5L	IRIS_chr_nc		3.5E-01	mg/L	1year	Negligible	5L	IRIS_chr_nc	
Propargyl alcohol						107-19-7	Selenious acid						7783-00-8
2.8E-01	mg/L	1year	Negligible	5L	IRIS_sub_nc		7.0E-02	mg/L	1year	Negligible	5L	HEAST_sub_nc	
Propazine						139-40-2	Selenium						7782-49-2
2.8E-01	mg/L	1year	Negligible	5L	HEAST_sub_nc		7.0E-02	mg/L	1year	Negligible	5L	HEAST_sub_nc	
Propham						122-42-9	Selenourea						630-10-4
2.3E+00	mg/L	7day	Negligible	15L	HA1d_adj		7.0E-02	mg/L	1year	Negligible	5L	HEAST_sub_nc	
7.0E+00	mg/L	7day	Negligible	5L	HA1d_adj		Sethoxydim						74051-80-2
7.0E+00	mg/L	14day	Negligible	5L	HA10d_adj		1.3E+00	mg/L	1year	Negligible	5L	IRIS_chr_nc	
2.3E+00	mg/L	14day	Negligible	15L	HA10d_adj		Silver						7440-22-4
2.8E+00	mg/L	1year	Negligible	5L	IRIS_sub_nc		1.0E-01	mg/L	7day	Negligible	15L	BW Std*	
Propiconazole						60207-90-1	2.8E-01	mg/L	7day	Negligible	5L	HA1d_adj	
1.8E-01	mg/L	1year	Negligible	5L	IRIS_chr_nc		2.8E-01	mg/L	14day	Negligible	5L	HA10d_adj	
Propylene glycol						57-55-6	1.0E-01	mg/L	14day	Negligible	15L	BW Std*	
2.8E+02	mg/L	1year	Negligible	5L	PPRTV_sub_nc		1.0E-01	mg/L	1year	Negligible	5L	BW Std*_	
							Silver cyanide						506-64-9
							1.4E+00	mg/L	1year	Negligible	5L	HEAST_sub_nc	

Table C-2: Water Military Exposure Guidelines

CHEMICAL NAME						CASRN	CHEMICAL NAME						CASRN
MEG	Units	Time-frame	Severity	Intake Rate	Basis		MEG	Units	Time-frame	Severity	Intake Rate	Basis	
Silvex						93-72-1	TCDD, 2,3,7,8-						1746-01-6
9.3E-02	mg/L	7day	Negligible	15L	HA1d_adj		4.7E-07	mg/L	7day	Negligible	15L	HA1d_adj	
2.8E-01	mg/L	7day	Negligible	5L	HA1d_adj		1.4E-06	mg/L	7day	Negligible	5L	HA1d_adj	
2.8E-01	mg/L	14day	Negligible	5L	HA10d_adj		2.8E-07	mg/L	1year	Negligible	5L	MRL_inter_nc	
9.3E-02	mg/L	14day	Negligible	15L	HA10d_adj		Tebuthiuron						34014-18-1
1.1E-01	mg/L	1year	Negligible	5L	HEAST_sub_nc		1.4E+00	mg/L	7day	Negligible	15L	HA1d_adj	
Simazine						122-34-9	4.2E+00	mg/L	7day	Negligible	5L	HA1d_adj	
7.0E-02	mg/L	1year	Negligible	5L	HEAST_sub_nc		4.2E+00	mg/L	14day	Negligible	5L	HA10d_adj	
Sodium azide						26628-22-8	1.4E+00	mg/L	14day	Negligible	15L	HA10d_adj	
5.6E-01	mg/L	1year	Negligible	5L	IRIS_sub_nc		9.8E-01	mg/L	1year	Negligible	5L	IRIS_chr_nc	
Sodium bromate						7789-38-0	Temephos						3383-96-8
9.3E-02	mg/L	7day	Negligible	15L	HA1d_adj		2.8E+00	mg/L	1year	Negligible	5L	HEAST_sub_nc	
2.8E-01	mg/L	7day	Negligible	5L	HA1d_adj		Terbacil						5902-51-2
Sodium cyanide						143-33-9	1.4E-01	mg/L	7day	Negligible	15L	HA1d_adj	
7.0E-01	mg/L	1year	Negligible	5L	MRL_inter_nc		4.2E-01	mg/L	7day	Negligible	5L	HA1d_adj	
Sodium diethyldithiocarbamate						148-18-5	4.2E-01	mg/L	14day	Negligible	5L	HA10d_adj	
3.6E-01	mg/L	1year	Negligible	5L	HEAST_ca		1.4E-01	mg/L	14day	Negligible	15L	HA10d_adj	
Sodium fluoroacetate						62-74-8	1.8E-01	mg/L	1year	Negligible	5L	IRIS_chr_nc	
2.8E-03	mg/L	1year	Negligible	5L	IRIS_sub_nc		Terbufos						13071-79-9
Sodium metavanadate						13718-26-8	2.3E-03	mg/L	7day	Negligible	15L	HA1d_adj	
1.4E-01	mg/L	1year	Negligible	5L	HEAST_sub_nc		7.0E-03	mg/L	7day	Negligible	5L	HA1d_adj	
Sodium perchlorate						7601-89-0	7.0E-03	mg/L	14day	Negligible	5L	HA10d_adj	
9.8E-03	mg/L	1year	Negligible	5L	MRL_chr_nc		2.3E-03	mg/L	14day	Negligible	15L	HA10d_adj	
Strontium, stable						7440-24-6	3.5E-04	mg/L	1year	Negligible	5L	HEAST_sub_nc	
1.2E+01	mg/L	7day	Negligible	15L	HA1d_adj		Terbutryn						886-50-0
3.5E+01	mg/L	7day	Negligible	5L	HA1d_adj		1.4E-02	mg/L	1year	Negligible	5L	IRIS_chr_nc	
3.5E+01	mg/L	14day	Negligible	5L	HA10d_adj		Tetrachlorobenzene, 1,2,4,5-						95-94-3
1.2E+01	mg/L	14day	Negligible	15L	HA10d_adj		2.8E-02	mg/L	1year	Negligible	5L	PPRTV_sub_nc	
2.8E+01	mg/L	1year	Negligible	5L	MRL_inter_nc		Tetrachloroethane, 1,1,1,2-						630-20-6
Strychnine						57-24-9	9.3E-01	mg/L	7day	Negligible	15L	HA1d_adj	
4.2E-02	mg/L	1year	Negligible	5L	IRIS_sub_nc		2.8E+00	mg/L	7day	Negligible	5L	HA1d_adj	
Styrene						100-42-5	2.8E+00	mg/L	14day	Negligible	5L	HA10d_adj	
4.7E-01	mg/L	7day	Negligible	15L	MRLoA_adj		9.3E-01	mg/L	14day	Negligible	15L	HA10d_adj	
1.4E+00	mg/L	7day	Negligible	5L	MRLoA_adj		1.3E+00	mg/L	1year	Negligible	5L	PPRTV_sub_nc	
1.4E+00	mg/L	14day	Negligible	5L	MRLoA_adj		Tetrachloroethane, 1,1,2,2-						79-34-5
4.7E-01	mg/L	14day	Negligible	15L	MRLoA_adj		1.4E+00	mg/L	7day	Negligible	15L	HA1d_adj	
Sulfate						14808-79-8	4.2E+00	mg/L	7day	Negligible	5L	HA1d_adj	
2.5E+02	mg/L	7day	Negligible	15L	TSFWS†*		4.2E+00	mg/L	14day	Negligible	5L	HA10d_adj	
3.0E+02	mg/L	7day	Negligible	5L	TSFWS_ST5‡		1.4E+00	mg/L	14day	Negligible	15L	HA10d_adj	
3.0E+02	mg/L	14day	Negligible	5L	TSFWS_LT5‡		1.4E-01	mg/L	1year	Negligible	5L	PPRTV_sub_nc	
2.5E+02	mg/L	14day	Negligible	15L	TSFWS†*		Tetrachlorophenol, 2,3,4,6-						58-90-2
Sulfonylbis(4-chlorobenzene),1,1'-						80-07-9	4.2E+00	mg/L	1year	Negligible	5L	IRIS_sub_nc	
5.6E-02	mg/L	1year	Negligible	5L	PPRTV_sub_nc		Tetrachlorotoluene, para, alpha, alpha, alpha-						5216-25-1
Systhane						88671-89-0	4.9E-03	mg/L	1year	Negligible	5L	HEAST_ca	
3.5E-01	mg/L	1year	Negligible	5L	IRIS_chr_nc								

Table C-2: Water Military Exposure Guidelines

CHEMICAL NAME						CASRN	CHEMICAL NAME						CASRN
MEG	Units	Time-frame	Severity	Intake Rate	Basis		MEG	Units	Time-frame	Severity	Intake Rate	Basis	
Tetrachlorovinphos						961-11-5	Toluidine, p-						106-49-0
4.2E-01	mg/L	1year	Negligible	5L	HEAST_sub_nc		5.2E-01	mg/L	1year	Negligible	5L	HEAST_ca	
Tetraethyl dithiopyrophosphate						3689-24-5	Toxaphene						8001-35-2
7.0E-02	mg/L	1year	Negligible	5L	IRIS_sub_nc		1.4E-02	mg/L	1year	Negligible	5L	MRL_inter_nc	
Tetraethyl lead						78-00-2	Tralomethrin						66841-25-6
1.4E-05	mg/L	1year	Negligible	5L	IRIS_sub_nc		1.1E-01	mg/L	1year	Negligible	5L	IRIS_chr_nc	
Tetramethylcyclohexane						30501-43-0	Tri(2-butoxyethyl) phosphate						78-51-3
4.2E+01	mg/L	1year	Negligible	5L	PPRTV_sub_nc		2.2E+01	mg/L	7day	Negligible	15L	MRLoA_adj	
Thallium						7440-28-0	Triallate						2303-17-5
3.3E-03	mg/L	7day	Negligible	15L	HA1d_adj		6.7E+01	mg/L	7day	Negligible	5L	MRLoA_adj	
9.8E-03	mg/L	7day	Negligible	5L	HA1d_adj		6.7E+01	mg/L	14day	Negligible	5L	MRLoA_adj	
9.8E-03	mg/L	14day	Negligible	5L	HA10d_adj		2.2E+01	mg/L	14day	Negligible	15L	MRLoA_adj	
3.3E-03	mg/L	14day	Negligible	15L	HA10d_adj		2.8E+00	mg/L	1year	Negligible	5L	MRL_inter_nc	
Thallium (I) acetate						563-68-8	Triasulfuron						82097-50-5
1.3E-02	mg/L	1year	Negligible	5L	HEAST_sub_nc		1.4E-01	mg/L	1year	Negligible	5L	IRIS_chr_nc	
Thallium (I) carbonate						6533-73-9	Tribromobenzene, 1,2,4-						615-54-3
1.1E-02	mg/L	1year	Negligible	5L	HEAST_sub_nc		7.0E-01	mg/L	1year	Negligible	5L	IRIS_sub_nc	
Thallium (I) chloride						7791-12-0	Tributyl phosphate						126-73-8
1.1E-02	mg/L	1year	Negligible	5L	HEAST_sub_nc		5.1E+00	mg/L	7day	Negligible	15L	MRLoA_adj	
Thallium (I) sulfate						7446-18-6	Tributyltin compounds						z-303
1.1E-02	mg/L	1year	Negligible	5L	HEAST_sub_nc		4.2E-03	mg/L	1year	Negligible	5L	PPRTV_sub_nc	
Thiobencarb						28249-77-6	Tributyltin oxide						56-35-9
1.4E-01	mg/L	1year	Negligible	5L	IRIS_chr_nc		4.2E-03	mg/L	1year	Negligible	5L	MRL_inter_nc	
Thiocyanates						463-56-9	Trichloro-1,2,2-trifluoroethane, 1,1,2-						76-13-1
8.4E-03	mg/L	1year	Negligible	5L	PPRTV_sub_nc		4.2E+01	mg/L	1year	Negligible	5L	HEAST_sub_nc	
Thiodiglycol						111-48-8	Trichloroacetic acid						76-03-9
7.0E+00	mg/L	1year	Negligible	5L	Munro_nc		1.4E+00	mg/L	7day	Negligible	15L	HA1d_adj	
Thiofanox						39196-18-4	Trichloroaniline hydrochloride, 2,4,6-						33663-50-2
4.2E-03	mg/L	1year	Negligible	5L	HEAST_sub_nc		3.4E+00	mg/L	1year	Negligible	5L	HEAST_ca	
Thiophanate-methyl						23564-05-8	Trichloroaniline, 2,4,6-						634-93-5
1.1E+00	mg/L	1year	Negligible	5L	IRIS_chr_nc		2.9E+00	mg/L	1year	Negligible	5L	HEAST_ca	
Thiram						137-26-8	Trichlorobenzene, 1,2,3-						87-61-6
8.4E-02	mg/L	1year	Negligible	5L	HEAST_sub_nc		1.1E-01	mg/L	1year	Negligible	5L	PPRTV_sub_nc	
Tin, inorganic						7440-31-5	Trichlorobenzene, 1,2,4-						120-82-1
4.2E+00	mg/L	1year	Negligible	5L	MRL_inter_nc		7.0E-02	mg/L	14day	Negligible	5L	MCL*	
Toluene						108-88-3	Trichlorobenzene, 1,2,4-						120-82-1
9.3E+00	mg/L	7day	Negligible	15L	HA1d_adj		7.0E-02	mg/L	14day	Negligible	15L	MCL*	
2.8E+01	mg/L	7day	Negligible	5L	HA1d_adj		7.0E-02	mg/L	14day	Negligible	5L	MCL*_	
1.1E+01	mg/L	1year	Negligible	5L	PPRTV_sub_nc								
Toluene-2,4-diamine						95-80-7							
3.1E-02	mg/L	1year	Negligible	5L	HEAST_ca								
Toluene-2,5-diamine						95-70-5							
8.4E+00	mg/L	1year	Negligible	5L	HEAST_sub_nc								
Toluene-2,6-diamine						823-40-5							
8.4E-01	mg/L	1year	Negligible	5L	PPRTV_sub_nc								

Table C-2: Water Military Exposure Guidelines

CHEMICAL NAME						CASRN	CHEMICAL NAME						CASRN
MEG	Units	Time-frame	Severity	Intake Rate	Basis		MEG	Units	Time-frame	Severity	Intake Rate	Basis	
Trichlorobenzene, 1,3,5-						108-70-3	Trichloropropene, 1,2,3-						96-19-5
2.8E-01	mg/L	7day	Negligible	15L	HA1d_adj		4.2E-01	mg/L	1year	Negligible	5L	PPRTV_sub_nc	
8.4E-01	mg/L	7day	Negligible	5L	HA1d_adj		Trichlorotoluene, 2,3,6-						2077-46-5
8.4E-01	mg/L	14day	Negligible	5L	HA10d_adj		7.0E-04	mg/L	1year	Negligible	5L	HEAST_sub_nc	
2.8E-01	mg/L	14day	Negligible	15L	HA10d_adj		Trichlorotoluene, alpha, 2,6-						2014-83-7
Trichloroethane, 1,1,1-						71-55-6	7.0E-04	mg/L	1year	Negligible	5L	HEAST_sub_nc	
4.7E+01	mg/L	7day	Negligible	15L	HA1d_adj		Triclosan						3380-34-5
1.4E+02	mg/L	7day	Negligible	5L	HA1d_adj		5.6E+01	mg/L	1year	Negligible	5L	HEAST_sub_nc	
8.4E+01	mg/L	14day	Negligible	5L	IRIS_sub_nc*		Tridiphane						58138-08-2
2.8E+01	mg/L	14day	Negligible	15L	IRIS_sub_nc*		4.2E-02	mg/L	1year	Negligible	5L	IRIS_chr_nc	
8.4E+01	mg/L	1year	Negligible	5L	IRIS_sub_nc		Trifluralin						1582-09-8
Trichloroethane, 1,1,2-						79-00-5	3.7E-02	mg/L	7day	Negligible	15L	HA1d_adj	
2.8E-01	mg/L	7day	Negligible	15L	HA1d_adj		1.1E-01	mg/L	7day	Negligible	5L	HA1d_adj	
8.4E-01	mg/L	7day	Negligible	5L	HA1d_adj		1.1E-01	mg/L	14day	Negligible	5L	HA10d_adj	
5.6E-01	mg/L	14day	Negligible	5L	HA10d_adj		3.7E-02	mg/L	14day	Negligible	15L	HA10d_adj	
1.9E-01	mg/L	14day	Negligible	15L	HA10d_adj		1.1E-01	mg/L	1year	Negligible	5L	HEAST_sub_nc	
5.5E-02	mg/L	1year	Negligible	5L	PPRTV_sub_nc		Trimethyl phosphate						512-56-1
Trichloroethylene						79-01-6	2.6E+00	mg/L	1year	Negligible	5L	HEAST_ca	
9.3E-01	mg/L	7day	Negligible	15L	MRLoA_adj		Trimethylbenzene, 1,3,5-						108-67-8
2.8E+00	mg/L	7day	Negligible	5L	MRLoA_adj		4.7E+00	mg/L	7day	Negligible	15L	HA1d_adj	
2.8E+00	mg/L	14day	Negligible	5L	MRLoA_adj		4.7E+00	mg/L	7day	Negligible	15L	HA1d_adj	
9.3E-01	mg/L	14day	Negligible	15L	MRLoA_adj		1.4E+01	mg/L	7day	Negligible	5L	HA1d_adj	
Trichlorofluoromethane						75-69-4	1.4E+01	mg/L	7day	Negligible	5L	HA1d_adj	
3.3E+00	mg/L	7day	Negligible	15L	HA1d_adj		Trimethylbenzene, 1,3,5-						108-67-8
9.8E+00	mg/L	7day	Negligible	5L	HA1d_adj		4.7E+00	mg/L	7day	Negligible	15L	HA1d_adj	
9.8E+00	mg/L	14day	Negligible	5L	HA10d_adj		4.7E+00	mg/L	7day	Negligible	15L	HA1d_adj	
3.3E+00	mg/L	14day	Negligible	15L	HA10d_adj		1.4E+01	mg/L	7day	Negligible	5L	HA1d_adj	
9.8E+00	mg/L	1year	Negligible	5L	HEAST_sub_nc		1.4E+01	mg/L	7day	Negligible	5L	HA1d_adj	
Trichlorophenol, 2,4,5-						95-95-4	Trinitrobenzene, 1,3,5-						99-35-4
4.2E+00	mg/L	1year	Negligible	5L	PPRTV_sub_nc		7.0E-03	mg/L	1year	Negligible	5L	HEAST_sub_nc	
Trichlorophenol, 2,4,6-						88-06-2	Trinitrophenylmethylnitramine						479-45-8
1.4E-02	mg/L	7day	Negligible	15L	HA1d_adj		1.4E-01	mg/L	1year	Negligible	5L	PPRTV_sub_nc	
4.2E-02	mg/L	7day	Negligible	5L	HA1d_adj		Trinitrotoluene, 2,4,6-						118-96-7
4.2E-02	mg/L	14day	Negligible	5L	HA10d_adj		9.3E-03	mg/L	7day	Negligible	15L	HA1d_adj	
1.4E-02	mg/L	14day	Negligible	15L	HA10d_adj		2.8E-02	mg/L	7day	Negligible	5L	HA1d_adj	
1.4E-02	mg/L	1year	Negligible	5L	PPRTV_chr_nc		2.8E-02	mg/L	14day	Negligible	5L	HA10d_adj	
Trichlorophenoxyacetic acid						93-76-5	9.3E-03	mg/L	14day	Negligible	15L	HA10d_adj	
1.4E+00	mg/L	1year	Negligible	5L	HEAST_sub_nc		2.1E-02	mg/L	1year	Negligible	5L	IRIS_sub_nc	
Trichloropropane, 1,1,2-						598-77-6	Triphenylphosphine oxide						791-28-6
7.0E-01	mg/L	1year	Negligible	5L	IRIS_sub_nc		2.8E-01	mg/L	1year	Negligible	5L	PPRTV_sub_nc	
Trichloropropane, 1,2,3-						96-18-4	Tris(1,3-dichloro-2-propyl) phosphite (TDCP)						13674-87-8
2.8E-01	mg/L	7day	Negligible	15L	HA1d_adj		7.0E-01	mg/L	1year	Negligible	5L	MRL_inter_nc	
8.4E-01	mg/L	7day	Negligible	5L	HA1d_adj		Tris(2-chloroethyl)phosphate						115-96-8
8.4E-01	mg/L	14day	Negligible	5L	HA10d_adj		2.8E-01	mg/L	1year	Negligible	5L	PPRTV_sub_nc	
2.8E-01	mg/L	14day	Negligible	15L	HA10d_adj		Tris(2-ethylhexyl)phosphate						78-42-2
3.3E-03	mg/L	1year	Negligible	5L	IRIS_ca		1.4E+00	mg/L	1year	Negligible	5L	PPRTV_chr_nc	

Table C-2: Water Military Exposure Guidelines

CHEMICAL NAME					CASRN	CHEMICAL NAME					CASRN
MEG	Units	Time-frame	Severity	Intake Rate	Basis	MEG	Units	Time-frame	Severity	Intake Rate	Basis
Uranium, highly soluble salts					HZ1800-90-T	Zinc, metallic					7440-66-6
3.0E-02	mg/L	1year	Negligible	5L	MCL*_	5.0E+00	mg/L	7day	Negligible	15L	BW Std*
Vanadium					7440-62-2	8.4E+00	mg/L	7day	Negligible	5L	HA1d_adj
9.8E-02	mg/L	1year	Negligible	5L	HEAST_sub_nc	8.4E+00	mg/L	14day	Negligible	5L	HA10d_adj
Vanadium and soluble, inorganic compounds (other than Vanadium Pentoxide)					z-365	5.0E+00	mg/L	14day	Negligible	15L	BW Std*
9.8E-03	mg/L	1year	Negligible	5L	PPRTV_sub_nc	5.0E+00	mg/L	1year	Negligible	5L	BW Std*_
Vanadium pentoxide					1314-62-1	Zineb					12122-67-7
1.3E-01	mg/L	1year	Negligible	5L	HEAST_sub_nc	7.0E-01	mg/L	1year	Negligible	5L	HEAST_sub_nc
Vanadium sulfate					16785-81-2						
2.8E-01	mg/L	1year	Negligible	5L	HEAST_sub_nc						
Vernam					1929-77-7						
1.4E-01	mg/L	1year	Negligible	5L	HEAST_sub_nc						
Vinclozolin					50471-44-8						
3.5E-01	mg/L	1year	Negligible	5L	IRIS_chr_nc						
Vinyl acetate					108-05-4						
1.4E+01	mg/L	1year	Negligible	5L	HEAST_sub_nc						
Vinyl chloride					75-01-4						
1.4E+00	mg/L	7day	Negligible	15L	HA1d_adj						
4.2E+00	mg/L	7day	Negligible	5L	HA1d_adj						
4.2E+00	mg/L	14day	Negligible	5L	HA10d_adj						
1.4E+00	mg/L	14day	Negligible	15L	HA10d_adj						
4.2E-02	mg/L	1year	Negligible	5L	IRIS_chr_nc						
Vinyl toluene					25013-15-4						
8.4E-02	mg/L	1year	Negligible	5L	HEAST_sub_nc						
VX					50782-69-9						
5.0E-03	mg/L	7day	Negligible	15L	TSFWS_ST15‡						
1.5E-02	mg/L	7day	Negligible	5L	TSFWS_ST5‡						
Warfarin					81-81-2						
4.2E-03	mg/L	1year	Negligible	5L	HEAST_sub_nc						
Xylene, m-					108-38-3						
2.8E+01	mg/L	1year	Negligible	5L	HEAST_chr_nc						
Xylene, o-					95-47-6						
2.8E+01	mg/L	1year	Negligible	5L	HEAST_chr_nc						
Xylenes, total					1330-20-7						
1.9E+01	mg/L	7day	Negligible	15L	HA1d_adj						
5.6E+01	mg/L	7day	Negligible	5L	HA1d_adj						
5.6E+01	mg/L	14day	Negligible	5L	HA10d_adj						
1.9E+01	mg/L	14day	Negligible	15L	HA10d_adj						
5.6E+00	mg/L	1year	Negligible	5L	PPRTV_sub_nc						
Zinc cyanide					557-21-1						
7.0E-01	mg/L	1year	Negligible	5L	HEAST_sub_nc						
Zinc phosphide					1314-84-7						
4.2E-02	mg/L	1year	Negligible	5L	IRIS_sub_nc						

Footnotes for Table C-2

*MEG derived outside default hierarchy
See Appendix B for acronym definitions

Table C-3: Soil Military Exposure Guidelines

CHEMICAL NAME					CASRN	CHEMICAL NAME					CASRN
MEG	Units	Timeframe	Severity	Basis		MEG	Units	Timeframe	Severity	Basis	
Acenaphthene					83-32-9	Aluminum phosphide					20859-73-8
7.80E+03	mg/kg	1year	Negligible	RD-230 Sec. 6.3*		8.48E+01	mg/kg	1year	Negligible	nc	
Acephate					30560-19-1	Aluminum, elemental					7429-90-5
8.48E+02	mg/kg	1year	Negligible	nc		1.00E+06	mg/kg	1year	Negligible	nc	
Acetaldehyde					75-07-0	Amdro					67485-29-4
1.58E+02	mg/kg	1year	Negligible	nc		6.36E+02	mg/kg	1year	Negligible	nc	
Acetochlor					34256-82-1	Ametryn					834-12-8
4.24E+03	mg/kg	1year	Negligible	nc		1.91E+04	mg/kg	1year	Negligible	nc	
Acetone					67-64-1	Aminophenol, 3-					591-27-5
4.96E+04	mg/kg	1year	Negligible	nc		6.36E+04	mg/kg	1year	Negligible	nc	
Acetone cyanohydrin					75-86-5	Aminophenol, 4-					123-30-8
6.36E+03	mg/kg	1year	Negligible	nc		4.24E+04	mg/kg	1year	Negligible	nc	
Acetonitrile					75-05-8	Aminopyridine, 4-					504-24-5
1.94E+02	mg/kg	1year	Negligible	nc		4.24E+01	mg/kg	1year	Negligible	nc	
Acetophenone					98-86-2	Amitraz					33089-61-1
2.12E+05	mg/kg	1year	Negligible	nc		5.30E+02	mg/kg	1year	Negligible	nc	
Acifluorfen-sodium					62476-59-9	Ammonia					7664-41-7
2.76E+03	mg/kg	1year	Negligible	nc		1.00E+06	mg/kg	1year	Negligible	nc	
Acrolein					107-02-8	Ammonium perchlorate					7790-98-9
3.23E-01	mg/kg	1year	Negligible	nc		1.48E+02	mg/kg	1year	Negligible	nc	
Acrylamide					79-06-1	Ammonium sulfamate					7773-06-0
3.54E+02	mg/kg	1year	Negligible	nc		4.24E+05	mg/kg	1year	Negligible	nc	
Acrylic acid					79-10-7	Aniline					62-53-3
8.57E+04	mg/kg	1year	Negligible	nc		2.17E+05	mg/kg	1year	Negligible	ca	
Acrylonitrile					107-13-1	Anthracene					120-12-7
1.24E+02	mg/kg	1year	Negligible	ca		3.90E+04	mg/kg	1year	Negligible	RD-230 Sec. 6.3*	
Adipic acid					124-04-9	Antimony pentoxide					1314-60-9
4.24E+05	mg/kg	1year	Negligible	nc		1.06E+02	mg/kg	1year	Negligible	nc	
Adiponitrile					111-69-3	Antimony potassium tartrate					28300-74-5
1.00E+06	mg/kg	1year	Negligible	nc		1.91E+02	mg/kg	1year	Negligible	nc	
Alachlor					15972-60-8	Antimony tetroxide					1332-81-6
2.12E+03	mg/kg	1year	Negligible	nc		8.48E+01	mg/kg	1year	Negligible	nc	
Alar					1596-84-5	Antimony trioxide					1309-64-4
3.18E+04	mg/kg	1year	Negligible	nc		6.76E+04	mg/kg	1year	Negligible	nc	
Aldicarb					116-06-3	Antimony, elemental					7440-36-0
2.12E+02	mg/kg	1year	Negligible	nc		8.48E+01	mg/kg	1year	Negligible	nc	
Aldicarb sulfone					1646-88-4	Apollo					74115-24-5
2.12E+02	mg/kg	1year	Negligible	nc		2.76E+03	mg/kg	1year	Negligible	nc	
Aldrin					309-00-2	Aramite					140-57-8
7.07E+00	mg/kg	1year	Negligible	nc		2.12E+04	mg/kg	1year	Negligible	nc	
Allyl					74223-64-6	Aroclor 1016					12674-11-2
5.30E+04	mg/kg	1year	Negligible	nc		3.48E+01	mg/kg	1year	Negligible	nc	
Allyl alcohol					107-18-6	Aroclor 1254					11097-69-1
8.48E+02	mg/kg	1year	Negligible	nc		9.94E+00	mg/kg	1year	Negligible	nc	
Allyl chloride					107-05-1	Arsenic, elemental					7440-38-2
3.35E-01	mg/kg	1year	Negligible	nc		6.00E+01	mg/kg	1year	Negligible	nc	

Table C-3: Soil Military Exposure Guidelines

CHEMICAL NAME					CASRN	CHEMICAL NAME					CASRN
MEG	Units	Timeframe	Severity	Basis		MEG	Units	Timeframe	Severity	Basis	
Arsine					7784-42-1	Beryllium, elemental					7440-41-7
4.66E+04	mg/kg	1year	Negligible	nc		1.00E+03	mg/kg	1year	Negligible	nc	
Assure					76578-14-8	Bidrin					141-66-2
1.91E+03	mg/kg	1year	Negligible	nc		2.12E+01	mg/kg	1year	Negligible	nc	
Asulam					3337-71-1	Bifenox					42576-02-3
1.06E+04	mg/kg	1year	Negligible	nc		2.12E+05	mg/kg	1year	Negligible	nc	
Atrazine					1912-24-9	Biphenthrin					82657-04-3
6.36E+02	mg/kg	1year	Negligible	nc		3.18E+03	mg/kg	1year	Negligible	nc	
Avermectin B1					65195-55-3	Biphenyl, 1,1-					92-52-4
8.48E+01	mg/kg	1year	Negligible	nc		1.06E+04	mg/kg	1year	Negligible	nc	
Azinphos methyl					86-50-0	Bis(2-chloro-1-methylethyl) ether					108-60-1
6.36E+02	mg/kg	1year	Negligible	nc		1.95E+03	mg/kg	1year	Negligible	ca	
Azobenzene					103-33-3	Bis(2-chloroethoxy)methane					111-91-1
1.35E+04	mg/kg	1year	Negligible	ca		6.36E+03	mg/kg	1year	Negligible	nc	
Barium, elemental					7440-39-3	Bis(2-chloroethyl) ether					111-44-4
1.48E+04	mg/kg	1year	Negligible	nc		1.50E+02	mg/kg	1year	Negligible	ca	
Baygon					114-26-1	Bis(2-chloroisopropyl) ether					39638-32-9
8.48E+02	mg/kg	1year	Negligible	nc		8.48E+03	mg/kg	1year	Negligible	nc	
Bayleton					43121-43-3	Bis(2-ethylhexyl) phthalate					117-81-7
6.36E+03	mg/kg	1year	Negligible	nc		3.54E+04	mg/kg	1year	Negligible	nc	
Baythroid					68359-37-5	Bis(chloromethyl) ether					542-88-1
5.30E+03	mg/kg	1year	Negligible	nc		1.05E-01	mg/kg	1year	Negligible	ca	
Benefin					1861-40-1	Bisphenol A					80-05-7
6.36E+04	mg/kg	1year	Negligible	nc		1.06E+05	mg/kg	1year	Negligible	nc	
Benomyl					17804-35-2	Boron					7440-42-8
1.06E+04	mg/kg	1year	Negligible	nc		4.23E+04	mg/kg	1year	Negligible	nc	
Bentazon					25057-89-0	Boron trifluoride					7637-07-2
6.36E+03	mg/kg	1year	Negligible	nc		1.00E+06	mg/kg	1year	Negligible	nc	
Benzene					71-43-2	Bromate					15541-45-4
3.02E+01	mg/kg	1year	Negligible	nc		8.48E+02	mg/kg	1year	Negligible	nc	
Benzenethiol					108-98-5	Bromobenzene					108-86-1
2.12E+01	mg/kg	1year	Negligible	nc		1.71E+02	mg/kg	1year	Negligible	nc	
Benzidine					92-87-5	Bromodichloromethane					75-27-4
5.38E+00	mg/kg	1year	Negligible	ca		2.29E+01	mg/kg	1year	Negligible	nc	
Benzo(a)anthracene					56-55-3	Bromoethene					593-60-2
1.20E+02	mg/kg	1year	Negligible	RD-230 Sec. 6.3*		1.38E+00	mg/kg	1year	Negligible	nc	
Benzo(a)pyrene					50-32-8	Bromoform					75-25-2
1.20E+01	mg/kg	1year	Negligible	RD-230 Sec. 6.3*		5.30E+03	mg/kg	1year	Negligible	nc	
Benzo(b)fluoranthene					205-99-2	Bromophos					2104-96-3
1.20E+02	mg/kg	1year	Negligible	RD-230 Sec. 6.3*		1.06E+04	mg/kg	1year	Negligible	nc	
Benzo(k)fluoranthene					207-08-9	Bromoxynil					1689-84-5
3.90E+02	mg/kg	1year	Negligible	RD-230 Sec. 6.3*		4.24E+03	mg/kg	1year	Negligible	nc	
Benzoic acid					65-85-0	Bromoxynil octanoate					1689-99-2
5.83E+05	mg/kg	1year	Negligible	nc		4.24E+03	mg/kg	1year	Negligible	nc	
Benzotrichloride					98-07-7	Busan					21564-17-0
1.14E+02	mg/kg	1year	Negligible	ca		6.36E+04	mg/kg	1year	Negligible	nc	

Table C-3: Soil Military Exposure Guidelines

CHEMICAL NAME					CASRN	CHEMICAL NAME					CASRN
MEG	Units	Timeframe	Severity	Basis		MEG	Units	Timeframe	Severity	Basis	
Butadiene, 1,3-					106-99-0	Chlordecone					143-50-0
2.69E-01	mg/kg	1year	Negligible	nc		1.06E+02	mg/kg	1year	Negligible	nc	
Butanol, 1-					71-36-3	Chlorfenvinphos					470-90-6
1.77E+05	mg/kg	1year	Negligible	nc		4.24E+02	mg/kg	1year	Negligible	nc	
Butyl benzyl phthalate					85-68-7	Chlorimuron-ethyl					90982-32-4
4.24E+05	mg/kg	1year	Negligible	nc		4.24E+03	mg/kg	1year	Negligible	nc	
Butyl glycolyl butyl phthalate					85-70-1	Chlorine					7782-50-5
2.12E+05	mg/kg	1year	Negligible	nc		2.11E+04	mg/kg	1year	Negligible	nc	
Butylate					2008-41-5	Chlorite (sodium chlorite)					7758-19-2
1.06E+04	mg/kg	1year	Negligible	nc		2.12E+04	mg/kg	1year	Negligible	nc	
Cacodylic acid					75-60-5	Chloro-1,3-butadiene					126-99-8
4.24E+03	mg/kg	1year	Negligible	nc		1.14E+01	mg/kg	1year	Negligible	nc	
Cadmium, elemental					7440-43-9	Chloro-2-methylaniline hydrochloride, 4-					3165-93-3
1.05E+02	mg/kg	1year	Negligible	nc		3.23E+03	mg/kg	1year	Negligible	ca	
Calcium cyanide					592-01-8	Chloro-2-methylaniline, 4-					95-69-2
8.48E+03	mg/kg	1year	Negligible	nc		2.56E+03	mg/kg	1year	Negligible	ca	
Caprolactam					105-60-2	Chloroacetic acid					79-11-8
1.06E+05	mg/kg	1year	Negligible	nc		4.24E+03	mg/kg	1year	Negligible	nc	
Captafol					2425-06-1	Chloroacetophenone, 2-					532-27-4
4.24E+02	mg/kg	1year	Negligible	nc		1.08E-02	mg/kg	1year	Negligible	nc	
Captan					133-06-2	Chloroaniline, 4-					106-47-8
2.76E+04	mg/kg	1year	Negligible	nc		1.06E+02	mg/kg	1year	Negligible	nc	
Carbaryl					63-25-2	Chlorobenzene					108-90-7
2.12E+04	mg/kg	1year	Negligible	nc		4.27E+02	mg/kg	1year	Negligible	nc	
Carbazole					86-74-8	Chlorobenzilate					510-15-6
5.89E+04	mg/kg	1year	Negligible	ca		3.54E+03	mg/kg	1year	Negligible	nc	
Carbofuran					1563-66-2	Chlorobenzotrifluoride, 4-					98-56-6
1.06E+03	mg/kg	1year	Negligible	nc		6.36E+03	mg/kg	1year	Negligible	nc	
Carbon disulfide					75-15-0	Chlorobutane, 1-					109-69-3
1.16E+02	mg/kg	1year	Negligible	nc		1.48E+04	mg/kg	1year	Negligible	nc	
Carbon tetrachloride					56-23-5	Chlorodifluoromethane					75-45-6
5.36E+01	mg/kg	1year	Negligible	nc		7.41E+03	mg/kg	1year	Negligible	nc	
Carbosulfan					55285-14-8	Chloroform					67-66-3
2.12E+03	mg/kg	1year	Negligible	nc		9.07E+01	mg/kg	1year	Negligible	nc	
Carboxin					5234-68-4	Chloronaphthalene, beta-					91-58-7
2.12E+04	mg/kg	1year	Negligible	nc		4.24E+04	mg/kg	1year	Negligible	nc	
Chloral					75-87-6	Chloronitrobenzene, o-					88-73-3
4.24E+03	mg/kg	1year	Negligible	nc		6.19E-01	mg/kg	1year	Negligible	nc	
Chloral hydrate					302-17-0	Chlorophenol, 2-					95-57-8
2.12E+04	mg/kg	1year	Negligible	nc		1.70E+03	mg/kg	1year	Negligible	nc	
Chloramben					133-90-4	Chloropropane, 2-					75-29-6
3.18E+03	mg/kg	1year	Negligible	nc		5.77E+02	mg/kg	1year	Negligible	nc	
Chloranil					118-75-2	Chlorothalonil					1897-45-6
3.68E+03	mg/kg	1year	Negligible	ca		2.65E+03	mg/kg	1year	Negligible	nc	
Chlordane					57-74-9	Chlorotoluene, o-					95-49-8
1.18E+02	mg/kg	1year	Negligible	nc		4.24E+04	mg/kg	1year	Negligible	nc	

Table C-3: Soil Military Exposure Guidelines

CHEMICAL NAME					CASRN	CHEMICAL NAME					CASRN
MEG	Units	Timeframe	Severity	Basis		MEG	Units	Timeframe	Severity	Basis	
Chlorotoluene, p-					106-43-4	Cyclohexanone					108-94-1
1.48E+05	mg/kg	1year	Negligible	nc		1.00E+06	mg/kg	1year	Negligible	nc	
Chlorpropham					101-21-3	Cyclohexylamine					108-91-8
4.24E+04	mg/kg	1year	Negligible	nc		6.36E+04	mg/kg	1year	Negligible	nc	
Chlorpyrifos					2921-88-2	Cyclopentadiene					542-92-7
6.36E+02	mg/kg	1year	Negligible	nc		1.00E+06	mg/kg	1year	Negligible	nc	
Chlorpyrifos methyl					5598-13-0	Cyhalothrin					68085-85-8
2.12E+03	mg/kg	1year	Negligible	nc		2.12E+03	mg/kg	1year	Negligible	nc	
Chlorsulfuron					64902-72-3	Cypermethrin					52315-07-8
1.06E+04	mg/kg	1year	Negligible	nc		2.12E+03	mg/kg	1year	Negligible	nc	
Chlorthiophos					60238-56-4	Cyromazine					66215-27-8
1.70E+02	mg/kg	1year	Negligible	nc		1.59E+03	mg/kg	1year	Negligible	nc	
Chromium (III)					16065-83-1	Dacthal					1861-32-1
2.98E+05	mg/kg	1year	Negligible	nc		2.12E+03	mg/kg	1year	Negligible	nc	
Chromium (VI)					18540-29-9	Dalapon					75-99-0
1.91E+03	mg/kg	1year	Negligible	nc		6.36E+03	mg/kg	1year	Negligible	nc	
Chrysene					218-01-9	Danitol					39515-41-8
3.90E+02	mg/kg	1year	Negligible	RD-230 Sec. 6.3*		5.30E+03	mg/kg	1year	Negligible	nc	
Cobalt					7440-48-4	DDD					72-54-8
6.15E+02	mg/kg	1year	Negligible	nc		5.16E+03	mg/kg	1year	Negligible	ca	
Coke oven emissions					8007-45-2	DDE					72-55-9
1.00E+06	mg/kg	1year	Negligible	ca		3.64E+03	mg/kg	1year	Negligible	ca	
Copper cyanide					544-92-3	DDT					50-29-3
1.06E+04	mg/kg	1year	Negligible	nc		1.00E+02	mg/kg	1year	Negligible	nc	
Cresol, m-					108-39-4	Decabromodiphenyl ether					1163-19-5
1.06E+05	mg/kg	1year	Negligible	nc		4.45E+03	mg/kg	1year	Negligible	nc	
Cresol, o-					95-48-7	Demeton					8065-48-3
1.06E+05	mg/kg	1year	Negligible	nc		8.48E+00	mg/kg	1year	Negligible	nc	
Cresol, p-					106-44-5	Di(2-ethylhexyl)adipate					103-23-1
1.06E+03	mg/kg	1year	Negligible	nc		1.06E+05	mg/kg	1year	Negligible	nc	
Crotonaldehyde, trans-					123-73-9	Diallate					2303-16-4
7.81E+02	mg/kg	1year	Negligible	ca		2.03E+04	mg/kg	1year	Negligible	ca	
Cumene					98-82-8	Diazinon					333-41-5
1.95E+03	mg/kg	1year	Negligible	nc		4.24E+02	mg/kg	1year	Negligible	nc	
Cyanazine					21725-46-2	Dibenz(a,h)anthracene					53-70-3
4.24E+02	mg/kg	1year	Negligible	nc		1.20E+01	mg/kg	1year	Negligible	RD-230 Sec. 6.3*	
Cyanide					57-12-5	Dibenzofuran					132-64-9
4.24E+03	mg/kg	1year	Negligible	nc		6.73E+02	mg/kg	1year	Negligible	nc	
Cyanogen					460-19-5	Dibromo-3-chloropropane, 1,2-					96-12-8
8.48E+03	mg/kg	1year	Negligible	nc		3.53E+02	mg/kg	1year	Negligible	nc	
Cyanogen bromide					506-68-3	Dibromobenzene, 1,4-					106-37-6
1.91E+04	mg/kg	1year	Negligible	nc		2.12E+04	mg/kg	1year	Negligible	nc	
Cyanogen chloride					506-77-4	Dibromochloromethane					124-48-1
1.06E+04	mg/kg	1year	Negligible	nc		1.24E+04	mg/kg	1year	Negligible	nc	
Cyclohexane					110-82-7	Dibromoethane, 1,2-					106-93-4
9.19E+02	mg/kg	1year	Negligible	nc		2.58E+00	mg/kg	1year	Negligible	nc	

Table C-3: Soil Military Exposure Guidelines

CHEMICAL NAME					CASRN	CHEMICAL NAME					CASRN
MEG	Units	Timeframe	Severity	Basis		MEG	Units	Timeframe	Severity	Basis	
Dibromomethane					74-95-3	Dichloropropene, 1,3-					542-75-6
1.91E+03	mg/kg	1year	Negligible	nc		9.36E+00	mg/kg	1year	Negligible	nc	
Dibutyl phthalate					84-74-2	Dichlorvos					62-73-7
2.12E+05	mg/kg	1year	Negligible	nc		6.36E+02	mg/kg	1year	Negligible	nc	
Dibutyl tin dichloride					683-18-1	Dicyclopentadiene					77-73-6
1.06E+03	mg/kg	1year	Negligible	nc		1.71E+01	mg/kg	1year	Negligible	nc	
Dicamba					1918-00-9	Dieldrin					60-57-1
6.36E+03	mg/kg	1year	Negligible	nc		1.77E+01	mg/kg	1year	Negligible	nc	
Dichloro-2-butene, 1,4-					764-41-0	Diesel engine exhaust					Diesel
2.89E+00	mg/kg	1year	Negligible	ca		1.00E+06	mg/kg	1year	Negligible	nc	
Dichloroacetic acid					79-43-6	Diethyl phthalate					84-66-2
2.55E+03	mg/kg	1year	Negligible	nc		1.00E+06	mg/kg	1year	Negligible	nc	
Dichlorobenzene, 1,2-					95-50-1	Diethylene glycol monobutyl ether					112-34-5
3.98E+03	mg/kg	1year	Negligible	nc		5.96E+04	mg/kg	1year	Negligible	nc	
Dichlorobenzene, 1,3-					541-73-1	Diethylene glycol monoethyl ether					111-90-0
1.64E+01	mg/kg	1year	Negligible	nc		1.02E+05	mg/kg	1year	Negligible	nc	
Dichlorobenzene, 1,4-					106-46-7	Diethylformamide					617-84-5
3.37E+03	mg/kg	1year	Negligible	nc		2.12E+02	mg/kg	1year	Negligible	nc	
Dichlorobenzidine, 3,3'-					91-94-1	Diethylstilbestrol					56-53-1
2.75E+03	mg/kg	1year	Negligible	ca		2.63E+05	mg/kg	1year	Negligible	ca	
Dichlorodifluoromethane					75-71-8	Difenzoquat					43222-48-6
2.96E+02	mg/kg	1year	Negligible	nc		1.70E+04	mg/kg	1year	Negligible	nc	
Dichloroethane, 1,1-					75-34-3	Diflubenzuron					35367-38-5
4.24E+05	mg/kg	1year	Negligible	nc		4.24E+03	mg/kg	1year	Negligible	nc	
Dichloroethane, 1,2-					107-06-2	Difluoroethane, 1,1-					75-37-6
2.69E+00	mg/kg	1year	Negligible	nc		1.00E+06	mg/kg	1year	Negligible	nc	
Dichloroethylene, 1,1-					75-35-4	Diisopropyl ether					108-20-3
4.10E+00	mg/kg	1year	Negligible	ca		1.00E+06	mg/kg	1year	Negligible	nc	
Dichloroethylene, 1,2-					540-59-0	Diisopropyl methylphosphonate					1445-75-6
1.91E+03	mg/kg	1year	Negligible	nc		1.70E+05	mg/kg	1year	Negligible	nc	
Dichloroethylene, cis-1,2-					156-59-2	Dimethipin					55290-64-7
2.12E+04	mg/kg	1year	Negligible	nc		4.24E+03	mg/kg	1year	Negligible	nc	
Dichloroethylene, trans-					156-60-5	Dimethoate					60-51-5
2.57E+02	mg/kg	1year	Negligible	nc		4.24E+01	mg/kg	1year	Negligible	nc	
Dichlorophenol, 2,4-					120-83-2	Dimethoxybenzidine, 3,3'-					119-90-4
3.54E+03	mg/kg	1year	Negligible	nc		8.84E+04	mg/kg	1year	Negligible	ca	
Dichlorophenoxy acetic acid, 2,4-					94-75-7	Dimethyl methylphosphonate					756-79-6
1.93E+03	mg/kg	1year	Negligible	nc		1.27E+04	mg/kg	1year	Negligible	nc	
Dichlorophenoxybutyric acid, 2,4-					94-82-6	Dimethyl terephthalate					120-61-6
1.70E+04	mg/kg	1year	Negligible	nc		2.12E+04	mg/kg	1year	Negligible	nc	
Dichloropropane, 1,2-					78-87-5	Dimethylaniline hydrochloride, 2,4-					21436-96-4
6.04E+00	mg/kg	1year	Negligible	nc		2.56E+03	mg/kg	1year	Negligible	ca	
Dichloropropane, 1,3-					142-28-9	Dimethylaniline, 2,4-					95-68-1
4.24E+04	mg/kg	1year	Negligible	nc		1.98E+03	mg/kg	1year	Negligible	ca	
Dichloropropanol, 2,3-					616-23-9	Dimethylaniline, N,N-					121-69-7
6.36E+02	mg/kg	1year	Negligible	nc		4.24E+03	mg/kg	1year	Negligible	nc	

Table C-3: Soil Military Exposure Guidelines

CHEMICAL NAME					CASRN	CHEMICAL NAME					CASRN
MEG	Units	Timeframe	Severity	Basis		MEG	Units	Timeframe	Severity	Basis	
Dimethylbenzidine, 3,3'-					119-93-7	Direct blue 6					2602-46-2
1.12E+02	mg/kg	1year	Negligible	ca		1.83E+02	mg/kg	1year	Negligible	ca	
Dimethylformamide					68-12-2	Direct brown 95					16071-86-6
6.36E+04	mg/kg	1year	Negligible	nc		1.60E+02	mg/kg	1year	Negligible	ca	
Dimethylhydrazine, 1,1-					57-14-7	Disulfoton					298-04-4
7.45E+03	mg/kg	1year	Negligible	nc		1.59E+01	mg/kg	1year	Negligible	nc	
Dimethylhydrazine, 1,2-					540-73-8	Dithiane, 1,4-					505-29-3
1.70E+02	mg/kg	1year	Negligible	nc		2.12E+04	mg/kg	1year	Negligible	nc	
Dimethylphenol, 2,4-					105-67-9	Diuron					330-54-1
1.06E+04	mg/kg	1year	Negligible	nc		4.24E+02	mg/kg	1year	Negligible	nc	
Dimethylphenol, 2,6-					576-26-1	Dodine					2439-10-3
1.27E+03	mg/kg	1year	Negligible	nc		8.48E+02	mg/kg	1year	Negligible	nc	
Dimethylphenol, 3,4-					95-65-8	EA 2192					73207-98-4
2.12E+03	mg/kg	1year	Negligible	nc		1.27E-01	mg/kg	1year	Negligible	nc	
Dinitrobenzene, 1,2-					528-29-0	EMPA					1832-53-7
2.12E+02	mg/kg	1year	Negligible	nc		5.30E+03	mg/kg	1year	Negligible	nc	
Dinitrobenzene, 1,3-					99-65-0	Endosulfan					115-29-7
1.77E+02	mg/kg	1year	Negligible	nc		1.06E+03	mg/kg	1year	Negligible	nc	
Dinitro-o-cresol, 4,6-					534-52-1	Endothall					145-73-3
7.07E+02	mg/kg	1year	Negligible	nc		4.24E+03	mg/kg	1year	Negligible	nc	
Dinitro-o-cyclohexyl phenol, 4,6-					131-89-5	Endrin					72-20-8
4.24E+03	mg/kg	1year	Negligible	nc		4.24E+02	mg/kg	1year	Negligible	nc	
Dinitrophenol, 2,4-					51-28-5	Epichlorohydrin					106-89-8
4.24E+03	mg/kg	1year	Negligible	nc		2.45E+01	mg/kg	1year	Negligible	nc	
Dinitrotoluene					25321-14-6	Epoxybutane, 1,2-					106-88-7
2.18E+03	mg/kg	1year	Negligible	ca		1.00E+06	mg/kg	1year	Negligible	nc	
Dinitrotoluene, 2,4-					121-14-2	EPTC					759-94-4
3.52E+02	mg/kg	1year	Negligible	nc		5.30E+03	mg/kg	1year	Negligible	nc	
Dinitrotoluene, 2,6-					606-20-2	Ethephon					16672-87-0
1.77E+03	mg/kg	1year	Negligible	nc		1.06E+03	mg/kg	1year	Negligible	nc	
Di-n-octyl phthalate					117-84-0	Ethion					563-12-2
7.07E+04	mg/kg	1year	Negligible	nc		4.24E+02	mg/kg	1year	Negligible	nc	
Dinoseb					88-85-7	Ethoxyethanol, 2-					110-80-5
2.12E+02	mg/kg	1year	Negligible	nc		8.84E+04	mg/kg	1year	Negligible	nc	
Dioxane, 1,4-					123-91-1	Ethoxyethyl acetate, 2-					111-15-9
1.06E+05	mg/kg	1year	Negligible	nc		1.00E+06	mg/kg	1year	Negligible	nc	
Diphenamid					957-51-7	Ethyl acetate					141-78-6
6.36E+03	mg/kg	1year	Negligible	nc		1.00E+06	mg/kg	1year	Negligible	nc	
Diphenylamine					122-39-4	Ethyl acrylate					140-88-5
5.30E+03	mg/kg	1year	Negligible	nc		3.09E+04	mg/kg	1year	Negligible	ca	
Diphenylhydrazine, 1,2-					122-66-7	Ethyl chloride					75-00-3
1.55E+03	mg/kg	1year	Negligible	ca		7.17E+02	mg/kg	1year	Negligible	nc	
Diquat					85-00-7	Ethyl ether					60-29-7
4.67E+02	mg/kg	1year	Negligible	nc		1.39E+04	mg/kg	1year	Negligible	nc	
Direct black 38					1937-37-7	Ethyl methacrylate					97-63-2
1.73E+02	mg/kg	1year	Negligible	ca		1.91E+04	mg/kg	1year	Negligible	nc	

Table C-3: Soil Military Exposure Guidelines

CHEMICAL NAME					CASRN	CHEMICAL NAME					CASRN
MEG	Units	Timeframe	Severity	Basis		MEG	Units	Timeframe	Severity	Basis	
Ethyl p-nitrophenyl phenylphosphorothioate					2104-64-5	Fosetyl-aluminum					39148-24-8
2.12E+01	mg/kg	1year	Negligible	nc		6.36E+05	mg/kg	1year	Negligible	nc	
Ethylbenzene					100-41-4	Furan					110-00-9
2.25E+03	mg/kg	1year	Negligible	nc		2.12E+03	mg/kg	1year	Negligible	nc	
Ethylene cyanohydrin					109-78-4	Furazolidone					67-45-8
2.12E+04	mg/kg	1year	Negligible	nc		3.91E+02	mg/kg	1year	Negligible	ca	
Ethylene diamine					107-15-3	Furfural					98-01-1
4.24E+04	mg/kg	1year	Negligible	nc		6.36E+03	mg/kg	1year	Negligible	nc	
Ethylene glycol					107-21-1	Furium					531-82-8
1.41E+05	mg/kg	1year	Negligible	nc		2.97E+01	mg/kg	1year	Negligible	ca	
Ethylene glycol monobutyl ether					111-76-2	Furmecyclox					60568-05-0
1.24E+04	mg/kg	1year	Negligible	nc		4.95E+04	mg/kg	1year	Negligible	ca	
Ethylene oxide					75-21-8	Glufosinate ammonium					77182-82-2
8.67E+01	mg/kg	1year	Negligible	ca		8.48E+02	mg/kg	1year	Negligible	nc	
Ethylene thiourea					96-45-7	Glycidaldehyde					765-34-4
1.41E+01	mg/kg	1year	Negligible	nc		7.07E+02	mg/kg	1year	Negligible	nc	
Ethylphthalyl ethyl glycolate					84-72-0	Glyphosate					1071-83-6
6.36E+05	mg/kg	1year	Negligible	nc		2.12E+04	mg/kg	1year	Negligible	nc	
Express					101200-48-0	Haloxypop-methyl					69806-40-2
1.70E+03	mg/kg	1year	Negligible	nc		1.06E+01	mg/kg	1year	Negligible	nc	
Fenamiphos					22224-92-6	Harmony					79277-27-3
5.30E+01	mg/kg	1year	Negligible	nc		2.76E+03	mg/kg	1year	Negligible	nc	
Fluometuron					2164-17-2	HCFC-142b					75-68-3
2.76E+03	mg/kg	1year	Negligible	nc		7.41E+03	mg/kg	1year	Negligible	nc	
Fluoranthene					206-44-0	HD					505-60-2
6.73E+04	mg/kg	1year	Negligible	nc		1.55E-01	mg/kg	1year	Negligible	nc	
Fluorene					86-73-7	Heptachlor					76-44-8
5.20E+03	mg/kg	1year	Negligible	RD-230 Sec. 6.3*		1.77E+01	mg/kg	1year	Negligible	nc	
Fluorine					7782-41-4	Heptachlor epoxide					1024-57-3
1.27E+04	mg/kg	1year	Negligible	nc		2.76E+00	mg/kg	1year	Negligible	nc	
Fluridone					59756-60-4	Hexabromobenzene					87-82-1
1.70E+04	mg/kg	1year	Negligible	nc		4.24E+03	mg/kg	1year	Negligible	nc	
Flurprimidol					56425-91-3	Hexachlorobenzene					118-74-1
4.24E+03	mg/kg	1year	Negligible	nc		1.77E+01	mg/kg	1year	Negligible	nc	
Flutolanil					66332-96-5	Hexachlorobutadiene					87-68-3
1.27E+04	mg/kg	1year	Negligible	nc		2.12E+02	mg/kg	1year	Negligible	nc	
Fluvalinate					69409-94-5	Hexachlorocyclohexane, alpha-					319-84-6
2.12E+03	mg/kg	1year	Negligible	nc		1.96E+02	mg/kg	1year	Negligible	ca	
Folpet					133-07-3	Hexachlorocyclohexane, beta-					319-85-7
2.12E+04	mg/kg	1year	Negligible	nc		1.27E+02	mg/kg	1year	Negligible	nc	
Fomesafen					72178-02-0	Hexachlorocyclohexane, technical					608-73-1
7.81E+03	mg/kg	1year	Negligible	ca		8.25E+02	mg/kg	1year	Negligible	ca	
Fonofos					944-22-9	Hexachlorocyclopentadiene					77-47-4
4.24E+02	mg/kg	1year	Negligible	nc		3.18E+03	mg/kg	1year	Negligible	nc	
Formaldehyde					50-00-0	Hexachloroethane					67-72-1
6.35E+04	mg/kg	1year	Negligible	nc		1.77E+03	mg/kg	1year	Negligible	nc	

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CHEMICAL NAME					CASRN	CHEMICAL NAME					CASRN
MEG	Units	Timeframe	Severity	Basis		MEG	Units	Timeframe	Severity	Basis	
Hexachlorophene					70-30-4	Kerosene					8008-20-6
1.91E+02	mg/kg	1year	Negligible	nc		1.00E+06	mg/kg	1year	Negligible	nc	
Hexamethylene diisocyanate					822-06-0	Lactofen					77501-63-4
1.92E+05	mg/kg	1year	Negligible	nc		4.24E+02	mg/kg	1year	Negligible	nc	
Hexane, commercial					110-54-3	Lead					7439-92-1
3.87E+02	mg/kg	1year	Negligible	nc		2.20E+03	mg/kg	1year	Negligible	RD-230 Sec. 6.3.1	
Hexazinone					51235-04-2	Lewisite oxide					3088-37-7
7.00E+03	mg/kg	1year	Negligible	nc		6.36E+01	mg/kg	1year	Negligible	nc	
HFC-134A					811-97-2	Lindane					58-89-9
1.00E+06	mg/kg	1year	Negligible	nc		5.89E+02	mg/kg	1year	Negligible	nc	
HMX					2691-41-0	Linuron					330-55-2
1.05E+05	mg/kg	1year	Negligible	nc		4.24E+02	mg/kg	1year	Negligible	nc	
Hydrazine					302-01-2	Lithium					7439-93-2
4.95E+02	mg/kg	1year	Negligible	ca		4.24E+02	mg/kg	1year	Negligible	nc	
Hydrogen chloride					7647-01-0	Londax					83055-99-6
1.00E+06	mg/kg	1year	Negligible	nc		4.24E+04	mg/kg	1year	Negligible	nc	
Hydrogen cyanide					74-90-8	Lutetium					7439-94-3
1.02E+01	mg/kg	1year	Negligible	nc		1.06E+05	mg/kg	1year	Negligible	nc	
Hydrogen sulfide					7783-06-4	Malathion					121-75-5
6.36E+03	mg/kg	1year	Negligible	nc		3.53E+03	mg/kg	1year	Negligible	nc	
Hydroquinone					123-31-9	Maleic anhydride					108-31-6
2.47E+04	mg/kg	1year	Negligible	ca		2.12E+04	mg/kg	1year	Negligible	nc	
Imazalil					35554-44-0	Maleic hydrazide					123-33-1
2.76E+03	mg/kg	1year	Negligible	nc		1.06E+05	mg/kg	1year	Negligible	nc	
Imazaquin					81335-37-7	Malononitrile					109-77-3
5.30E+04	mg/kg	1year	Negligible	nc		2.12E+02	mg/kg	1year	Negligible	nc	
Indeno(1,2,3-cd)pyrene					193-39-5	Mancozeb					8018-01-7
1.20E+02	mg/kg	1year	Negligible	RD-230 Sec. 6.3*		6.36E+03	mg/kg	1year	Negligible	nc	
Iodine					7553-56-2	Maneb					12427-38-2
2.12E+03	mg/kg	1year	Negligible	nc		1.06E+04	mg/kg	1year	Negligible	nc	
Iprodione					36734-19-7	Manganese					7439-96-5
8.48E+03	mg/kg	1year	Negligible	nc		1.81E+04	mg/kg	1year	Negligible	nc	
Iron					7439-89-6	MCPA					94-74-6
1.48E+05	mg/kg	1year	Negligible	nc		1.06E+02	mg/kg	1year	Negligible	nc	
Isobutyl alcohol					78-83-1	MCPB					94-81-5
6.36E+05	mg/kg	1year	Negligible	nc		2.12E+04	mg/kg	1year	Negligible	nc	
Isophorone					78-59-1	MCPB					93-65-2
3.54E+05	mg/kg	1year	Negligible	nc		2.12E+03	mg/kg	1year	Negligible	nc	
Isopropalin					33820-53-0	Mephosfolan					950-10-7
3.18E+04	mg/kg	1year	Negligible	nc		1.91E+02	mg/kg	1year	Negligible	nc	
Isopropyl methyl phosphonic acid					1832-54-8	Mepiquat chloride					24307-26-4
2.12E+05	mg/kg	1year	Negligible	nc		6.36E+04	mg/kg	1year	Negligible	nc	
Isoxaben					82558-50-7	Mercuric chloride					7487-94-7
1.06E+04	mg/kg	1year	Negligible	nc		6.36E+02	mg/kg	1year	Negligible	nc	
JP-4 jet fuel					50815-00-4	Mercury (generic)					7439-97-6
1.00E+06	mg/kg	1year	Negligible	nc		5.60E+01	mg/kg	1year	Negligible	RD-230 Sec. 6.3*	

Table C-3: Soil Military Exposure Guidelines

CHEMICAL NAME					CASRN	CHEMICAL NAME					CASRN
MEG	Units	Timeframe	Severity	Basis		MEG	Units	Timeframe	Severity	Basis	
Mercury, elemental					7439-97-6	Methyl-5-nitroaniline, 2-					99-55-8
9.78E+05	mg/kg	1year	Negligible	nc		4.50E+04	mg/kg	1year	Negligible	ca	
Merphos					150-50-5	Methylaniline hydrochloride, 2-					636-21-5
6.36E+01	mg/kg	1year	Negligible	nc		6.87E+03	mg/kg	1year	Negligible	ca	
Merphos oxide					78-48-8	Methylaniline, 2-					95-53-4
6.36E+01	mg/kg	1year	Negligible	nc		5.16E+03	mg/kg	1year	Negligible	ca	
Metalaxyl					57837-19-1	Methylene chloride					75-09-2
1.27E+04	mg/kg	1year	Negligible	nc		3.54E+02	mg/kg	1year	Negligible	nc	
Methacrylonitrile					126-98-7	Methylene diphenyl diisocyanate					101-68-8
8.44E+00	mg/kg	1year	Negligible	nc		6.52E+04	mg/kg	1year	Negligible	nc	
Methamidophos					10265-92-6	Methylene-bis(2-chloroaniline), 4,4'-					101-14-4
1.06E+01	mg/kg	1year	Negligible	nc		3.54E+02	mg/kg	1year	Negligible	nc	
Methanol					67-56-1	Methylenebis(N,N'-dimethyl)aniline, 4,4'-					101-61-1
1.00E+06	mg/kg	1year	Negligible	nc		2.69E+04	mg/kg	1year	Negligible	ca	
Methidathion					950-37-8	Methylenedianiline, 4,4'-					101-77-9
2.12E+02	mg/kg	1year	Negligible	nc		1.41E+04	mg/kg	1year	Negligible	nc	
Methomyl					16752-77-5	Methylmercury					22967-92-6
5.30E+03	mg/kg	1year	Negligible	nc		2.12E+01	mg/kg	1year	Negligible	nc	
Methoxy-5-nitroaniline, 2-					99-59-2	Methylnaphthalene, 1-					90-12-0
3.23E+04	mg/kg	1year	Negligible	ca		9.10E+02	mg/kg	1year	Negligible	RD-230 Sec. 6.3*	
Methoxychlor					72-43-5	Methylnaphthalene, 2-					91-57-6
8.84E+02	mg/kg	1year	Negligible	nc		5.20E+01	mg/kg	1year	Negligible	RD-230 Sec. 6.3*	
Methoxyethanol, 2-					109-86-4	Methylphosphonic acid					993-13-5
1.77E+03	mg/kg	1year	Negligible	nc		1.00E+06	mg/kg	1year	Negligible	nc	
Methoxyethyl acetate, 2-					110-49-6	Methylstyrene, alpha-					98-83-9
4.24E+03	mg/kg	1year	Negligible	nc		1.48E+05	mg/kg	1year	Negligible	nc	
Methyl acetate					79-20-9	Metolachlor					51218-45-2
1.00E+06	mg/kg	1year	Negligible	nc		3.18E+04	mg/kg	1year	Negligible	nc	
Methyl acrylate					96-33-3	Metribuzin					21087-64-9
6.36E+03	mg/kg	1year	Negligible	nc		5.30E+03	mg/kg	1year	Negligible	nc	
Methyl bromide					74-83-9	Mirex					2385-85-5
2.48E+01	mg/kg	1year	Negligible	nc		4.24E+01	mg/kg	1year	Negligible	nc	
Methyl chloride					74-87-3	Molinate					2212-67-1
1.49E+02	mg/kg	1year	Negligible	nc		4.24E+02	mg/kg	1year	Negligible	nc	
Methyl ethyl ketone					78-93-3	Molybdenum					7439-98-7
2.71E+03	mg/kg	1year	Negligible	nc		1.06E+03	mg/kg	1year	Negligible	nc	
Methyl isobutyl ketone					108-10-1	Monochloramine					10599-90-3
2.78E+03	mg/kg	1year	Negligible	nc		2.12E+04	mg/kg	1year	Negligible	nc	
Methyl mercaptan					74-93-1	Naled					300-76-5
1.00E+06	mg/kg	1year	Negligible	nc		4.24E+02	mg/kg	1year	Negligible	nc	
Methyl methacrylate					80-62-6	Naphthalene					91-20-3
6.73E+02	mg/kg	1year	Negligible	nc		2.60E+03	mg/kg	1year	Negligible	RD-230 Sec. 6.3*	
Methyl parathion					298-00-0	Napropamide					15299-99-7
1.24E+02	mg/kg	1year	Negligible	nc		2.12E+04	mg/kg	1year	Negligible	nc	
Methyl tertiary butyl ether					1634-04-4	Nickel refinery dust					Ni ref dust
1.62E+03	mg/kg	1year	Negligible	nc		1.00E+06	mg/kg	1year	Negligible	ca	

Table C-3: Soil Military Exposure Guidelines

CHEMICAL NAME					CASRN	CHEMICAL NAME					CASRN
MEG	Units	Timeframe	Severity	Basis		MEG	Units	Timeframe	Severity	Basis	
Nickel subsulfide					12035-72-2	Nitrotoluene, o-					88-72-2
1.00E+06	mg/kg	1year	Negligible	ca		2.12E+03	mg/kg	1year	Negligible	nc	
Nickel, soluble salts					Ni sol salts	Nitrotoluene, p-					99-99-0
4.24E+03	mg/kg	1year	Negligible	nc		8.48E+02	mg/kg	1year	Negligible	nc	
Nitrate					14797-55-8	Norflurazon					27314-13-2
3.39E+05	mg/kg	1year	Negligible	nc		8.48E+03	mg/kg	1year	Negligible	nc	
Nitrite					14797-65-0	NuStar					85509-19-9
2.12E+04	mg/kg	1year	Negligible	nc		1.48E+02	mg/kg	1year	Negligible	nc	
Nitroaniline, 2-					88-74-4	Octabromodiphenyl ether					32536-52-0
3.73E+05	mg/kg	1year	Negligible	nc		6.36E+03	mg/kg	1year	Negligible	nc	
Nitrobenzene					98-95-3	Octamethylpyrophosphoramidate					152-16-9
1.13E+02	mg/kg	1year	Negligible	nc		4.24E+02	mg/kg	1year	Negligible	nc	
Nitrofurantoin					67-20-9	Oryzalin					19044-88-3
1.48E+05	mg/kg	1year	Negligible	nc		1.06E+04	mg/kg	1year	Negligible	nc	
Nitrofurazone					59-87-0	Oxadiazon					19666-30-9
9.90E+02	mg/kg	1year	Negligible	ca		1.06E+03	mg/kg	1year	Negligible	nc	
Nitroglycerin					55-63-0	Oxamyl					23135-22-0
2.12E+01	mg/kg	1year	Negligible	nc		5.30E+03	mg/kg	1year	Negligible	nc	
Nitroguanidine					556-88-7	Oxyfluorfen					42874-03-3
2.12E+04	mg/kg	1year	Negligible	nc		6.36E+02	mg/kg	1year	Negligible	nc	
Nitromethane					75-52-5	Paclobutrazol					76738-62-0
1.00E+06	mg/kg	1year	Negligible	nc		2.76E+04	mg/kg	1year	Negligible	nc	
Nitrophenol, 2-					88-75-5	Paraquat dichloride					1910-42-5
2.27E-02	mg/kg	1year	Negligible	nc		9.55E+02	mg/kg	1year	Negligible	nc	
Nitropropane, 2-					79-46-9	Parathion					56-38-2
1.00E+06	mg/kg	1year	Negligible	ca		1.27E+03	mg/kg	1year	Negligible	nc	
Nitrosodiethanolamine, N-					1116-54-7	Pebulate					1114-71-2
4.42E+02	mg/kg	1year	Negligible	ca		1.06E+04	mg/kg	1year	Negligible	nc	
Nitrosodiethylamine, N-					55-18-5	Pendimethalin					40487-42-1
8.25E+00	mg/kg	1year	Negligible	ca		8.48E+03	mg/kg	1year	Negligible	nc	
Nitrosodimethylamine, N-					62-75-9	Pentabromo-6-chlorocyclohexane, 1,2,3,4,5-					87-84-3
1.41E+00	mg/kg	1year	Negligible	nc		6.46E+04	mg/kg	1year	Negligible	ca	
Nitroso-di-n-butylamine, N-					924-16-3	Pentabromodiphenyl ether					32534-81-9
1.48E+01	mg/kg	1year	Negligible	ca		4.24E+03	mg/kg	1year	Negligible	nc	
Nitrosodiphenylamine, N-					86-30-6	Pentachlorobenzene					608-93-5
3.03E+05	mg/kg	1year	Negligible	ca		1.70E+03	mg/kg	1year	Negligible	nc	
Nitrosodipropylamine, N-					621-64-7	Pentachloroethane					76-01-7
1.77E+02	mg/kg	1year	Negligible	ca		1.65E+04	mg/kg	1year	Negligible	ca	
Nitroso-N-ethylurea, N-					759-73-9	Pentachloronitrobenzene					82-68-8
1.06E+01	mg/kg	1year	Negligible	ca		6.36E+02	mg/kg	1year	Negligible	nc	
Nitroso-N-methylethylamine, N-					10595-95-6	Pentachlorophenol					87-86-5
6.75E+01	mg/kg	1year	Negligible	ca		1.41E+02	mg/kg	1year	Negligible	nc	
Nitrosopyrrolidine, N-					930-55-2	Perchloroethylene					127-18-4
5.89E+02	mg/kg	1year	Negligible	ca		9.66E+01	mg/kg	1year	Negligible	nc	
Nitrotoluene, m-					99-08-1	Permethrin					52645-53-1
2.12E+02	mg/kg	1year	Negligible	nc		4.24E+04	mg/kg	1year	Negligible	nc	

Table C-3: Soil Military Exposure Guidelines

CHEMICAL NAME					CASRN	CHEMICAL NAME					CASRN
MEG	Units	Timeframe	Severity	Basis		MEG	Units	Timeframe	Severity	Basis	
Phenanthrene					85-01-8	Profuralin					26399-36-0
2.80E+03	mg/kg	1year	Negligible	RD-230 Sec. 6.3*		1.27E+03	mg/kg	1year	Negligible	nc	
Phenmedipham					13684-63-4	Prometon					1610-18-0
5.30E+04	mg/kg	1year	Negligible	nc		3.18E+04	mg/kg	1year	Negligible	nc	
Phenol					108-95-2	Prometryn					7287-19-6
1.27E+05	mg/kg	1year	Negligible	nc		8.48E+02	mg/kg	1year	Negligible	nc	
Phenylenediamine, m-					108-45-2	Pronamide					23950-58-5
1.27E+04	mg/kg	1year	Negligible	nc		1.59E+04	mg/kg	1year	Negligible	nc	
Phenylenediamine, o-					95-54-5	Propachlor					1918-16-7
2.63E+04	mg/kg	1year	Negligible	ca		2.76E+04	mg/kg	1year	Negligible	nc	
Phenylenediamine, p-					106-50-3	Propanil					709-98-8
4.03E+04	mg/kg	1year	Negligible	nc		1.06E+03	mg/kg	1year	Negligible	nc	
Phenylmercuric acetate					62-38-4	Propargite					2312-35-8
1.70E+01	mg/kg	1year	Negligible	nc		4.24E+03	mg/kg	1year	Negligible	nc	
Phenylphenol, 2-					90-43-7	Propargyl alcohol					107-19-7
6.38E+05	mg/kg	1year	Negligible	ca		4.24E+03	mg/kg	1year	Negligible	nc	
Phorate					298-02-2	Propazine					139-40-2
4.24E+01	mg/kg	1year	Negligible	nc		4.24E+03	mg/kg	1year	Negligible	nc	
Phosgene					75-44-5	Propham					122-42-9
8.38E+05	mg/kg	1year	Negligible	nc		4.24E+04	mg/kg	1year	Negligible	nc	
Phosmet					732-11-6	Propiconazole					60207-90-1
4.24E+03	mg/kg	1year	Negligible	nc		2.76E+03	mg/kg	1year	Negligible	nc	
Phosphine					7803-51-2	Propylene glycol					57-55-6
6.36E+01	mg/kg	1year	Negligible	nc		1.00E+06	mg/kg	1year	Negligible	nc	
Phosphoric acid					7664-38-2	Propylene glycol dinitrate					6423-43-4
1.00E+06	mg/kg	1year	Negligible	nc		2.53E+05	mg/kg	1year	Negligible	nc	
Phosphorus, white					12185-10-3	Propylene glycol monoethyl ether					1569-02-4
4.24E+01	mg/kg	1year	Negligible	nc		1.00E+06	mg/kg	1year	Negligible	nc	
Phthalic anhydride					85-44-9	Propylene glycol monomethyl ether					107-98-2
4.23E+05	mg/kg	1year	Negligible	nc		1.00E+06	mg/kg	1year	Negligible	nc	
Picloram					1918-02-1	Propylene oxide					75-56-9
1.48E+04	mg/kg	1year	Negligible	nc		5.64E+01	mg/kg	1year	Negligible	nc	
Pirimiphos-methyl					29232-93-7	Pursuit					81335-77-5
2.12E+03	mg/kg	1year	Negligible	nc		5.30E+04	mg/kg	1year	Negligible	nc	
Polybrominated biphenyl					36355-01-8	Pydrin					51630-58-1
1.48E+01	mg/kg	1year	Negligible	nc		5.30E+03	mg/kg	1year	Negligible	nc	
Polychlorinated biphenyls					1336-36-3	Pyrene					129-00-0
5.80E+02	mg/kg	1year	Negligible	ca		5.05E+04	mg/kg	1year	Negligible	nc	
Potassium cyanide					151-50-8	Pyridine					110-86-1
1.06E+04	mg/kg	1year	Negligible	nc		2.12E+03	mg/kg	1year	Negligible	nc	
Potassium perchlorate					7778-74-7	Quinalphos					13593-03-8
1.48E+02	mg/kg	1year	Negligible	nc		1.06E+02	mg/kg	1year	Negligible	nc	
Potassium silver cyanide					506-61-6	Quinoline					91-22-5
4.24E+04	mg/kg	1year	Negligible	nc		4.12E+02	mg/kg	1year	Negligible	ca	
Prochloraz					67747-09-5	RDX					121-82-4
1.91E+03	mg/kg	1year	Negligible	nc		6.18E+03	mg/kg	1year	Negligible	nc	

Table C-3: Soil Military Exposure Guidelines

CHEMICAL NAME					CASRN	CHEMICAL NAME					CASRN
MEG	Units	Timeframe	Severity	Basis		MEG	Units	Timeframe	Severity	Basis	
Refractory ceramic fibers					ref ceramic fiber	Systhane					88671-89-0
1.00E+06	mg/kg	1year	Negligible	nc		5.30E+03	mg/kg	1year	Negligible	nc	
Resmethrin					10453-86-8	TCDD, 2,3,7,8-					1746-01-6
6.36E+03	mg/kg	1year	Negligible	nc		4.00E-03	mg/kg	1year	Negligible	nc	
Ronnel					299-84-3	Tebuthiuron					34014-18-1
1.06E+04	mg/kg	1year	Negligible	nc		1.48E+04	mg/kg	1year	Negligible	nc	
Rotenone					83-79-4	Temephos					3383-96-8
8.48E+02	mg/kg	1year	Negligible	nc		4.24E+04	mg/kg	1year	Negligible	nc	
Savey					78587-05-0	Terbacil					5902-51-2
5.30E+03	mg/kg	1year	Negligible	nc		2.76E+03	mg/kg	1year	Negligible	nc	
Selenious acid					7783-00-8	Terbufos					13071-79-9
1.06E+03	mg/kg	1year	Negligible	nc		5.30E+00	mg/kg	1year	Negligible	nc	
Selenium					7782-49-2	Terbutryn					886-50-0
1.06E+03	mg/kg	1year	Negligible	nc		2.12E+02	mg/kg	1year	Negligible	nc	
Selenourea					630-10-4	Tetrachlorobenzene, 1,2,4,5-					95-94-3
1.06E+03	mg/kg	1year	Negligible	nc		4.24E+02	mg/kg	1year	Negligible	nc	
Sethoxydim					74051-80-2	Tetrachloroethane, 1,1,1,2-					630-20-6
1.91E+04	mg/kg	1year	Negligible	nc		1.81E+03	mg/kg	1year	Negligible	ca	
Silver					7440-22-4	Tetrachloroethane, 1,1,2,2-					79-34-5
1.06E+03	mg/kg	1year	Negligible	nc		2.31E+02	mg/kg	1year	Negligible	ca	
Silver cyanide					506-64-9	Tetrachlorophenol, 2,3,4,6-					58-90-2
2.12E+04	mg/kg	1year	Negligible	nc		6.36E+04	mg/kg	1year	Negligible	nc	
Silvex					93-72-1	Tetrachlorotoluene, para, alpha, alpha, alpha-					5216-25-1
1.70E+03	mg/kg	1year	Negligible	nc		7.42E+01	mg/kg	1year	Negligible	ca	
Simazine					122-34-9	Tetrachlorovinphos					961-11-5
1.06E+03	mg/kg	1year	Negligible	nc		6.36E+03	mg/kg	1year	Negligible	nc	
Sodium azide					26628-22-8	Tetraethyl dithiopyrophosphate					3689-24-5
8.48E+03	mg/kg	1year	Negligible	nc		1.06E+03	mg/kg	1year	Negligible	nc	
Sodium cyanide					143-33-9	Tetraethyl lead					78-00-2
1.06E+04	mg/kg	1year	Negligible	nc		2.12E-01	mg/kg	1year	Negligible	nc	
Sodium diethyldithiocarbamate					148-18-5	Tetrahydrofuran					109-99-9
5.50E+03	mg/kg	1year	Negligible	ca		4.49E+02	mg/kg	1year	Negligible	nc	
Sodium fluoroacetate					62-74-8	Thallium (I) acetate					563-68-8
4.24E+01	mg/kg	1year	Negligible	nc		1.91E+02	mg/kg	1year	Negligible	nc	
Sodium metavanadate					13718-26-8	Thallium (I) carbonate					6533-73-9
2.12E+03	mg/kg	1year	Negligible	nc		1.70E+02	mg/kg	1year	Negligible	nc	
Sodium perchlorate					7601-89-0	Thallium (I) chloride					7791-12-0
1.48E+02	mg/kg	1year	Negligible	nc		1.70E+02	mg/kg	1year	Negligible	nc	
Strontium, stable					7440-24-6	Thallium (I) sulfate					7446-18-6
4.24E+05	mg/kg	1year	Negligible	nc		1.70E+02	mg/kg	1year	Negligible	nc	
Strychnine					57-24-9	Thiobencarb					28249-77-6
6.36E+02	mg/kg	1year	Negligible	nc		2.12E+03	mg/kg	1year	Negligible	nc	
Styrene					100-42-5	Thiocyanates					463-56-9
1.60E+03	mg/kg	1year	Negligible	nc		1.27E+02	mg/kg	1year	Negligible	nc	
Sulfonylbis(4-chlorobenzene),1,1'-					80-07-9	Thiodiglycol					111-48-8
8.48E+02	mg/kg	1year	Negligible	nc		1.04E+05	mg/kg	1year	Negligible	nc	

Table C-3: Soil Military Exposure Guidelines

CHEMICAL NAME					CASRN	CHEMICAL NAME					CASRN
MEG	Units	Timeframe	Severity	Basis		MEG	Units	Timeframe	Severity	Basis	
Thiofanox					39196-18-4	Trichloroethane, 1,1,2-					79-00-5
6.36E+01	mg/kg	1year	Negligible	nc		3.92E+02	mg/kg	1year	Negligible	ca	
Thiophanate-methyl					23564-05-8	Trichloroethylene					79-01-6
1.70E+04	mg/kg	1year	Negligible	nc		2.80E+01	mg/kg	1year	Negligible	ca	
Thiram					137-26-8	Trichlorofluoromethane					75-69-4
1.27E+03	mg/kg	1year	Negligible	nc		1.76E+02	mg/kg	1year	Negligible	nc	
Tin, inorganic					7440-31-5	Trichlorophenol, 2,4,5-					95-95-4
6.36E+04	mg/kg	1year	Negligible	nc		6.36E+04	mg/kg	1year	Negligible	nc	
Titanium tetrachloride					7550-45-0	Trichlorophenol, 2,4,6-					88-06-2
1.00E+06	mg/kg	1year	Negligible	nc		2.12E+02	mg/kg	1year	Negligible	nc	
Toluene					108-88-3	Trichlorophenoxyacetic acid					93-76-5
2.75E+03	mg/kg	1year	Negligible	nc		2.12E+04	mg/kg	1year	Negligible	nc	
Toluene diisocyanate mixture, 2,4-/2,6-					26471-62-5	Trichloropropane, 1,1,2-					598-77-6
6.52E+04	mg/kg	1year	Negligible	nc		1.06E+04	mg/kg	1year	Negligible	nc	
Toluene-2,4-diamine					95-80-7	Trichloropropane, 1,2,3-					96-18-4
3.87E+02	mg/kg	1year	Negligible	ca		4.62E+00	mg/kg	1year	Negligible	nc	
Toluene-2,5-diamine					95-70-5	Trichloropropene, 1,2,3-					96-19-5
1.27E+05	mg/kg	1year	Negligible	nc		4.62E+00	mg/kg	1year	Negligible	nc	
Toluene-2,6-diamine					823-40-5	Trichlorotoluene, 2,3,6-					2077-46-5
1.27E+04	mg/kg	1year	Negligible	nc		1.06E+01	mg/kg	1year	Negligible	nc	
Toluidine, p-					106-49-0	Trichlorotoluene, alpha, 2,6-					2014-83-7
7.81E+03	mg/kg	1year	Negligible	ca		1.06E+01	mg/kg	1year	Negligible	nc	
Toxaphene					8001-35-2	Triclosan					3380-34-5
2.12E+02	mg/kg	1year	Negligible	nc		8.48E+05	mg/kg	1year	Negligible	nc	
Tralomethrin					66841-25-6	Tridiphane					58138-08-2
1.59E+03	mg/kg	1year	Negligible	nc		6.36E+02	mg/kg	1year	Negligible	nc	
Triallate					2303-17-5	Triethylamine					121-44-8
2.76E+03	mg/kg	1year	Negligible	nc		8.64E+01	mg/kg	1year	Negligible	nc	
Triasulfuron					82097-50-5	Trifluralin					1582-09-8
2.12E+03	mg/kg	1year	Negligible	nc		1.33E+03	mg/kg	1year	Negligible	nc	
Tribromobenzene, 1,2,4-					615-54-3	Trimethyl phosphate					512-56-1
1.06E+04	mg/kg	1year	Negligible	nc		4.01E+04	mg/kg	1year	Negligible	ca	
Tributyl phosphate					126-73-8	Trimethylbenzene, 1,2,4-					95-63-6
4.24E+03	mg/kg	1year	Negligible	nc		1.93E+02	mg/kg	1year	Negligible	nc	
Tributyltin oxide					56-35-9	Trimethylbenzene, 1,3,5-					108-67-8
6.36E+01	mg/kg	1year	Negligible	nc		1.13E+01	mg/kg	1year	Negligible	nc	
Trichloro-1,2,2-trifluoroethane, 1,1,2-					76-13-1	Trinitrobenzene, 1,3,5-					99-35-4
6.55E+03	mg/kg	1year	Negligible	nc		1.02E+02	mg/kg	1year	Negligible	nc	
Trichloroaniline hydrochloride, 2,4,6-					33663-50-2	Trinitrophenylmethylnitramine					479-45-8
5.12E+04	mg/kg	1year	Negligible	ca		2.12E+03	mg/kg	1year	Negligible	nc	
Trichloroaniline, 2,4,6-					634-93-5	Trinitrotoluene, 2,4,6-					118-96-7
4.37E+04	mg/kg	1year	Negligible	ca		2.99E+02	mg/kg	1year	Negligible	nc	
Trichlorobenzene, 1,2,4-					120-82-1	Triphenylphosphine oxide					791-28-6
1.20E+02	mg/kg	1year	Negligible	nc		4.24E+03	mg/kg	1year	Negligible	nc	
Trichloroethane, 1,1,1-					71-55-6	Tris(2-chloroethyl)phosphate					115-96-8
1.18E+03	mg/kg	1year	Negligible	nc		4.24E+03	mg/kg	1year	Negligible	nc	

Table C-3: Soil Military Exposure Guidelines

CHEMICAL NAME					CASRN	CHEMICAL NAME					CASRN
MEG	Units	Timeframe	Severity	Basis		MEG	Units	Timeframe	Severity	Basis	
Tris(2-ethylhexyl)phosphate					78-42-2						
2.12E+04	mg/kg	1year	Negligible	nc							
Uranium, highly soluble salts					HZ1800-90-T						
4.24E+02	mg/kg	1year	Negligible	nc							
Vanadium					7440-62-2						
1.46E+03	mg/kg	1year	Negligible	nc							
Vanadium pentoxide					1314-62-1						
1.87E+03	mg/kg	1year	Negligible	nc							
Vanadium sulfate					16785-81-2						
4.24E+03	mg/kg	1year	Negligible	nc							
Vernam					1929-77-7						
2.12E+03	mg/kg	1year	Negligible	nc							
Vinclozolin					50471-44-8						
5.30E+03	mg/kg	1year	Negligible	nc							
Vinyl acetate					108-05-4						
2.37E+01	mg/kg	1year	Negligible	nc							
Vinyl chloride					75-01-4						
1.10E+01	mg/kg	1year	Negligible	nc							
Vinyl toluene					25013-15-4						
5.43E+01	mg/kg	1year	Negligible	nc							
Warfarin					81-81-2						
6.36E+01	mg/kg	1year	Negligible	nc							
Xylene, m-					108-38-3						
4.24E+05	mg/kg	1year	Negligible	nc							
Xylene, o-					95-47-6						
4.24E+05	mg/kg	1year	Negligible	nc							
Xylenes, total					1330-20-7						
3.41E+02	mg/kg	1year	Negligible	nc							
Zinc cyanide					557-21-1						
1.06E+04	mg/kg	1year	Negligible	nc							
Zinc phosphide					1314-84-7						
6.36E+02	mg/kg	1year	Negligible	nc							
Zinc, metallic					7440-66-6						
6.36E+04	mg/kg	1year	Negligible	nc							
Zineb					12122-67-7						
1.06E+04	mg/kg	1year	Negligible	nc							

Footnotes for Table C-3

*MEG derived outside default hierarchy
See Appendix B for acronym definitions

**APPENDIX
D**

**MILITARY EXPOSURE
GUIDELINES SUGGESTED
CHEMICAL MATCHES**

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Table D-1: Chemical Matches

Chemical		Matched To	MEG		Applicable		
Name	CASRN		Name	CASRN	Time	Severity	Media
1,2,3,4,6,7,8-HeptaCDD	35822-46-9	->	See section 3.5.6 in TG-230		All	All	All
1,2,3,4,6,7,8-HeptaCDF	67562-39-4	->	See section 3.5.6 in TG-230		All	All	All
1,2,3,4,7,8,9-HeptaCDF	55673-89-7	->	See section 3.5.6 in TG-230		All	All	All
1,2,3,4,7,8-HexaCDD	39227-28-6	->	See section 3.5.6 in TG-230		All	All	All
1,2,3,4,7,8-HexaCDF	70648-26-9	->	See section 3.5.6 in TG-230		All	All	All
1,2,3,6,7,8-HexaCDD	57653-85-7	->	See section 3.5.6 in TG-230		All	All	All
1,2,3,6,7,8-HexaCDF	57117-44-9	->	See section 3.5.6 in TG-230		All	All	All
1,2,3,7,8,9-HexaCDD	19408-74-3	->	See section 3.5.6 in TG-230		All	All	All
1,2,3,7,8,9-HexaCDF	72918-21-9	->	See section 3.5.6 in TG-230		All	All	All
1,2,3,7,8-PentaCDD	40321-76-4	->	See section 3.5.6 in TG-230		All	All	All
1,2,3,7,8-PentaCDF	57117-41-6	->	See section 3.5.6 in TG-230		All	All	All
1,4-Dichlorobenzene-d4	3855-82-1	->	Dichlorobenzene, 1,4-	106-46-7	All	All	All
2,3,4,6,7,8-HexaCDF	60851-34-5	->	See section 3.5.6 in TG-230		All	All	All
2,3,4,7,8-PentaCDF	57117-31-4	->	See section 3.5.6 in TG-230		All	All	All
2,3,7,8-TetraCDD	1746-01-6	->	See section 3.5.6 in TG-230		All	All	All
2,3,7,8-TetraCDF	51207-31-9	->	See section 3.5.6 in TG-230		All	All	All
Acifluorfen	50594-66-6	->	Acifluorfen-sodium	62476-59-9	All	All	Water, Soil
alpha-Chlordane	5103-71-9	->	Chlordane	57-74-9	All	All	Water, Soil
Ammonium	14798-03-9	->	Ammonia	7664-41-7	All	All	Air
Aroclor 1016	12674-11-2	->	Polychlorinated biphenyl (Aroclor 1016/1242)	z-0042	All	All	All
Benzene-d6	1076-43-3	->	Benzene	71-43-2	All	All	All
Bromochloroacetic acid	5589-96-8	->	Dichloroacetic acid	79-43-6	All	All	Water
Captafol	2939-80-2	->	Captafol	2425-06-1	All	All	Water
Chlordane, technical	12789-03-6	->	Chlordane	57-74-9	All	All	Water, Soil
Chlorobenzene-d5	3114-55-4	->	Chlorobenzene	108-90-7	All	All	Air
Chromium	7440-47-3	->	Chromium (III)	16065-83-1	All	All	Soil
Chromium	7440-47-3	->	Chromium, elemental	7440-47-3	All	All	Air, Water
cis-Permethrin	54774-45-7	->	Permethrin	52645-53-1	All	All	Water, Soil
Cobalt-60	10198-40-0	->	Cobalt	7440-48-4	All	All	Water, Soil
Copper	7440-50-8	->	Copper compounds	Cu cmpds	All	All	Air, Water
Cyanide {CN}, Available		->	Cyanide	57-12-5	All	All	Water
Cyanide {CN}, Total		->	Cyanide	57-12-5	All	All	Water
Demeton-O	298-03-3	->	Demeton	8065-48-3	All	All	Water
Demeton-S	126-75-0	->	Demeton	8065-48-3	All	All	Water
Dibromoacetic acid	631-64-1	->	Dichloroacetic acid	79-43-6	All	All	Water
Diquat	2764-72-9	->	Diquat	85-00-7	All	All	Water
Diquat dibromide monohydrate	6385-62-2	->	Diquat	85-00-7	All	All	Water
E701185	Haloacetic acids {HAA}	->	Dichloroacetic acid	79-43-6	All	All	Water
Endosulfan I	959-98-8	->	Endosulfan	115-29-7	All	All	Water, Soil
Endosulfan II	33213-65-9	->	Endosulfan	115-29-7	All	All	Water, Soil
Fluoride	7782-41-4	->	Fluoride	16984-48-8	All	All	Water
gamma-Chlordane	5103-74-2	->	Chlordane	57-74-9	All	All	Water, Soil
HAA5	Haloacetic acids {HAA}	->	Dichloroacetic acid	79-43-6	All	All	Water
m,p-Methylphenol {m,p-Cresol}		->	Cresol, p-	106-44-5	All	All	Water, Soil

Table D-1: Chemical Matches

Chemical		Matched To	MEG		Applicable		
Name	CASRN		Name	CASRN	Time	Severity	Media
m,p-Xylene		->	Xylenes, total	1330-20-7	All	All	Air, Water
Mecoprop	7085-19-0	->	MCCPP	93-65-2	All	All	Water
Mercury	7439-97-6	->	Mercuric chloride	7487-94-7	All	All	Water
Monobromoacetic acid	79-08-3	->	Dichloroacetic acid	79-43-6	All	All	Water
Nickel	7440-02-0	->	Nickel, soluble salts	Ni sol salts	All	All	All
o,p'-DDD	53-19-0	->	DDD	72-54-8	All	All	Water, Soil
o,p'-DDE	3424-82-6	->	DDE	72-55-9	All	All	Water, Soil
o,p'-DDT	789-02-6	->	DDT	50-29-3	All	All	Water, Soil
OctaCDD	3268-87-9	->	See section 3.5.6 in TG-230		All	All	Air
OctaCDF	39001-02-0	->	See section 3.5.6 in TG-230		All	All	Air
PARTICULATE (TSP)		->	Particulate material, unspecified	PNOS	All	All	Air
Particulates N.O.R. (total)		->	Particulate material, unspecified	PNOS	All	All	Air
PCB-1	2051-60-7	->	Add up all PCB compounds and compare total to "Polychlorinated biphenyls 1336-36-3"		All	All	All
PCB-1	2051-60-7	->	Add up all PCB compounds and compare total to "Polychlorinated biphenyls 1336-36-3"		All	All	All
PCB-154	60145-22-4	->	Add up all PCB compounds and compare total to "Polychlorinated biphenyls 1336-36-3"		All	All	All
PCB-154	60145-22-4	->	Add up all PCB compounds and compare total to "Polychlorinated biphenyls 1336-36-3"		All	All	All
PCB-171	52663-71-5	->	Add up all PCB compounds and compare total to "Polychlorinated biphenyls 1336-36-3"		All	All	All
PCB-171	52663-71-5	->	Add up all PCB compounds and compare total to "Polychlorinated biphenyls 1336-36-3"		All	All	All
PCB-201	40186-71-8	->	Add up all PCB compounds and compare total to "Polychlorinated biphenyls 1336-36-3"		All	All	All
PCB-201	40186-71-8	->	Add up all PCB compounds and compare total to "Polychlorinated biphenyls 1336-36-3"		All	All	All
PCB-29	15862-07-4	->	Add up all PCB compounds and compare total to "Polychlorinated biphenyls 1336-36-3"		All	All	All
PCB-29	15862-07-4	->	Add up all PCB compounds and compare total to "Polychlorinated biphenyls 1336-36-3"		All	All	All
PCB-47	2437-79-8	->	Add up all PCB compounds and compare total to "Polychlorinated biphenyls 1336-36-3"		All	All	All
PCB-47	2437-79-8	->	Add up all PCB compounds and compare total to "Polychlorinated biphenyls 1336-36-3"		All	All	All
PCB-5	16605-91-7	->	Add up all PCB compounds and compare total to "Polychlorinated biphenyls 1336-36-3"		All	All	All
PCB-5	16605-91-7	->	Add up all PCB compounds and compare total to "Polychlorinated biphenyls 1336-36-3"		All	All	All
PCB-98	60233-25-2	->	Add up all PCB compounds and compare total to "Polychlorinated biphenyls 1336-36-3"		All	All	All
PCB-98	60233-25-2	->	Add up all PCB compounds and compare total to "Polychlorinated biphenyls 1336-36-3"		All	All	All
Perchlorate {ClO4}	14797-73-0	->	Ammonium perchlorate	7790-98-9	All	All	Water
Permethrin, trans-	51877-74-8	->	Permethrin	52645-53-1	All	All	Water, Soil
Silver	7440-22-4	->	Silver soluble compounds	Ag sol cmpds	All	All	Air
Sulfur	63705-05-5	->	Sulfur (precipitated)	7704-34-9	All	All	Air
Toluene-d8	2037-26-5	->	Toluene	108-88-3	All	All	Air
Tridymite {SiO2}	15468-32-3	->	Silica, crystalline quartz	14808-60-7	All	All	Air
Trihalomethanes, total		->	Bromodichloromethane	75-27-4	All	All	Water
Uranium	7440-61-1	->	Uranium, highly soluble salts	HZ1800-90-T	All	All	Water
Uranium-235	15117-96-1	->	Uranium, highly soluble salts	HZ1800-90-T	All	All	All
Uranium-238		->	Uranium, highly soluble salts	HZ1800-90-T	All	All	All
Zinc	7440-66-6	->	Zinc oxide	1314-13-2	1year	All	Air

**APPENDIX
E****MILITARY EXPOSURE
GUIDELINE HEALTH EFFECTS
BASIS**

The table in this appendix only includes health effect data from the following data sources:

- USEPA's Integrated Risk Information System (IRIS) database
- USEPA's Provisional Peer Reviewed Toxicity Value (PPRTV) manuscripts
- ATSDR's Minimal Risk Levels (MRL)
- ACGIH Threshold Limit Values (TLV)
- NRC's Acute Exposure Guideline Levels (AEGL)

These sources have readily available health endpoint data published with the exposure guideline values. If a MEG is not listed in Appendix E, it typically indicates that the health endpoint has not been collected from that source or a health endpoint is not available from the source of the exposure guideline. A risk assessor may contact USAPHC to obtain this information if it is needed to complete an assessment. Future updates to this table may expand the list of sources for which health effect data are available. These updates will also be provided electronically at: <http://1.usa.gov/TG-230>

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Table E-1: Air MEG Health Effect Basis

CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
2,2-Dimethylpentane			590-35-2	Acetone			67-64-1
8hour	Negligible	URT irr, CNS impair		8hour	Negligible	NOAEL for slight irritation	
14day	Negligible	URT irr, CNS impair		1hour	Negligible	NOAEL for slight irritation	
1year	Negligible	URT irr, CNS impair		1year	Negligible	Increased visual evoked response	
2,3-Dimethylpentane			565-59-3	1hour	Marginal	Ataxia in rats	
8hour	Negligible	CNS impair, URT irr		1hour	Critical	No lethality in rats	
14day	Negligible	CNS impair, URT irr		Acetone cyanohydrin			75-86-5
1year	Negligible	CNS impair, URT irr		8hour	Negligible	Application of AEGL-1 values for HC	
2,4-Dimethylpentane			108-08-7	1hour	Negligible	Application of AEGL-1 values for HC	
8hour	Negligible	CNS impair, URT irr		1year	Negligible	Irritation and breathing difficulties	
14day	Negligible	CNS impair, URT irr		1hour	Marginal	Application of AEGL-2 values for HC	
1year	Negligible	CNS impair, URT irr		1hour	Critical	Application of AEGL-3 values for HC	
2-Methylhexane			591-76-4	Acetonitrile			75-05-8
8hour	Negligible	CNS impair, URT irr		1year	Negligible	Mortality	
14day	Negligible	CNS impair, URT irr		8hour	Negligible	Slight chest tightness and cooling sensation in lung (1/3 human volunteers)	
1year	Negligible	CNS impair, URT irr		14day	Negligible	LRT irr	
3-Carene			13466-78-9	1hour	Negligible	Slight chest tightness and cooling sensation in lung (1/3 human volunteers)	
8hour	Negligible	URT irr, CNS impair, skin irr, lung dam		1hour	Marginal	Slight pulmonary congestion and hemorrhage in rats	
14day	Negligible	URT irr, CNS impair, skin irr, lung dam		1hour	Critical	Calculated LC01 in the rat after a 4-hour exposure	
1year	Negligible	URT irr, CNS impair, skin irr, lung dam		Acetophenone			98-86-2
3-Methylhexane			589-34-4	1hour	Negligible	Eye irr	
8hour	Negligible	URT irr, CNS impair		8hour	Negligible	Eye irr	
14day	Negligible	URT irr, CNS impair		14day	Negligible	Eye irr	
1year	Negligible	URT irr, CNS impair		1year	Negligible	Eye irr	
Acetaldehyde			75-07-0	Acetylene tetrabromide			79-27-6
1year	Negligible	Degeneration of olfactory epithelium		8hour	Negligible	pulm edema, liver dam, URT irr, Eye irr	
8hour	Negligible	No eye irritation in human volunteers, 30 minutes exposure		14day	Negligible	pulm edema, liver dam, URT irr, Eye irr	
1hour	Negligible	No eye irritation in human volunteers, 30 minutes exposure		1year	Negligible	pulm edema, liver dam, URT irr, Eye irr	
1hour	Marginal	No effect level for histopathological changes to the nasal epithelium in rats		Acetylsalicylic acid			50-78-2
1hour	Critical	BMDL05 in acute and subacute rat lethality study		8hour	Negligible	Skin irr, eye irr	
Acetic acid			64-19-7	14day	Negligible	Skin irr, eye irr	
14day	Negligible	URT irr, pulm func, eye irr		1year	Negligible	Skin irr, eye irr	
1year	Negligible	URT irr, pulm func, eye irr		Acetic acid 2-methylbutyl ester			624-41-9
Acetic acid 2-methylbutyl ester			624-41-9	8hour	Negligible	URT irr	
8hour	Negligible	URT irr		14day	Negligible	URT irr	
14day	Negligible	URT irr		1year	Negligible	URT irr	
1year	Negligible	URT irr					

Table E-1: Air MEG Health Effect Basis

CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Acrolein			107-02-8	Acrylonitrile			107-13-1
10min	Negligible	Very slight eye irritation, annoyance/discomfort in humans		10min	Negligible	No effect in volunteer human subjects exposed to 4.6 ppm for 8 hrs; UF=1x1	
1year	Negligible	Nasal lesions		1year	Negligible	Tumor type: Respiratory cancer	
1hour	Negligible	Very slight eye irritation, annoyance/discomfort in humans		1hour	Negligible	No effect in volunteer human subjects exposed to 4.6 ppm for 8 hrs; UF=1x1	
8hour	Negligible	Very slight eye irritation, annoyance/discomfort in humans		8hour	Negligible	No effect in volunteer human subjects exposed to 4.6 ppm for 8 hrs; UF=1x1	
10min	Marginal	10-15% Decrease in respiratory rate in humans		10min	Marginal	Slight transient effects in rats exposed for 2 hrs to 305 ppm; UF=3x3; n=1.1	
1hour	Marginal	10-15% Decrease in respiratory rate in humans		1hour	Marginal	Slight transient effects in rats exposed for 2 hrs to 305 ppm; UF=3x3; n=1.2	
8hour	Marginal	10-15% Decrease in respiratory rate in humans		8hour	Marginal	Slight transient effects in rats exposed for 2 hrs to 305 ppm; UF=3x3; n=1.2	
10min	Critical	1 h (10-min, 30-min and 1-h values) or 4 h (4-h and 8-h values) no-effect level for death in rats		10min	Critical	30-min, 1-hr, and 8-hr, BMCLo5 lethality threshold estimates in rats UF=3x3; n=1.1	
1hour	Critical	3 h (10-min, 30-min and 1-h values) or 4 h (4-h and 8-h values) no-effect level for death in rats		1hour	Critical	30-min, 1-hr, and 8-hr, BMCLo5 lethality threshold estimates in rats UF=3x3; n=1.2	
8hour	Critical	5 h (10-min, 30-min and 1-h values) or 4 h (4-h and 8-h values) no-effect level for death in rats		8hour	Critical	30-min, 1-hr, and 8-hr, BMCLo5 lethality threshold estimates in rats UF=3x3; n=1.2	
Acrylamide			79-06-1	Adamsite			578-94-9
1year	Negligible	Degenerative nerve changes		1hour	Negligible	irritation threshold for human volunteers	
8hour	Negligible	CNS impair		8hour	Negligible	irritation threshold for human volunteers	
14day	Negligible	CNS impair		1hour	Marginal	respiratory tract effects in monkeys	
Acrylic acid			79-10-7	1hour	Critical	Notable pulmonary damage with no lethality in monkeys; estimated lethality threshold in monkeys	
14day	Negligible	URT irr		Adipic acid			124-04-9
1year	Negligible	Degeneration of nasal olfactory epithelium		8hour	Negligible	URT irr, ANS impair	
1hour	Negligible	Eye irritation in humans; histopathological effects on nasal mucosa in mice		14day	Negligible	URT irr, ANS impair	
8hour	Negligible	Eye irritation in humans; histopathological effects on nasal mucosa in mice		1year	Negligible	URT irr, ANS impair	
1hour	Marginal	Histopathological alterations of the nasal mucosa in monkeys and rats		Adiponitrile			111-69-3
1hour	Critical	LC01 for lethality in rats		8hour	Negligible	URT irr, LRT irr	
				14day	Negligible	URT irr, LRT irr	
				1year	Negligible	Slight anemia without nonneoplastic lesions.	
				Alachlor			15972-60-8
				8hour	Negligible	Hemosiderosis	
				14day	Negligible	Hemosiderosis	
				1year	Negligible	Hemosiderosis	

Table E-1: Air MEG Health Effect Basis

CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Aldrin			309-00-2	Allyl glycidyl ether			106-92-3
8hour	Negligible	Kidney dam, Liver dam, CNS impair		8hour	Negligible	URT irr, dermatitis, eye irr, skin irr	
14day	Negligible	Kidney dam, Liver dam, CNS impair		14day	Negligible	URT irr, dermatitis, eye irr, skin irr	
1year	Negligible	Tumor type: Liver carcinoma		1year	Negligible	URT irr, dermatitis, eye irr, skin irr	
Allyl alcohol			107-18-6	Allyl propyl disulfide			2179-59-1
10min	Negligible	Slight nasal irritation in rats		8hour	Negligible	URT irr, eye irr	
14day	Negligible	Eye irr, URT irr		14day	Negligible	URT irr, eye irr	
1year	Negligible	No signs of irritation		1year	Negligible	URT irr, eye irr	
1hour	Negligible	Slight nasal irritation in rats		Allylamine			107-11-9
8hour	Negligible	Slight nasal irritation in rats		1hour	Negligible	Mild human irritation or discomfort	
10min	Marginal	AEGL 3/3				All subjects detected the odor of allylamine. At 2.5, 5, and 10 ppm, respectively, there were dose-related increases in the incidence of slight or moderate eye irritation (21%, 15%, 50%), nose irritation (50%, 54%, 100%), and pulmonary discomfort (29%, 46	
1hour	Marginal	AEGL 3/5		8hour	Negligible	Mild human irritation or discomfort	
8hour	Marginal	AEGL 3/7		1hour	Marginal	Human eye and respiratory irritation and NOAEL for severe irritation (</= 1 hr), Human eye and respiratory irritation and NOAEL for severe irritation; NOAEL for cardiovascular lesions in rats	
10min	Critical	Estimated LC01 value in rats calculated using ten Berge program included rat mortality data from Kirkpatrick (2008), Union Carbide and Carbon Corporation (1951), McCord (1932), Smyth and Carpenter (1948)		1hour	Critical	Lethality NOEL in rats	
1hour	Critical	Estimated LC01 value in rats calculated using ten Berge program included rat mortality data from Kirkpatrick (2008), Union Carbide and Carbon Corporation (1951), McCord (1932), Smyth and Carpenter (1948)		Allyltrichlorosilane			107-37-9
8hour	Critical	Estimated LC01 value in rats calculated using ten Berge program included rat mortality data from Kirkpatrick (2008), Union Carbide and Carbon Corporation (1951), McCord (1932), Smyth and Carpenter (1948)		1hour	Negligible	HCl AEGL-1 values divided by a molar adjustment factor of 3 adopted as AEGL-1 values for Trichlorosilanes	
Allyl chloride			107-05-1	8hour	Negligible	HCl AEGL-1 values divided by a molar adjustment factor of 3 adopted as AEGL-1 values for Trichlorosilanes	
1hour	Negligible	Estimate of the threshold for irritation		1hour	Marginal	HCl AEGL-2 values divided by a molar adjustment factor of 3 adopted as AEGL-2 values for Trichlorosilanes	
14day	Negligible	Kidney dam, Eye irr, URT irr, Liver dam		1hour	Critical	HCl AEGL-3 values divided by a molar adjustment factor of 3 adopted as AEGL-3 values for Trichlorosilanes	
1year	Negligible	Functional and histological peripheral neurotoxicity		Aluminum, elemental			7429-90-5
8hour	Negligible	Estimate of the threshold for irritation		8hour	Negligible	LRT irr, neurotoxicity, Pneumoconiosis	
1hour	Marginal	Highest concentration with no irreversible or incapacitating effects		14day	Negligible	LRT irr, neurotoxicity, Pneumoconiosis	
1hour	Critical	Highest concentration with no lethality		Allyl chloroformate			2937-50-0
1hour	Marginal	1/3 the AEGL-3 values		1hour	Marginal	1/3 the AEGL-3 values	
1hour	Critical	1-hour rat BMCL07		1hour	Critical	1-hour rat BMCL07	

Table E-1: Air MEG Health Effect Basis

CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Aminopyridine, 2-			504-29-0	Amyltrichlorosilane			107-72-2
8hour	Negligible	Headache, CNS impair, dizziness, nausea		1hour	Negligible	HCl AEGL-1 values divided by a molar adjustment factor of 3 adopted as AEGL-1 values for Trichlorosilanes	
14day	Negligible	Headache, CNS impair, dizziness, nausea		8hour	Negligible	HCl AEGL-1 values divided by a molar adjustment factor of 3 adopted as AEGL-1 values for Trichlorosilanes	
1year	Negligible	Headache, CNS impair, dizziness, nausea		1hour	Marginal	HCl AEGL-2 values divided by a molar adjustment factor of 3 adopted as AEGL-2 values for Trichlorosilanes	
Amitrole			61-82-5	1hour	Critical	HCl AEGL-3 values divided by a molar adjustment factor of 3 adopted as AEGL-3 values for Trichlorosilanes	
8hour	Negligible	Thyroid eff		Aniline			62-53-3
14day	Negligible	Thyroid eff		8hour	Negligible	22% methemoglobin: cyanosis	
1year	Negligible	Thyroid eff		14day	Negligible	MeHb-emia	
Ammonia			7664-41-7	1year	Negligible	Lack of toxicity (other effect: Mild spleen toxicity.)	
10min	Negligible	Mild irritation		1hour	Negligible	22% methemoglobin: cyanosis	
10min	Marginal	Irritation: eyes and throat; urge to cough		1hour	Marginal	41% methemoglobin: lethargy	
1hour	Negligible	Mild irritation		1hour	Critical	Greater than 70% methemoglobin: lethality	
1year	Negligible	Effects		Anisidine, o-			90-04-0
8hour	Negligible	Mild irritation		8hour	Negligible	MeHb-emia	
1hour	Marginal	Irritation: eyes and throat; urge to cough		14day	Negligible	MeHb-emia	
8hour	Marginal	Irritation: eyes and throat; urge to cough		1year	Negligible	MeHb-emia	
10min	Critical	Lethality		Anisidine, p-			104-94-9
1hour	Critical	Lethality		8hour	Negligible	MeHb-emia	
8hour	Critical	Lethality		14day	Negligible	MeHb-emia	
Ammonium chloride			12125-02-9	1year	Negligible	MeHb-emia	
8hour	Negligible	Eye irr, URT irr		Antimony, elemental			7440-36-0
14day	Negligible	Eye irr, URT irr		8hour	Negligible	Skin irr, URT irr	
1year	Negligible	Eye irr, URT irr		14day	Negligible	Skin irr, URT irr	
Ammonium perfluorooctanoate			3825-26-1	1year	Negligible	Skin irr, URT irr	
8hour	Negligible	Liver dam		ANTU			86-88-4
14day	Negligible	Liver dam		8hour	Negligible	Thyroid eff, nausea	
1year	Negligible	Liver dam		14day	Negligible	Thyroid eff, nausea	
Amyl acetate			628-63-7	1year	Negligible	Thyroid eff, nausea	
8hour	Negligible	URT irr		Aramite			140-57-8
14day	Negligible	URT irr		1year	Negligible	Neoplastic liver nodules and carcinomas	
1year	Negligible	URT irr		Aroclor 1242			53469-21-9
Amyl acetate, sec-			626-38-0	8hour	Negligible	eye irr, Liver dam, chloracne	
8hour	Negligible	URT irr		14day	Negligible	eye irr, Liver dam, chloracne	
14day	Negligible	URT irr		1year	Negligible	eye irr, Liver dam, chloracne	
1year	Negligible	URT irr					

Table E-1: Air MEG Health Effect Basis

CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Aroclor 1254			11097-69-1	Asbestos			1332-21-4
8hour	Negligible	liver dam, chloracne, URT irr		1year	Negligible	Tumor type: Lung cancer and mesothelioma	
14day	Negligible	liver dam, chloracne, URT irr		Asphalt			8052-42-4
1year	Negligible	liver dam, chloracne, URT irr		8hour	Negligible	eye irr, URT irr	
Aromatic hydrocarbon solvents			64742-95-6	14day	Negligible	eye irr, URT irr	
1year	Negligible	Decreased maternal body weight versus controls.		1year	Negligible	eye irr, URT irr	
Arsenic compounds			As cmpds	Atrazine			1912-24-9
8hour	Negligible	Lung cancer		8hour	Negligible	CNS convul	
14day	Negligible	Lung cancer		14day	Negligible	CNS convul	
1year	Negligible	Lung cancer		1year	Negligible	CNS convul	
Arsenic trioxide			1327-53-3	Azinphos methyl			86-50-0
1hour	Marginal	1/3 of AEGL-5		14day	Negligible	Reduced erythrocyte ChE activity	
1hour	Critical	Based on the NOEL for mortality in rats		8hour	Negligible	Cholinesterase inhib	
Arsenic, elemental			7440-38-2	1year	Negligible	Reduced erythrocyte ChE activity	
1year	Negligible	Tumor type: Lung cancer		Azobenzene			103-33-3
Arsine			7784-42-1	1year	Negligible	Tumor type: Abdominal cavity sarcomas	
8hour	Negligible	vascular sys impair, Liver impair, Kidney impair, PNS impair		Barium sulfate			7727-43-7
14day	Negligible	vascular sys impair, Liver impair, Kidney impair, PNS impair		8hour	Negligible	Pneumoconiosis	
1year	Negligible	Increased hemolysis, abnormal RBC morphology, and increased spleen weight (other effect: Increased hemolysis, increased spleen weight, and impaired compensatory erythropoiesis.)		14day	Negligible	Pneumoconiosis	
10min	Marginal	Absence of significant hematologic alterations in mice consistent with the known continuum of arsine toxicity		1year	Negligible	Pneumoconiosis	
10min	Negligible	Absence of significant hematologic alterations in mice consistent with the known continuum of arsine toxicity		Barium, elemental			7440-39-3
1hour	Marginal	Absence of significant hematologic alterations in mice consistent with the known continuum of arsine toxicity		8hour	Negligible	Skin irr, muscular stim, Eye irr, GI irr	
8hour	Marginal	Absence of significant hematologic alterations in mice consistent with the known continuum of arsine toxicity		14day	Negligible	Skin irr, muscular stim, Eye irr, GI irr	
10min	Critical	Estimated threshold for lethality in mice		Baygon			114-26-1
1hour	Critical	Estimated threshold for lethality in mice		8hour	Negligible	Cholinesterase inhib	
8hour	Critical	Estimated threshold for lethality in mice		14day	Negligible	Cholinesterase inhib	
				1year	Negligible	Cholinesterase inhib	
				Benomyl			17804-35-2
				8hour	Negligible	male repro dam, embryo/fetal dam URT irr, testicular dam	
				14day	Negligible	male repro dam, embryo/fetal dam URT irr, testicular dam	
				1year	Negligible	male repro dam, embryo/fetal dam URT irr, testicular dam	
				Benzene			71-43-2
				8hour	Negligible	Highest level available without AEG 1 effect in humans. 110 ppm for 2h no subjective symptoms	
				1hour	Negligible	Highest level available without AEG 1 effect in humans. 110 ppm for 2h no subjective symptoms	
				1year	Negligible	Decreased lymphocyte count	
				1hour	Marginal	Highest level without AEGL-2 effect (CNS depression, i.e. reduced activity in animals). 4000 ppm for 4	
				1hour	Critical	Highest reliable NOAEL for mortality in rats. 5940 ppm for 4h.	

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CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Benzenethiol			108-98-5	Biphenyl, 1,1-			92-52-4
1hour	Negligible	skin irr, CNS impair, eye irr		8hour	Negligible	Pulm func	
8hour	Negligible	skin irr, CNS impair, eye irr		14day	Negligible	Pulm func	
14day	Negligible	skin irr, CNS impair, eye irr		1year	Negligible	Pulm func	
1year	Negligible	skin irr, CNS impair, eye irr		Bis(2-chloroethyl) ether			111-44-4
1hour	Marginal	3-fold reduction of AEGL-3 values		1year	Negligible	Tumor type: Hepatomas	
1hour	Critical	LC01 in rats		8hour	Negligible	nausea, eye irr, URT irr	
Benzidine			92-87-5	14day	Negligible	nausea, eye irr, URT irr	
1year	Negligible	Tumor type: Bladdered tumors		Bis(2-dimethylaminoethyl)ether			3033-62-3
Benzoic acid			65-85-0	8hour	Negligible	URT irr, Eye irr, skin irr	
1year	Negligible	Pulmonary effects		14day	Negligible	URT irr, Eye irr, skin irr	
Benzoyl peroxide			94-36-0	1year	Negligible	URT irr, Eye irr, skin irr	
8hour	Negligible	skin irr, URT irr		Bis(2-ethylhexyl) phthalate			117-81-7
14day	Negligible	skin irr, URT irr		8hour	Negligible	LRT irr	
1year	Negligible	skin irr, URT irr		14day	Negligible	LRT irr	
Benzyl acetate			140-11-4	1year	Negligible	LRT irr	
1hour	Marginal	URT irr		Bis(chloromethyl) ether			542-88-1
1hour	Negligible	URT irr		1year	Negligible	Tumor type: Respiratory tract tumors	
8hour	Negligible	URT irr		8hour	Negligible	Lung cancer	
14day	Negligible	URT irr		14day	Negligible	Lung cancer	
1year	Negligible	URT irr		1hour	Marginal	NOAEL for irreversible lung lesions in rats and hamsters	
Benzyl chloride			100-44-7	1hour	Critical	Lethality NOEL for rats and hamster	
8hour	Negligible	Eye irr, Skin irr, URT irr		Bismuth telluride			1304-82-1
14day	Negligible	Eye irr, Skin irr, URT irr		8hour	Negligible	Lung dam, Lung dam	
1year	Negligible	Eye irr, Skin irr, URT irr		14day	Negligible	Lung dam, Lung dam	
Benzyl chloroformate			501-53-1	1year	Negligible	Lung dam, Lung dam	
1hour	Marginal	1/3 the AEGL-3 values		Borates, pentahydrate			12179-04-3
1hour	Critical	Concentration causing no death in rats; 4-hr exposure		8hour	Negligible	URT irr	
Beryllium, elemental			7440-41-7	14day	Negligible	URT irr	
14day	Negligible	Beryllium sensitization and progression to CBD		1year	Negligible	URT irr	
1year	Negligible	Beryllium sensitization and progression to CBD		Borax			1303-96-4
8hour	Negligible	Beryllium sens, chronic beryllium disease (berylliosis)		8hour	Negligible	URT irr	
beta-Pinene			127-91-3	14day	Negligible	URT irr	
8hour	Negligible	URT irr, skin irr, lung dam, CNS impair		1year	Negligible	URT irr	
14day	Negligible	URT irr, skin irr, lung dam, CNS impair		8hour	Negligible	URT irr	
1year	Negligible	URT irr, skin irr, lung dam, CNS impair		Boric acid			10043-35-3
Bidrin			141-66-2	Boron			7440-42-8
8hour	Negligible	Cholinesterase inhib		14day	Negligible	increased nasal secretions	
14day	Negligible	Cholinesterase inhib		1year	Negligible	increased nasal secretions	
1year	Negligible	Cholinesterase inhib		Boron oxide			1303-86-2
				8hour	Negligible	Eye irr, URT irr	
				14day	Negligible	Eye irr, URT irr	
				1year	Negligible	Eye irr, URT irr	

Table E-1: Air MEG Health Effect Basis

CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Boron tribromide			10294-33-4	Bromobenzene			108-86-1
1hour	Negligible	Analogy with hydrogen bromide		1year	Negligible	Hepatocellular cytomegaly in femal B6C3F1 mice	
8hour	Negligible	Analogy with hydrogen bromide		Bromochloromethane			74-97-5
1hour	Marginal	Analogy with hydrogen chloride and hydrogen bromide		8hour	Negligible	liver dam, CNS impair	
1hour	Critical	Analogy with hydrogen bromide		14day	Negligible	liver dam, CNS impair	
Boron Trifluoride			7637-07-2	Bromodichloromethane			75-27-4
1hour	Negligible	NOEL in rats		1year	Negligible	Histopathologic evidence of kidney degeneration	
8hour	Negligible	NOEL in rats		Bromoethene			593-60-2
1hour	Marginal	1/3 the AEGL-3 values		8hour	Negligible	Liver cancer	
1hour	Critical	4- hr. BMCL05 in rats		14day	Negligible	Liver cancer	
Boron trifluoride			7637-07-2	Bromoform			75-25-2
10min	Negligible	NOEL in rats		8hour	Negligible	URT irr, Liver dam, eye irr	
10min	Marginal	1/3 the AEGL-3 values		14day	Negligible	URT irr, Liver dam, eye irr	
8hour	Marginal	1/3 the AEGL-3 values		1year	Negligible	URT irr, Liver dam, eye irr	
10min	Critical	4- hr. BMCL05 in rats		Bromomethane			74-83-9
8hour	Critical	4- hr. BMCL05 in rats		8hour	Negligible	URT irr, skin irr	
Bromacil			314-40-9	1year	Negligible	Degeneration of the olfactory epithelium for the nasal cavity	
8hour	Negligible	Thyroid eff		14day	Negligible	Decreased brain neurotransmitters	
14day	Negligible	Thyroid eff		1hour	Marginal	NOAEL for clinical signs- rat and dog	
1year	Negligible	Thyroid eff		1hour	Critical	BMCL05 - rat	
Bromine			7726-95-6	Bromopropane, 1-			106-94-5
14day	Negligible	lung dam, LRT irr, URT irr		8hour	Negligible	developmental toxicity, male and female repro toxicity, CNS toxicity	
1year	Negligible	lung dam, LRT irr, URT irr		14day	Negligible	developmental toxicity, male and female repro toxicity, CNS toxicity	
Bromine chloride			13863-41-7	1year	Negligible	developmental toxicity, male and female repro toxicity, CNS toxicity	
1hour	Negligible	Analogy with chlorine		Butadiene, 1,3-			106-99-0
8hour	Negligible	Analogy with chlorine		1hour	Negligible	Difficulty in focusing in humans	
1hour	Marginal	One-third of the AEGL-3 values		1year	Negligible	Ovarian atrophy	
1hour	Critical	Threshold for lethality in the rat		8hour	Negligible	Difficulty in focusing in humans	
Bromine pentafluoride			7789-30-2	14day	Negligible	fetal body weight 5% lower than controls	
8hour	Negligible	Skin irr, Eye irr, URT irr		1hour	Marginal	No effects in humans	
14day	Negligible	Skin irr, Eye irr, URT irr		1hour	Critical	Lethality in rats	
1year	Negligible	Skin irr, Eye irr, URT irr		Butane			106-97-8
1hour	Marginal	Based on analogy with chlorine pentafluoride		1hour	Negligible	Drowsiness in humans	
1hour	Critical	Highest non-lethal concentration in the rat		14day	Negligible	CNS impair, Card sens	
Bromine trifluoride			7787-71-5	1year	Negligible	CNS impair, Card sens	
1hour	Negligible	Analogy with chlorine trifluoride		8hour	Negligible	Drowsiness in humans	
8hour	Negligible	Analogy with chlorine trifluoride		1hour	Marginal	Dazed appearance in guinea pigs	
1hour	Marginal	Analogy with chlorine trifluoride		1hour	Critical	LC01 in mice	
1hour	Critical	Analogy with chlorine trifluoride		Bromoacetone			598-31-2
Bromoacetone			598-31-2	8hour	Negligible	Ocular irritation in humans	
8hour	Negligible	Ocular irritation in humans		1hour	Negligible	Ocular irritation in humans	
1hour	Negligible	Ocular irritation in humans		1hour	Marginal	One-third the AEGL-3 values	
1hour	Marginal	One-third the AEGL-3 values		1hour	Critical	Threshold for lethality (LC01) in rats	
1hour	Critical	Threshold for lethality (LC01) in rats					

Table E-1: Air MEG Health Effect Basis

CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Butanethiol			109-79-5	Butyl acrylate, n-			141-32-2
8hour	Negligible	URT irr		1hour	Negligible	No clinical signs with repeated exposures	
14day	Negligible	URT irr		14day	Negligible	Eye irr, URT irr, Skin irr	
1year	Negligible	URT irr		1year	Negligible	Eye irr, URT irr, Skin irr	
Butanol, 1-			71-36-3	8hour	Negligible	No clinical signs with repeated exposures	
1hour	Negligible	Eye irr, URT irr		1hour	Marginal	Clinical signs and histopathology with repeated exposure	
8hour	Negligible	Eye irr, URT irr		1hour	Critical	Calculated BMCL05 from LC50 data	
14day	Negligible	Eye irr, URT irr		Butyl alcohol, sec-			78-92-2
1year	Negligible	Eye irr, URT irr		8hour	Negligible	URT irr, CNS impair	
Butene			25167-67-3	14day	Negligible	URT irr, CNS impair	
8hour	Negligible	Body weight eff		Butyl chloroformate, n-			592-34-7
14day	Negligible	Body weight eff		1hour	Marginal	1/3 AEGL-3 values	
1year	Negligible	Body weight eff		1hour	Critical	Estimated 1-hr lethality threshold in rats	
Butene, 1-			106-98-9	Butyl glycidyl ether, n-			2426-08-6
8hour	Negligible	Body weight eff		1hour	Negligible	Testicular dam	
14day	Negligible	Body weight eff		8hour	Negligible	Testicular dam	
1year	Negligible	Body weight eff		14day	Negligible	Testicular dam	
Butene, 2-			107-01-7	1year	Negligible	Testicular dam	
8hour	Negligible	Body weight eff		Butyl isocyanate, n-			111-36-4
14day	Negligible	Body weight eff		1hour	Negligible	0.04 ppm NOEL for ocular irritation, UF=3 (intrasp.); no time scaling	
1year	Negligible	Body weight eff		8hour	Negligible	0.04 ppm NOEL for ocular irritation, UF=3 (intrasp.); no time scaling	
Butene, cis-2-			590-18-1	1hour	Marginal	0.05 ppm threshold for ocular irritation disallowing normal work but not impairing escape; adjusted by 1.4 for analytical method; UF=3 (intrasp.); no time scaling	
8hour	Negligible	Body weight eff		1hour	Critical	4-hr BMCL05 3.35 ppm for lethality in rats; adjusted by 1.4 for analytical method; UF= 3 (intrasp.) and 10 (intersp.); n= 1or 6	
14day	Negligible	Body weight eff		Butyl lactate, N-			138-22-7
1year	Negligible	Body weight eff		8hour	Negligible	Headache, URT irr	
Butene, trans-2-			624-64-6	14day	Negligible	Headache, URT irr	
8hour	Negligible	Body weight eff		1year	Negligible	Headache, URT irr	
14day	Negligible	Body weight eff		Butylated hydroxytoluene			128-37-0
1year	Negligible	Body weight eff		8hour	Negligible	URT irr	
Butoxyethanol acetate, 2-			112-07-2	14day	Negligible	URT irr	
8hour	Negligible	Hemolysis		1year	Negligible	URT irr	
14day	Negligible	Hemolysis		Butylphenol, 2-sec-			89-72-5
1year	Negligible	Hemolysis		8hour	Negligible	URT irr, Eye irr, skin irr	
Butyl acetate, sec-			105-46-4	14day	Negligible	URT irr, Eye irr, skin irr	
1hour	Negligible	URT irr, Eye irr		1year	Negligible	URT irr, Eye irr, skin irr	
8hour	Negligible	URT irr, Eye irr					
14day	Negligible	URT irr, Eye irr					
1year	Negligible	URT irr, Eye irr					
Butyl acetate, tert-			540-88-5				
8hour	Negligible	URT irr, Eye irr					
14day	Negligible	URT irr, Eye irr					
1year	Negligible	URT irr, Eye irr					

Table E-1: Air MEG Health Effect Basis

CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Butyltoluene, p-tert-			98-51-1	Calcium hydroxide			1305-62-0
8hour	Negligible	URT irr, Eye irr, nausea		8hour	Negligible	Eye irr, skin irr, URT irr	
14day	Negligible	URT irr, Eye irr, nausea		14day	Negligible	Eye irr, skin irr, URT irr	
1year	Negligible	URT irr, Eye irr, nausea		1year	Negligible	Eye irr, skin irr, URT irr	
Butyltrichlorosilane			7521-80-4	Calcium oxide			1305-78-8
8hour	Negligible	HCl AEGL-1 values divided by a molar adjustment factor of 3 adopted as AEGL-1 values for Trichlorosilanes		8hour	Negligible	URT irr	
1hour	Negligible	HCl AEGL-1 values divided by a molar adjustment factor of 3 adopted as AEGL-1 values for Trichlorosilanes		14day	Negligible	URT irr	
1hour	Marginal	HCl AEGL-2 values divided by a molar adjustment factor of 3 adopted as AEGL-2 values for Trichlorosilanes		1year	Negligible	URT irr	
1hour	Critical	HCl AEGL-3 values divided by a molar adjustment factor of 3 adopted as AEGL-3 values for Trichlorosilanes		Calcium sulfate			7778-18-9
BZ			53800-72-9	8hour	Negligible	Nasal symptoms	
1hour	Marginal	Estimated threshold (20 mg-min/m ³) for incapacitation in volunteer human subjects; UF=3; MF=3; n=3		14day	Negligible	Nasal symptoms	
1hour	Critical	10-fold reduction of LCt ₅₀ in monkeys (37,000 mg-min/m ³) as estimated lethality threshold (3,700 mg-min/m ³); UF= 3x10; MF=3; n=1 for Cn x t = k		1year	Negligible	Nasal symptoms	
Cadmium, elemental			7440-43-9	Calcium sulfate dihydrate			10101-41-4
1hour	Marginal	Overt respiratory tract irritation and patholog		8hour	Negligible	Nasal symptoms	
14day	Negligible	alveolar histiocyticinfiltrate and focalinflammation in alveolarsepta		14day	Negligible	Nasal symptoms	
1hour	Critical	Threshold of lethality based on the 2-hr rat LC ₅₀ for Cd fumes, 112 mg/m ³		1year	Negligible	Nasal symptoms	
Calcium chromate			13765-19-0	Calcium sulfate hemihydrate			10034-76-1
8hour	Negligible	Lung cancer		8hour	Negligible	Nasal symptoms	
14day	Negligible	Lung cancer		14day	Negligible	Nasal symptoms	
1year	Negligible	Lung cancer		1year	Negligible	Nasal symptoms	
Calcium cyanamide			156-62-7	Camphor			76-22-2
8hour	Negligible	URT irr, Eye irr		8hour	Negligible	URT irr, Eye irr, Anosmia	
14day	Negligible	URT irr, Eye irr		14day	Negligible	URT irr, Eye irr, Anosmia	
1year	Negligible	URT irr, Eye irr		1year	Negligible	URT irr, Eye irr, Anosmia	
				Caprolactam			105-60-2
				1hour	Marginal	URT irr	
				1hour	Negligible	URT irr	
				8hour	Negligible	URT irr	
				14day	Negligible	URT irr	
				1year	Negligible	URT irr	
				Captafol			2425-06-1
				8hour	Negligible	Skin irr	
				14day	Negligible	Skin irr	
				1year	Negligible	Skin irr	
				Captan			133-06-2
				8hour	Negligible	Skin irr	
				14day	Negligible	Skin irr	
				1year	Negligible	Skin irr	
				Carbaryl			63-25-2
				8hour	Negligible	male repro dam, Cholinesterase inhib, embryo dam	
				14day	Negligible	male repro dam, Cholinesterase inhib, embryo dam	
				1year	Negligible	male repro dam, Cholinesterase inhib, embryo dam	

Table E-1: Air MEG Health Effect Basis

CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Carbofuran			1563-66-2	Carbon tetrachloride			56-23-5
8hour	Negligible	Cholinesterase inhib		1year	Negligible	Hepatic fatty degeneration and increased liver weight	
14day	Negligible	Cholinesterase inhib		1hour	Negligible	Absence of CNS or renal effects in human volunteer subjects exposed to 76 ppm for 4 hrs	
1year	Negligible	Cholinesterase inhib		14day	Negligible	Liver dam	
Carbon dioxide			124-38-9	8hour	Negligible	Absence of CNS or renal effects in human volunteer subjects exposed to 76 ppm for 4 hrs	
1year	Negligible	Asphyxia		1hour	Marginal	Nausea, vomiting, headache in human subjects exposed to 1191 ppm for 9 minutes	
Carbon disulfide			75-15-0	1hour	Critical	Lethality in rats; estimated LC03	
8hour	Negligible	Increase in blood acetaldehyde in humans with moderate intake of alcohol		Carbonyl fluoride			353-50-4
1hour	Negligible	Increase in blood acetaldehyde in humans with moderate intake of alcohol		1hour	Marginal	One-third of the AEGL-3 values	
14day	Negligible	PNS impair		1hour	Critical	4-hr rat BMCL07	
1hour	Marginal	NOEL for behavioral changes in rats (inhibition of escape response)		Carbonyl sulfide			463-58-1
1hour	Critical	No lethality in rats		1hour	Marginal	NOEL for clinical signs and brain pathology in rats	
Carbon Monoxide			630-08-0	1hour	Critical	4-hour rat BMCL05/BMC03	
8hour	Negligible	COHb-emia		Catechol			120-80-9
1year	Negligible	COHb-emia		1hour	Negligible	Eye irr, dermatitis, URT irr	
10min	Marginal	Cardiac effects in humans with coronary artery disease		8hour	Negligible	Eye irr, dermatitis, URT irr	
1hour	Marginal	Cardiac effects in humans with coronary artery disease		14day	Negligible	Eye irr, dermatitis, URT irr	
8hour	Marginal	Cardiac effects in humans with coronary artery disease		1year	Negligible	Eye irr, dermatitis, URT irr	
10min	Critical	Lethal poisoning was associated with a COHb \$40 % in most lethal poisoning cases; no severe or life-threatening effects in healthy humans at COHb of 34-56 %		Cellulose			9004-34-6
1hour	Critical	Lethal poisoning was associated with a COHb \$40 % in most lethal poisoning cases; no severe or life-threatening effects in healthy humans at COHb of 34-56 %		8hour	Negligible	URT irr	
8hour	Critical	Lethal poisoning was associated with a COHb \$40 % in most lethal poisoning cases; no severe or life-threatening effects in healthy humans at COHb of 34-56 %		14day	Negligible	URT irr	
Carbon tetrabromide			558-13-4	1year	Negligible	URT irr	
8hour	Negligible	Liver dam, URT irr, eye irr, skin irr		Ceric oxide			1306-38-3
14day	Negligible	Liver dam, URT irr, eye irr, skin irr		1year	Negligible	Increased incidence of alveolar epithelial hyperplasia in the lungs of male and female rats	
1year	Negligible	Liver dam, URT irr, eye irr, skin irr		Cesium hydroxide			21351-79-1
Carbon tetrachloride			56-23-5	8hour	Negligible	eye irr, Skin irr, URT irr	
1year	Negligible	Liver dam, URT irr, eye irr, skin irr		14day	Negligible	eye irr, Skin irr, URT irr	
Carbon tetrachloride			56-23-5	1year	Negligible	eye irr, Skin irr, URT irr	
1year	Negligible	Liver dam, URT irr, eye irr, skin irr		Chlordane			57-74-9
Carbon tetrachloride			56-23-5	1year	Negligible	Centri lobular hyper-trophy, hepatocellular vacuolization, increased P-450, decreased albumin, decreased albumin/globulin ratio	
1year	Negligible	Liver dam, URT irr, eye irr, skin irr		8hour	Negligible	Liver dam	
Carbon tetrachloride			56-23-5	14day	Negligible	Liver dam	
1year	Negligible	Liver dam, URT irr, eye irr, skin irr		Carbon tetrachloride			56-23-5

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CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Chlorinated diphenyl oxide			31242-93-0	Chloroacetaldehyde			107-20-0
8hour	Negligible	liver dam, Chloracne		1hour	Negligible	Eye and nasal irritation	
14day	Negligible	liver dam, Chloracne		1hour	Negligible	Eye and nasal irritation	
1year	Negligible	liver dam, Chloracne		8hour	Negligible	Eye and nasal irritation	
Chlorine			7782-50-5	Chloroacetic acid			79-11-8
10min	Negligible	No to slight changes in pulmonary function parameters in humans		8hour	Negligible	Eye and nasal irritation	
1year	Negligible	loss of cilia and epithelium in the trachea		1hour	Marginal	Lung edema	
1hour	Negligible	No to slight changes in pulmonary function parameters in humans		1hour	Marginal	Lung edema	
8hour	Negligible	No to slight changes in pulmonary function parameters in humans		1hour	Critical	Mortality (BMC05)	
10min	Marginal	1.0 ppm for 4 h was a NOAEL for an asthma-like attack in human subjects; the other values were timescaled		1hour	Critical	Mortality (BMC05)	
1hour	Marginal	1.0 ppm for 4 h was a NOAEL for an asthma-like attack in human subjects; the other values were timescaled		Chloroacetone			78-95-5
8hour	Marginal	1.0 ppm for 4 h was a NOAEL for an asthma-like attack in human subjects; the other values were timescaled		1hour	Marginal	1/3 of AEGL-3 values	
10min	Critical	Threshold for lethality in the rat		1hour	Critical	Estimated lethality threshold for male rats (BMD05)	
1hour	Critical	Threshold for lethality in the rat		Chloroacetonitrile			107-14-2
8hour	Critical	Threshold for lethality in the rat		1hour	Marginal	Derived by analogy to acetonitrile AEGL-2 values	
Chlorine dioxide			10049-04-4	1hour	Critical	Derived by analogy to acetonitrile AEGL-3 values	
8hour	Negligible	LRT irr, bronchitis		Chloroacetophenone, 2-			532-27-4
14day	Negligible	LRT irr, bronchitis		1year	Negligible	Squamous hyperplasia of the nasal respiratory epithelium	
1year	Negligible	LRT irr, bronchitis		8hour	Negligible	URT irr, Eye irr, skin irr	
Chlorine pentafluoride			13637-63-3	14day	Negligible	URT irr, Eye irr, skin irr	
1hour	Negligible	No observed irritation - rat		Chloroacetyl chloride			79-04-9
8hour	Negligible	No observed irritation - rat		1hour	Negligible	NOEL for conjunctivitis in rats	
1hour	Marginal	Sensory irritation, mild lung congestion monkey and rat		8hour	Negligible	NOEL for conjunctivitis in rats	
1hour	Critical	Highest 1-hour non-lethal concentration in rats; BMCL07		14day	Negligible	URT irr	
Chlorine trifluoride			7790-91-2	1year	Negligible	URT irr	
1hour	Negligible	Slight irritation - dog		1hour	Marginal	NOEL for inability to escape due to eye irritation in rats	
8hour	Negligible	Slight irritation - dog		1hour	Critical	Threshold for lethality in male rats	
1hour	Marginal	Threshold, impaired ability to escape -dog		Chlorobenzene			108-90-7
1hour	Critical	Threshold for lethality - monkey		1hour	Negligible	Highest level without AEGL-1 effect in humans	
Chloro-1,3-butadiene			126-99-8	1year	Negligible	Increased weights, tubule dilation, inflammation of the interstitial cells, and regeneration of the epithelium in males, Increased weight and hepatocellular hypertrophy	
1hour	Marginal	URT irr, eye irr		8hour	Negligible	Highest level without AEGL-1 effect in humans	
1hour	Negligible	URT irr, eye irr		14day	Negligible	Liver dam	
8hour	Negligible	URT irr, eye irr		1hour	Marginal	Narcosis	
14day	Negligible	URT irr, eye irr		1hour	Critical	No mortality in rats and guinea pigs	

Table E-1: Air MEG Health Effect Basis

CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Chlorobenzotrifluoride, 4-			98-56-6	Chloromethyl(trichloro)silane			1558-25-4
1year	Negligible	Hepatocellular hypertrophy, increased liver weight, minor changes in serum chemistry (small increase in serum ATL)		1hour	Negligible	HCl AEGL-1 values divided by a molar adjustment factor of 3 adopted as AEGL-1 values for Trichlorosilanes	
Chlorobenzylidene malononitrile, o-			2698-41-1	8hour	Negligible	HCl AEGL-1 values divided by a molar adjustment factor of 3 adopted as AEGL-1 values for Trichlorosilanes	
1hour	Negligible	NOAEL for Ocular/nasal irritation and headache in humans		1hour	Marginal	HCl AEGL-2 values divided by a molar adjustment factor of 3 adopted as AEGL-2 values for Trichlorosilanes	
8hour	Negligible	NOAEL for Ocular/nasal irritation and headache in humans		1hour	Critical	HCl AEGL-3 values divided by a molar adjustment factor of 3 adopted as AEGL-3 values for Trichlorosilanes	
1hour	Marginal	Ocular/nasal irritation and headache in humans		Chloronitrobenzene, o-			88-73-3
1hour	Critical	Threshold for lethality (LC01) in rats		1year	Negligible	Nasal lesions	
Chlorodifluoromethane			75-45-6	Chloronitrobenzene, p-			100-00-5
1year	Negligible	Increased kidney, adrenal and pituitary weights (other effect: Reduced maternal weight gain.)		8hour	Negligible	MeHb-emia	
8hour	Negligible	asphyxia, card sens, CNS impair		14day	Negligible	MeHb-emia	
14day	Negligible	asphyxia, card sens, CNS impair		1year	Negligible	MeHb-emia	
Chloroform			67-66-3	Chloronitropropane			600-25-9
1year	Negligible	Toxic hepatitis		8hour	Negligible	pulm edema, Eye irr	
1hour	Negligible	Liver dam, embryo/fetal dam, CNS impair		14day	Negligible	pulm edema, Eye irr	
8hour	Negligible	Liver dam, embryo/fetal dam, CNS impair		1year	Negligible	pulm edema, Eye irr	
1hour	Marginal	Fetotoxicity/embryo-lethality in rat exposed for 7 hrs/day on gestation days 6-15; single exposure assumed		Chloropentafluoroethane			76-15-3
1hour	Critical	Estimated lethality threshold for mice; 3-fold reduction 560-min LC50 of 4500 ppm to 1500 ppm		8hour	Negligible	Card sens	
Chloromethyl methyl ether			107-30-2	14day	Negligible	Card sens	
1hour	Marginal	Estimated NOAEL for serious or irreversible lung lesions in rats and hamsters		1year	Negligible	Card sens	
1hour	Critical	Lethality threshold for hamsters and rats		Chloropicrin			76-06-2
				8hour	Negligible	54 ppb NOAEL for ocular irritation in human subjects; UF = 1 x 1	
				1hour	Negligible	52 ppb NOAEL for ocular irritation in human subjects; UF = 1 x 1	
				14day	Negligible	pulm edema, Eye irr	
				1year	Negligible	pulm edema, Eye irr	
				1hour	Marginal	152 ppb for 60 minutes as threshold for severe ocular irritation and possible respiratory effects in human volunteers; UF=1x1	
				1hour	Critical	BMCL05 of 7.9 ppm for lethality in rats exposed for 240 min; UF=3x3; n=2.5	
				Chloropropionic acid, 2-			598-78-7
				8hour	Negligible	Male repro dam	
				14day	Negligible	Male repro dam	
				1year	Negligible	Male repro dam	

Table E-1: Air MEG Health Effect Basis

CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Chlorostyrene, o-			2039-87-4	Clopidol			2971-90-6
8hour	Negligible	Peripheral neuropathy, CNS impair		8hour	Negligible	URT irr	
14day	Negligible	Peripheral neuropathy, CNS impair		14day	Negligible	URT irr	
1year	Negligible	Peripheral neuropathy, CNS impair		1year	Negligible	URT irr	
Chlorosulfonic acid			7790-94-5	Coal dust, anthracite			Coal dust a
1hour	Negligible	By analogy, AEGL-1 for H2SO4, divided by a modifying factor of 6		8hour	Negligible	Lung dam, pulm fibrosis	
8hour	Negligible	By analogy, AEGL-1 for H2SO4, divided by a modifying factor of 6		14day	Negligible	Lung dam, pulm fibrosis	
1hour	Marginal	By analogy, AEGL-2 for H2SO4, divided by a modifying factor of 4		1year	Negligible	Lung dam, pulm fibrosis	
1hour	Critical	Lethality threshold in rats		Coal dust, bituminous			Coal dust b
Chlorotoluene, o-			95-49-8	8hour	Negligible	pulm fibrosis, Lung dam	
8hour	Negligible	skin irr, Eye irr, URT irr		14day	Negligible	pulm fibrosis, Lung dam	
14day	Negligible	skin irr, Eye irr, URT irr		1year	Negligible	pulm fibrosis, Lung dam	
1year	Negligible	skin irr, Eye irr, URT irr		Coal tar pitch volatiles (high temperature)			65996-93-2
Chlorotrifluoroethylene			79-38-9	8hour	Negligible	Cancer	
1hour	Negligible	NOAEL for kidney effects - rat		14day	Negligible	Cancer	
8hour	Negligible	NOAEL for kidney effects - rat		1year	Negligible	Cancer	
1hour	Marginal	Reversible kidney lesions - rat		Cobalt			7440-48-4
1hour	Critical	Highest non-lethal concentration - mouse		1year	Negligible	Adenoma and carcinoma	
Chlorpyrifos			2921-88-2	8hour	Negligible	Asthma, pulm func, myocardial eff	
8hour	Negligible	Cholinesterase inhib		14day	Negligible	Asthma, pulm func, myocardial eff	
14day	Negligible	Cholinesterase inhib		Cobalt carbonyl			10210-68-1
1year	Negligible	Cholinesterase inhib		8hour	Negligible	spleen dam, Pulm edema	
Chromate			11104-59-9	14day	Negligible	spleen dam, Pulm edema	
8hour	Negligible	Lung cancer		1year	Negligible	spleen dam, Pulm edema	
14day	Negligible	Lung cancer		Cobalt hydrocarbonyl			16842-03-8
1year	Negligible	Lung cancer		8hour	Negligible	Pulm edema, lung dam	
Chromium (III)			16065-83-1	14day	Negligible	Pulm edema, lung dam	
1year	Negligible	Septal cell hyperplasia and interstitial inflammation of the lung increased absolute and relative lung weight at 30 mg/m3		1year	Negligible	Pulm edema, lung dam	
Chromium (VI)			18540-29-9	Coke oven emissions			8007-45-2
1year	Negligible	Tumor type: Lung cancer		1year	Negligible	Tumor type: Respiratory cancer	
Chromium, elemental			7440-47-3	Commercial Hexane			Com Hexane
8hour	Negligible	cancer, Lung cancer, skin irr, URT irr		1year	Negligible	Peripheral neuropathology (decreased MCV at 12 weeks)	
14day	Negligible	cancer, Lung cancer, skin irr, URT irr		Copper fume			Cu fume
1year	Negligible	cancer, Lung cancer, skin irr, URT irr		8hour	Negligible	metal fume fever, Irr, GI	
Chromyl chloride			14977-61-8	14day	Negligible	metal fume fever, Irr, GI	
8hour	Negligible	URT irr, skin irr		1year	Negligible	metal fume fever, Irr, GI	
14day	Negligible	URT irr, skin irr		Coumaphos			56-72-4
1year	Negligible	URT irr, skin irr		8hour	Negligible	Cholinesterase inhib	
				14day	Negligible	Cholinesterase inhib	
				1year	Negligible	Cholinesterase inhib	
				Cresol, m-			108-39-4
				8hour	Negligible	URT irr	
				14day	Negligible	URT irr	
				1year	Negligible	URT irr	

Table E-1: Air MEG Health Effect Basis

CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Cresol, o-			95-48-7	Cyanamide			420-04-2
8hour	Negligible	URT irr		8hour	Negligible	eye irr, Skin irr	
14day	Negligible	URT irr		14day	Negligible	eye irr, Skin irr	
1year	Negligible	URT irr		1year	Negligible	eye irr, Skin irr	
Cresol, p-			106-44-5	Cyanogen			460-19-5
8hour	Negligible	URT irr		1hour	Negligible	Cyanide AEGL-1 values adopted as AEGL-1 values for cyanogens	
14day	Negligible	URT irr		8hour	Negligible	Cyanide AEGL-1 values adopted as AEGL-1 values for cyanogens	
1year	Negligible	URT irr		1year	Negligible	eye irr, LRT irr	
Cristobalite			14464-46-1	14day	Negligible	Cyanide AEGL-1 values adopted as AEGL-1 values for cyanogens	
8hour	Negligible	Pulm fibrosis, lung cancer		1hour	Marginal	One-third the AEGL-3 Values	
14day	Negligible	Pulm fibrosis, lung cancer		1hour	Critical	Concentrations causing no lethality in rats	
1year	Negligible	Pulm fibrosis, lung cancer		Cyclohexane			110-82-7
Crotonaldehyde			4170-30-3	1year	Negligible	Reduced pup weights in the F1 and F2 generations	
1hour	Negligible	Mild eye irritation in humans		8hour	Negligible	CNS impair	
8hour	Negligible	Mild eye irritation in humans		14day	Negligible	CNS impair	
1hour	Marginal	Impaired pulmonary function, NOAEL for bronchiole lesions		Cyclohexanol			108-93-0
1hour	Critical	Lethality NOEL		8hour	Negligible	Eye irr, CNS impair	
Crotonaldehyde, trans-			123-73-9	14day	Negligible	Eye irr, CNS impair	
1hour	Negligible	Human mild eye irritation (Fannick 1982)., Mild eye irritation in human		1year	Negligible	Eye irr, CNS impair	
8hour	Negligible	Mild eye irritation in humans		Cyclohexanone			108-94-1
1hour	Marginal	Rat impaired pulmonary function, NOAEL for bronchiole lesions (Rinehart 1967)., Impaired pulmonary function, NOAEL for bronchiole lesions		8hour	Negligible	Eye irr, URT irr	
1hour	Critical	Rat lethality NOEL (Rinehart 1967). Lethality NOEL		14day	Negligible	Eye irr, URT irr	
Crufomate			299-86-5	1year	Negligible	Eye irr, URT irr	
8hour	Negligible	Cholinesterase inhib		Cyclohexene			110-83-8
14day	Negligible	Cholinesterase inhib		8hour	Negligible	URT irr, eye irr	
1year	Negligible	Cholinesterase inhib		14day	Negligible	URT irr, eye irr	
Cumene			98-82-8	1year	Negligible	URT irr, eye irr	
1hour	Negligible	Mild eye and respiratory irritation in humans		Cyclohexyl isocyanate			3173-53-3
1year	Negligible	Increased kidney weights in female rats and adrenal weights in male and female rats		1hour	Critical	Calculated BMCL07	
14day	Negligible	CNS impair, URT irr, Skin irr, Eye irr					
8hour	Negligible	Mild eye and respiratory irritation in humans					
1hour	Marginal	Mild reversible neurological change and NOEL for ataxia in rats, and impaired ability to escape					
1hour	Critical	Lethality threshold from CNS depression in rats					

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CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Cyclohexylamine			108-91-8	Demeton			8065-48-3
1hour	Negligible	Mild sensory and/or ocular irritatio in rats (Bio/dynamics, Inc. 1990)., Mild sensory and/or ocular irritatio in rats		8hour	Negligible	Cholinesterase inhib	
8hour	Negligible	Mild sensory and/or ocular irritatio in rats		14day	Negligible	Cholinesterase inhib	
14day	Negligible	Mild sensory and/or ocular irritatio in rats		1year	Negligible	Cholinesterase inhib	
1year	Negligible	Mild sensory and/or ocular irritatio in rats		Demeton-S-methyl			919-86-8
1hour	Marginal	Moderate respiratory effects and ocular irritation; NOAEL for irreversible ocular lesions, Moderate respiratory effects and ocular irritation; NOAEL for irreversible ocular lesions (Bio/dynamics, Inc. 1990).		8hour	Negligible	Cholinesterase inhib	
1hour	Critical	Lethality threshold and irreversible ocular lesions (Bio/dynamics, Inc. 1990)., Lethality threshold and irreversible ocular lesions		14day	Negligible	Cholinesterase inhib	
				1year	Negligible	Cholinesterase inhib	
Cyclopentadiene			542-92-7	Diacetone alcohol			123-42-2
8hour	Negligible	URT irr, eye irr		1hour	Marginal	eye irr, URT irr	
14day	Negligible	URT irr, eye irr		1hour	Negligible	eye irr, URT irr	
				8hour	Negligible	eye irr, URT irr	
Cyclopentane			287-92-3	14day	Negligible	eye irr, URT irr	
8hour	Negligible	URT irr, skin irr, Eye irr, CNS impair		1year	Negligible	eye irr, URT irr	
14day	Negligible	URT irr, skin irr, Eye irr, CNS impair		Diazinon			333-41-5
1year	Negligible	URT irr, skin irr, Eye irr, CNS impair		8hour	Negligible	Cholinesterase inhib	
Cyhexatin			13121-70-5	14day	Negligible	Cholinesterase inhib	
8hour	Negligible	URT irr, kidney dam, body weight e		1year	Negligible	Cholinesterase inhib	
14day	Negligible	URT irr, kidney dam, body weight e		Diazomethane			334-88-3
1year	Negligible	URT irr, kidney dam, body weight e		8hour	Negligible	URT irr, eye irr	
Dalapon			75-99-0	14day	Negligible	URT irr, eye irr	
1year	Negligible	URT irr, Eye irr		1year	Negligible	URT irr, eye irr	
8hour	Negligible	URT irr, Eye irr		Diborane			19287-45-7
14day	Negligible	URT irr, Eye irr		8hour	Negligible	headache, URT irr	
DDT			50-29-3	14day	Negligible	headache, URT irr	
8hour	Negligible	Liver dam		1year	Negligible	headache, URT irr	
14day	Negligible	Liver dam		10min	Marginal	LOAEL for pulmonary changes in male ICR mice; 5 ppm for 2 h. (reversible inflammatory epithelial degeneration in the bronchioles)	
1year	Negligible	Tumor type: Liver, benign and malignant		1hour	Marginal	LOAEL for pulmonary changes in male ICR mice; 5 ppm for 2 h. (reversible inflammatory epithelial degeneration in the bronchioles)	
Decaborane			17702-41-9	8hour	Marginal	LOAEL for pulmonary changes in male ICR mice; 5 ppm for 2 h. (reversible inflammatory epithelial degeneration in the bronchioles)	
8hour	Negligible	CNS convul, cognitive decrement		10min	Critical	4-h LC01 of 9.2 ppm estimated from a 4-h LC50 in male ICR mice.	
14day	Negligible	CNS convul, cognitive decrement		1hour	Critical	4-h LC01 of 9.2 ppm estimated from a 4-h LC50 in male ICR mice.	
1year	Negligible	CNS convul, cognitive decrement		8hour	Critical	4-h LC01 of 9.2 ppm estimated from a 4-h LC50 in male ICR mice.	
				Dibromo-3-chloropropane, 1,2-			96-12-8
				1year	Negligible	Tumors	

Table E-1: Air MEG Health Effect Basis

CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Dibromoethane, 1,2-			106-93-4	Dichlorobenzene, 1,4-			106-46-7
1hour	Negligible	NOAEL for liver toxicity		1year	Negligible	Increased liver weights in P1 males	
8hour	Negligible	NOAEL for liver toxicity		14day	Negligible	Nose and eye irritation	
1hour	Marginal	Slight histopathological changes in the liver; noeffect-level for irreversible toxicity		1hour	Negligible	kidney dam, Eye irr	
				8hour	Negligible	kidney dam, Eye irr	
1hour	Critical	no effect level for lethality		Dichlorodifluoromethane			75-71-8
Dibutyl phenyl phosphate			2528-36-1	8hour	Negligible	Card sens	
8hour	Negligible	Cholinesterase inhib, URT irr		Dichloroethane, 1,1-			75-34-3
14day	Negligible	Cholinesterase inhib, URT irr		8hour	Negligible	eye irr, URT irr, Kidney dam, Liver dam	
1year	Negligible	Cholinesterase inhib, URT irr		14day	Negligible	eye irr, URT irr, Kidney dam, Liver dam	
Dibutyl phosphate			107-66-4	1year	Negligible	eye irr, URT irr, Kidney dam, Liver dam	
8hour	Negligible	Bladder irr, URT irr, eye irr		Dichloroethane, 1,2-			107-06-2
14day	Negligible	Bladder irr, URT irr, eye irr		1year	Negligible	Tumor type: Hemangiosarcomas	
1year	Negligible	Bladder irr, URT irr, eye irr		8hour	Negligible	Liver dam, nausea	
Dibutyl phthalate			84-74-2	14day	Negligible	Liver dam, nausea	
8hour	Negligible	Testicular dam, URT irr, eye irr		Dichloroethylene, 1,1-			75-35-4
14day	Negligible	Testicular dam, URT irr, eye irr		8hour	Negligible	Liver dam, Kidney dam	
1year	Negligible	Testicular dam, URT irr, eye irr		Dichloroethylene, 1,2-			540-59-0
Dibutylethanolamine			102-81-8	8hour	Negligible	eye irr, CNS impair	
8hour	Negligible	Eye irr, URT irr		14day	Negligible	eye irr, CNS impair	
14day	Negligible	Eye irr, URT irr		1year	Negligible	eye irr, CNS impair	
1year	Negligible	Eye irr, URT irr		Dichloroethylene, cis-1,2-			156-59-2
Dichloro-1-nitroethane			594-72-9	1hour	Negligible	Ocular irritation in humans	
8hour	Negligible	URT irr		14day	Negligible	CNS impair, eye irr	
14day	Negligible	URT irr		1year	Negligible	CNS impair, eye irr	
1year	Negligible	URT irr		8hour	Negligible	Ocular irritation in humans	
Dichloro-2-butene, 1,4-			764-41-0	1hour	Marginal	Narcosis in rats: 4- & 8-h; Anestheti effects in humans	
8hour	Negligible	URT irr, eye irr		1hour	Critical	No death in rats: 4- & 8-h; Nausea, intracranial pressure, and dizziness in humans: 10-, & 30-min, &1-h	
14day	Negligible	URT irr, eye irr		Dichloroethylene, trans-			156-60-5
Dichloro-5,5-dimethylhydantoin			118-52-5	1year	Negligible	Slight fatty accumulation in liver lobules	
8hour	Negligible	URT irr		1hour	Negligible	Ocular irritation in humans	
14day	Negligible	URT irr		8hour	Negligible	Ocular irritation in humans	
1year	Negligible	URT irr		14day	Negligible	Slight fatty degeneration	
Dichloroacetic acid			79-43-6	1hour	Marginal	Narcosis in rats: 4- & 8-h; Anestheti effects in humans	
8hour	Negligible	eye irr, URT irr, testicular dam		1hour	Critical	No death in rats: 4- & 8-h; Nausea, intracranial pressure, and dizziness in humans: 10-, & 30-min, &1-h	
14day	Negligible	eye irr, URT irr, testicular dam		Dichlorofluoromethane			75-43-4
1year	Negligible	eye irr, URT irr, testicular dam		8hour	Negligible	Liver dam	
Dichloroacetyl chloride			79-36-7				
1hour	Negligible	NOEL for conjunctivitis in rats					
8hour	Negligible	NOEL for conjunctivitis in rats					
1hour	Marginal	NOEL for inability to escape due to eye irritation in rats					
1hour	Critical	Threshold for lethality in male rats					
Dichlorobenzene, 1,2-			95-50-1				
8hour	Negligible	liver dam, eye irr, URT irr					
14day	Negligible	liver dam, eye irr, URT irr					

Table E-1: Air MEG Health Effect Basis

CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Dichlorophenoxy acetic acid, 2,4-			94-75-7	Dicyclopentadiene			77-73-6
8hour	Negligible	skin irr, URT irr		1year	Negligible	Increased absolute and relative live weights	
14day	Negligible	skin irr, URT irr		14day	Negligible	Increased absolute and relative live weights	
1year	Negligible	skin irr, URT irr					
Dichloropropane, 1,2-			78-87-5	Dicyclopentadienyl iron			102-54-5
14day	Negligible	Nasal mucosa degeneration		8hour	Negligible	Liver dam	
1year	Negligible	Hyperplasia of the nasal mucosa		14day	Negligible	Liver dam	
8hour	Negligible	body weight eff, URT irr		1year	Negligible	Liver dam	
Dichloropropene, 1,3-			542-75-6	Dieldrin			60-57-1
1year	Negligible	Hyperplasia/hypertrophy of nasal respiratory epithelium		1year	Negligible	Tumor type: Liver carcinoma	
8hour	Negligible	Kidney dam		8hour	Negligible	Liver dam, Repro eff, CNS impair	
14day	Negligible	Kidney dam		14day	Negligible	Liver dam, Repro eff, CNS impair	
Dichloropropene, 2,3-			78-88-6	Diesel engine exhaust			Diesel
14day	Negligible	Very slight hyperplasia of nasal respiratory epithelium in 9/10.		1year	Negligible	Pulmonary inflammation and histopathology	
Dichlorosilane			4109-96-0	Diesel fuel marine			77650-28-3
1hour	Negligible	Hydrogen chloride (HCl) AEGL-1 values divided by a molar adjustment factor of 2 adopted as AEGL-1 values for Dichlorosilanes		8hour	Negligible	Dermatitis	
8hour	Negligible	Hydrogen chloride (HCl) AEGL-1 values divided by a molar adjustment factor of 2 adopted as AEGL-1 values for Dichlorosilanes		14day	Negligible	Dermatitis	
1hour	Marginal	HCl AEGL-2 values divided by a molar adjustment factor of 2 adopted as AEGL-2 values for Dichlorosilanes		1year	Negligible	Dermatitis	
1hour	Critical	HCl AEGL-3 values divided by a molar adjustment factor of 2 adopted as AEGL-3 values for Dichlorosilanes		Diesel fuels			68334-30-5
Dichlorotetrafluoroethane			76-14-2	8hour	Negligible	Dermatitis	
8hour	Negligible	Pulm func		14day	Negligible	Dermatitis	
Dichlorvos			62-73-7	1year	Negligible	Dermatitis	
8hour	Negligible	No effects in human volunteers exposed for 2-7 hours to 0.11 ppm (1 mg/m3)		Diethanolamine			111-42-2
1year	Negligible	Inhibition of erythrocyte and brain AChE		8hour	Negligible	Kidney dam, Liver dam	
1hour	Negligible	No effects in human volunteers exposed for 2-7 hours to 0.11 ppm (1 mg/m3)		14day	Negligible	Kidney dam, Liver dam	
14day	Negligible	Inhibition of erythrocyte AChE		1year	Negligible	Kidney dam, Liver dam	
1hour	Marginal	Highest experimental exposure without an AEGL-2 effect (0.56 ppr 5 mg/m3)		Diethyl ketone			96-22-0
1hour	Critical	Highest experimental exposure without a lethal effect (8.0 ppm, 72 mg/m3)		8hour	Negligible	URT irr, CNS impair	
				14day	Negligible	URT irr, CNS impair	
				1year	Negligible	URT irr, CNS impair	
Dichlorvos			62-73-7	Diethyl phthalate			84-66-2
8hour	Negligible	No effects in human volunteers exposed for 2-7 hours to 0.11 ppm (1 mg/m3)		8hour	Negligible	URT irr	
1year	Negligible	Inhibition of erythrocyte and brain AChE		14day	Negligible	URT irr	
1hour	Negligible	No effects in human volunteers exposed for 2-7 hours to 0.11 ppm (1 mg/m3)		1year	Negligible	URT irr	
14day	Negligible	Inhibition of erythrocyte AChE		Diethylamine			109-89-7
1hour	Marginal	Highest experimental exposure without an AEGL-2 effect (0.56 ppr 5 mg/m3)		8hour	Negligible	URT irr, eye irr	
1hour	Critical	Highest experimental exposure without a lethal effect (8.0 ppm, 72 mg/m3)		14day	Negligible	URT irr, eye irr	
				1year	Negligible	URT irr, eye irr	
Dichlorvos			62-73-7	Diethylaminoethanol, 2-			100-37-8
8hour	Negligible	No effects in human volunteers exposed for 2-7 hours to 0.11 ppm (1 mg/m3)		8hour	Negligible	CNS convul, URT irr	
1year	Negligible	Inhibition of erythrocyte and brain AChE		14day	Negligible	CNS convul, URT irr	
1hour	Negligible	No effects in human volunteers exposed for 2-7 hours to 0.11 ppm (1 mg/m3)		1year	Negligible	CNS convul, URT irr	
14day	Negligible	Inhibition of erythrocyte AChE					
1hour	Marginal	Highest experimental exposure without an AEGL-2 effect (0.56 ppr 5 mg/m3)					
1hour	Critical	Highest experimental exposure without a lethal effect (8.0 ppm, 72 mg/m3)					

Table E-1: Air MEG Health Effect Basis

CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Diethyldichlorosilane			1719-53-5	Diisopropylamine			108-18-9
1hour	Negligible	Hydrogen chloride (HCl) AEGL-1 values adopted as AEGL-1 values for Monochlorosilanes		8hour	Negligible	URT irr, eye dam	
8hour	Negligible	Hydrogen chloride (HCl) AEGL-1 values adopted as AEGL-1 values for Monochlorosilanes		14day	Negligible	URT irr, eye dam	
1hour	Marginal	Hydrogen chloride (HCl) AEGL-2 values adopted as AEGL-2 values for Monochlorosilanes		1year	Negligible	URT irr, eye dam	
1hour	Critical	Hydrogen chloride (HCl) AEGL-2 values adopted as AEGL-3 values for Monochlorosilanes		Diketene			674-82-8
Diethylene glycol monobutyl ether			112-34-5	1hour	Marginal	AEGL-3 reduced by factor of 5	
1year	Negligible	Hepatocellular vacuolization		1hour	Critical	BMCL05 for lethality	
Diethylene glycol monoethyl ether			111-90-0	Dimethyl acetamide, N, N-			127-19-5
1year	Negligible	Irritation		8hour	Negligible	Liver dam, embryo/fetal dam	
Diethylene triamine			111-40-0	14day	Negligible	Liver dam, embryo/fetal dam	
1hour	Negligible	eye irr, URT irr		1year	Negligible	Liver dam, embryo/fetal dam	
8hour	Negligible	eye irr, URT irr		Dimethyl carbamoyl chloride			79-44-7
14day	Negligible	eye irr, URT irr		8hour	Negligible	URT irr, Nasal cancer	
1year	Negligible	eye irr, URT irr		14day	Negligible	URT irr, Nasal cancer	
Difluorodibromomethane			75-61-6	1year	Negligible	URT irr, Nasal cancer	
8hour	Negligible	liver dam, CNS impair, URT irr		Dimethyl hydrogen phosphite			868-85-9
14day	Negligible	liver dam, CNS impair, URT irr		1hour	Marginal	Labored breathing and ptosis in mice	
1year	Negligible	liver dam, CNS impair, URT irr		1hour	Critical	NOEL for mortality in rats	
Difluoroethane, 1,1-			75-37-6	Dimethyl phthalate			131-11-3
1year	Negligible	No adverse effects observed		8hour	Negligible	Eye irr, URT irr	
Difluorotetrachloroethane, 1,2-			76-12-0	14day	Negligible	Eye irr, URT irr	
8hour	Negligible	Liver dam, Kidney dam, CNS impair		1year	Negligible	Eye irr, URT irr	
14day	Negligible	Liver dam, Kidney dam, CNS impair		Dimethyl sulfate			77-78-1
1year	Negligible	Liver dam, Kidney dam, CNS impair		8hour	Negligible	Nasal cell proliferation rat	
Difluorotetrachloroethane, 2,2-			76-11-9	1hour	Negligible	Nasal cell proliferation rat	
8hour	Negligible	Kidney dam, CNS impair, Liver dam		14day	Negligible	Nasal cell proliferation rat	
14day	Negligible	Kidney dam, CNS impair, Liver dam		1year	Negligible	Nasal cell proliferation rat	
1year	Negligible	Kidney dam, CNS impair, Liver dam		1hour	Marginal	Breathing problems rat, mouse, hamster	
Diglycidyl ether			2238-07-5	1hour	Critical	lethality due to emphysema and edema rat	
8hour	Negligible	skin irr, Eye irr, male repro dam		Diisobutyl ketone			108-83-8
14day	Negligible	skin irr, Eye irr, male repro dam		8hour	Negligible	URT irr, eye irr	
1year	Negligible	skin irr, Eye irr, male repro dam		14day	Negligible	URT irr, eye irr	
Diisopropyl ether			108-20-3	1year	Negligible	URT irr, eye irr	
1year	Negligible	short 14th ribs in fetal rats		Diisopropyl ether			108-20-3
8hour	Negligible	URT irr, Eye irr		1year	Negligible	short 14th ribs in fetal rats	
14day	Negligible	URT irr, Eye irr		8hour	Negligible	URT irr, Eye irr	

Table E-1: Air MEG Health Effect Basis

CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Dimethylamine			124-40-3	Dimethylformamide			68-12-2
10min	Negligible	NOAEL for nasal irritation/lesions in rats in repeat-exposure study		1year	Negligible	Elevated liver enzyme changes	
1hour	Negligible	NOAEL for nasal irritation/lesions in rats in repeat-exposure study		Dimethylhydrazine, 1,1-			57-14-7
14day	Negligible	GI dam, URT irr		1year	Negligible	Endometrial cysts	
1year	Negligible	GI dam, URT irr		8hour	Negligible	URT irr, nasal cancer	
8hour	Negligible	NOAEL for nasal irritation/lesions in rats in repeat-exposure study		14day	Negligible	URT irr, nasal cancer	
10min	Marginal	Nasal lesions in rats, considered mild and reversible		1hour	Marginal	Behavioral changes and muscle fasciculations in dogs exposed at 360 ppm for 15 min	
1hour	Marginal	Nasal lesions in rats, considered mild and reversible		1hour	Critical	Lethality threshold of 327 ppm for 1 h estimated from 1-h LC50 in dogs	
8hour	Marginal	Nasal lesions in rats, considered mild and reversible		Dimethylhydrazine, 1,2-			540-73-8
10min	Critical	Lethality threshold for mice		1hour	Marginal	Behavioral changes and muscle fasciculations in dogs exposed at 360 ppm for 15 min	
1hour	Critical	Lethality threshold for mice		1hour	Critical	Lethality threshold of 327 ppm for 1 h estimated from 1-h LC50 in dogs	
8hour	Critical	Lethality threshold for mice		Dimethylpropyl acetate, 1,1-			625-16-1
Dimethylaniline, N,N-			121-69-7	8hour	Negligible	URT irr	
8hour	Negligible	MeHb-emia		14day	Negligible	URT irr	
14day	Negligible	MeHb-emia		1year	Negligible	URT irr	
1year	Negligible	MeHb-emia		Dinitolmide			148-01-6
Dimethylbenzidine, 3,3'-			119-93-7	8hour	Negligible	Liver dam	
1hour	Marginal	MeHb-emia, kidney irr, bladder irr, bladder cancer, Eye irr		14day	Negligible	Liver dam	
1hour	Negligible	MeHb-emia, kidney irr, bladder irr, bladder cancer, Eye irr		1year	Negligible	Liver dam	
8hour	Negligible	MeHb-emia, kidney irr, bladder irr, bladder cancer, Eye irr		Dinitrobenzene (mixed isomers)			0-323*
14day	Negligible	MeHb-emia, kidney irr, bladder irr, bladder cancer, Eye irr		8hour	Negligible	MeHb-emia, eye dam	
1year	Negligible	MeHb-emia, kidney irr, bladder irr, bladder cancer, Eye irr		14day	Negligible	MeHb-emia, eye dam	
Dimethylchlorosilane			1066-35-9	1year	Negligible	MeHb-emia, eye dam	
1hour	Negligible	Hydrogen chloride (HCl) AEGL-1 values adopted as AEGL-1 values for Monochlorosilanes		Dinitrobenzene, 1,2-			528-29-0
8hour	Negligible	Hydrogen chloride (HCl) AEGL-1 values adopted as AEGL-1 values for Monochlorosilanes		8hour	Negligible	MeHb-emia, eye dam	
1hour	Marginal	Hydrogen chloride (HCl) AEGL-2 values adopted as AEGL-2 values for Monochlorosilanes		14day	Negligible	MeHb-emia, eye dam	
1hour	Critical	Hydrogen chloride (HCl) AEGL-2 values adopted as AEGL-3 values for Monochlorosilanes		1year	Negligible	MeHb-emia, eye dam	
Dimethylethoxysilane			14857-34-2	Dinitrobenzene, 1,3-			99-65-0
8hour	Negligible	headache, URT irr, eye irr		8hour	Negligible	eye dam, MeHb-emia	
14day	Negligible	headache, URT irr, eye irr		14day	Negligible	eye dam, MeHb-emia	
1year	Negligible	headache, URT irr, eye irr		1year	Negligible	eye dam, MeHb-emia	
				Dinitrobenzene, 1,4-			100-25-4
				8hour	Negligible	eye dam, MeHb-emia	
				14day	Negligible	eye dam, MeHb-emia	
				1year	Negligible	eye dam, MeHb-emia	
				Dinitro-o-cresol, 4,6-			534-52-1
				8hour	Negligible	Basal metab	
				14day	Negligible	Basal metab	
				1year	Negligible	Basal metab	

Table E-1: Air MEG Health Effect Basis

CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Dinitrotoluene			25321-14-6	Diphenyldichlorosilane			80-10-4
8hour	Negligible	repro eff, Card impair		1hour	Negligible	Hydrogen chloride (HCl) AEGL-1 values divided by a molar adjustment factor of 2 adopted as AEGL-1 values for Dichlorosilanes	
14day	Negligible	repro eff, Card impair		8hour	Negligible	Hydrogen chloride (HCl) AEGL-1 values divided by a molar adjustment factor of 2 adopted as AEGL-1 values for Dichlorosilanes	
1year	Negligible	repro eff, Card impair		1hour	Marginal	HCl AEGL-2 values divided by a molar adjustment factor of 2 adopted as AEGL-2 values for Dichlorosilanes	
Dioxane, 1,4-			123-91-1	1hour	Critical	HCl AEGL-3 values divided by a molar adjustment factor of 2 adopted as AEGL-3 values for Dichlorosilanes	
1hour	Negligible	Irritative effects in humans		Diphenylhydrazine, 1,2-			122-66-7
1year	Negligible	No effects		1year	Negligible	Tumor type: Hepatocellular carcinomas and neoplastic liver nodules	
8hour	Negligible	Irritative effects in humans		Dipropyl ketone			123-19-3
14day	Negligible	Sensory irritation and pulmonary function		8hour	Negligible	URT irr	
1hour	Marginal	Central nervous system effects in rats (no narcosis); liver enzyme increase in rats (no severe necrosis)		14day	Negligible	URT irr	
1hour	Critical	Extrapolated NOEL for acute lethality in rats		1year	Negligible	URT irr	
Dioxathion			78-34-2	Dipropylene glycol monomethyl ether			34590-94-8
8hour	Negligible	Cholinesterase inhib		8hour	Negligible	Eye irr, CNS impair, URT irr	
14day	Negligible	Cholinesterase inhib		14day	Negligible	Eye irr, CNS impair, URT irr	
1year	Negligible	Cholinesterase inhib		1year	Negligible	Eye irr, CNS impair, URT irr	
Dioxolane			646-06-0	Diquat			2764-72-9
8hour	Negligible	Hematologic eff		8hour	Negligible	LRT irr, cataract, LRT irr, cataract	
14day	Negligible	Hematologic eff		14day	Negligible	LRT irr, cataract, LRT irr, cataract	
1year	Negligible	Hematologic eff		1year	Negligible	LRT irr, cataract, LRT irr, cataract	
Diphenylamine			122-39-4	8hour	Negligible	cataract, LRT irr, LRT irr, cataract	
8hour	Negligible	Kidney dam, hematologic eff, Liver dam		14day	Negligible	cataract, LRT irr, LRT irr, cataract	
14day	Negligible	Kidney dam, hematologic eff, Liver dam		1year	Negligible	cataract, LRT irr, LRT irr, cataract	
1year	Negligible	Kidney dam, hematologic eff, Liver dam		Diquat			85-00-7
Diphenyldichloroarsine			712-48-1	8hour	Negligible	LRT irr, cataract, LRT irr, cataract	
1hour	Marginal	Estimated as 1/3 reduction of AEGL 3		14day	Negligible	LRT irr, cataract, LRT irr, cataract	
1hour	Critical	Lethality threshold in rats		1year	Negligible	LRT irr, cataract, LRT irr, cataract	
				Diquat dibromide monohydrate			6385-62-2
				8hour	Negligible	LRT irr, cataract, LRT irr, cataract	
				14day	Negligible	LRT irr, cataract, LRT irr, cataract	
				1year	Negligible	LRT irr, cataract, LRT irr, cataract	

Table E-1: Air MEG Health Effect Basis

CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Disulfiram			97-77-8	Endrin			72-20-8
8hour	Negligible	nausea, Vasodilation		8hour	Negligible	headache, Liver dam, CNS impair	
14day	Negligible	nausea, Vasodilation		14day	Negligible	headache, Liver dam, CNS impair	
1year	Negligible	nausea, Vasodilation		1year	Negligible	headache, Liver dam, CNS impair	
Disulfoton			298-04-4	Enflurane			13838-16-9
1year	Negligible	Muscle tremors; convulsions; increased salivation; difficulty breathing		8hour	Negligible	CNS impair, card impair	
14day	Negligible	Depression in erythrocyte cholinesterase activity; unspecified behavioral disorders		14day	Negligible	CNS impair, card impair	
8hour	Negligible	Cholinesterase inhib		1year	Negligible	CNS impair, card impair	
Diuron			330-54-1	Epichlorohydrin			106-89-8
8hour	Negligible	URT irr		1hour	Negligible	No effect level for irritation	
14day	Negligible	URT irr		1year	Negligible	Changes in the nasal turbinates	
1year	Negligible	URT irr		8hour	Negligible	No effect level for irritation	
Divinyl benzene			1321-74-0	14day	Negligible	male repro, URT irr	
8hour	Negligible	URT irr		1hour	Marginal	Three-fold reduction of AEGL-3 values, except for 10 min.	
14day	Negligible	URT irr		1hour	Critical	Lethality threshold	
1year	Negligible	URT irr		Epoxybutane, 1,2-			106-88-7
Dodecyl mercaptan			112-55-0	1hour	Negligible	NOAEL for eye irritation rat	
1hour	Negligible	URT irr		1year	Negligible	Degenerative lesions of the nasal cavity	
8hour	Negligible	URT irr		8hour	Negligible	NOAEL for eye irritation rat	
14day	Negligible	URT irr		1hour	Marginal	Moderate eye irritation rat	
1year	Negligible	URT irr		1hour	Critical	Highest non-lethal concentration ra	
Dodecyltrichlorosilane			4484-72-4	Ethanolamine			141-43-5
1hour	Negligible	HCl AEGL-1 values divided by a molar adjustment factor of 3 adopted as AEGL-1 values for Trichlorosilanes		8hour	Negligible	Eye irr, skin irr	
8hour	Negligible	HCl AEGL-1 values divided by a molar adjustment factor of 3 adopted as AEGL-1 values for Trichlorosilanes		Ethion			563-12-2
1hour	Marginal	HCl AEGL-2 values divided by a molar adjustment factor of 3 adopted as AEGL-2 values for Trichlorosilanes		8hour	Negligible	Cholinesterase inhib	
1hour	Critical	HCl AEGL-3 values divided by a molar adjustment factor of 3 adopted as AEGL-3 values for Trichlorosilanes		14day	Negligible	Cholinesterase inhib	
Endosulfan			115-29-7	1year	Negligible	Cholinesterase inhib	
8hour	Negligible	LRT irr, Kidney dam, Liver dam		Ethoxyethanol, 2-			110-80-5
14day	Negligible	LRT irr, Kidney dam, Liver dam		1year	Negligible	Decreased testis weight, seminiferous tubule degeneration and decreased hemoglobin	
1year	Negligible	LRT irr, Kidney dam, Liver dam		8hour	Negligible	embryo/fetal dam, Male repro dam	
				14day	Negligible	embryo/fetal dam, Male repro dam	
				Ethoxyethyl acetate, 2-			111-15-9
				8hour	Negligible	Male repro dam	
				14day	Negligible	Male repro dam	
				Ethyl acetate			141-78-6
				8hour	Negligible	eye irr, URT irr	
				14day	Negligible	eye irr, URT irr	
				1year	Negligible	eye irr, URT irr	

Table E-1: Air MEG Health Effect Basis

CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Ethyl acrylate			140-88-5	Ethyl mercaptan			75-08-1
1hour	Negligible	Reversible lesions in the olfactory epithelium		8hour	Negligible	NOEL for irritation in rabbits	
8hour	Negligible	Reversible lesions in the olfactory epithelium		1hour	Negligible	NOEL for irritation in rabbits	
14day	Negligible	URT irr, CNS impair, GI irr, Eye irr, Skin sens		14day	Negligible	CNS impair, URT irr	
1year	Negligible	URT irr, CNS impair, GI irr, Eye irr, Skin sens		1year	Negligible	CNS impair, URT irr	
1hour	Marginal	Reversible lesions in the olfactory epithelium		1hour	Marginal	3-fold reduction of AEGL-3 values	
1hour	Critical	BMCL07		1hour	Critical	LC01 in mice	
Ethyl amyl ketone			541-85-5	Ethyl p-nitrophenyl phenylphosphorothioate			2104-64-5
8hour	Negligible	Neurotoxicity		8hour	Negligible	Cholinesterase inhib	
14day	Negligible	Neurotoxicity		14day	Negligible	Cholinesterase inhib	
1year	Negligible	Neurotoxicity		1year	Negligible	Cholinesterase inhib	
Ethyl bromide			74-96-4	Ethyl tert-butyl ether			637-92-3
8hour	Negligible	CNS impair, Liver dam		8hour	Negligible	Pulm func, neurotoxicity	
14day	Negligible	CNS impair, Liver dam		14day	Negligible	Pulm func, neurotoxicity	
1year	Negligible	CNS impair, Liver dam		1year	Negligible	Pulm func, neurotoxicity	
Ethyl butyl ketone			106-35-4	Ethylamine			75-04-7
8hour	Negligible	skin irr, CNS impair, eye irr		8hour	Negligible	Analogy with methylamine- mild nasal and lung irritation	
14day	Negligible	skin irr, CNS impair, eye irr		1hour	Negligible	Analogy with methylamine- mild nasal and lung irritation	
1year	Negligible	skin irr, CNS impair, eye irr		14day	Negligible	skin irr, Eye irr, eye dam	
Ethyl chloride			75-00-3	1year	Negligible	skin irr, Eye irr, eye dam	
1year	Negligible	Delayed fetal ossification		1hour	Marginal	Analogy with methylamine ratio of 5.5 (AEGL-3/AEGL-2) was applied to the EA AEGL-3 values	
14day	Negligible	Increased incidence of small center of unossified bone in the skull		1hour	Critical	LC01 in rats	
8hour	Negligible	Liver dam		Ethylbenzene			100-41-4
Ethyl chloroformate			541-41-3	1year	Negligible	Complete loss of third outer hair cells and hearing loss	
1hour	Marginal	1/3 the AEGL-3 values		14day	Negligible	Loss of outer hair cells and shifts in hearing thresholds	
1hour	Critical	Estimated lethality threshold in the rat after a 1-hour exposure		Ethylbis(2-chloroethyl)amine			538-07-8
Ethyl cyanoacrylate			7085-85-0	1hour	Marginal	Threshold for ocular irritation in humans sufficient to compromise operational effectiveness	
8hour	Negligible	URT irr, skin irr		1hour	Critical	Lethality threshold in rats estimated as 3-fold reduction of LCt50 values	
14day	Negligible	URT irr, skin irr		Ethylchloroformate			2941-64-2
1year	Negligible	URT irr, skin irr		1hour	Marginal	1/3 the AEGL-3 values	
Ethyl ether			60-29-7	1hour	Critical	Estimated 4-hour rat lethality threshold	
8hour	Negligible	URT irr, CNS impair		Ethylchloroarsine			598-14-1
14day	Negligible	URT irr, CNS impair		1hour	Marginal	Estimated as 1/3 reduction of AEGL 3	
Ethyl formate			109-94-4	1hour	Critical	Estimated lethality threshold in mic	
8hour	Negligible	URT irr, CNS impair		Ethylene			74-85-1
14day	Negligible	URT irr, CNS impair		8hour	Negligible	Asphyxia	
1year	Negligible	URT irr, CNS impair		14day	Negligible	Asphyxia	
Ethyl isocyanate			109-90-0	1year	Negligible	Asphyxia	
1hour	Marginal	One-third the AEGL-3 values					
1hour	Critical	Concentration causing no death in rats (27 ppm, 6-hr)					

Table E-1: Air MEG Health Effect Basis

CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Ethylene chlorohydrin			107-07-3	Ethyleneimine			151-56-4
1hour	Marginal	AEGL-2 specific data unavailable; AEGL-2 values estimated as one third of the AEGL-3 values		8hour	Negligible	URT irr, Kidney dam, Liver dam	
1hour	Critical	Nonlethal exposure of mice to 280 ppm for 120 min.; interspecies UF = 3; intraspecies UF = 10; n = 1 or 3.		14day	Negligible	URT irr, Kidney dam, Liver dam	
Ethylene diamine			107-15-3	1year	Negligible	URT irr, Kidney dam, Liver dam	
1hour	Marginal	Bronchiolar edema and kidney swelling from 8-hr exposure to approximately 484 ppm EDA. Note that persons previously sensitized t EDA may experience more severe effects at a given exposure concentration and/or duration., Bronchiolar edema, kidney swelling		1hour	Marginal	NOEL for extreme respiratory difficulty	
1hour	Negligible	Bronchiolar edema and kidney swelling from 8-hr exposure to approximately 484 ppm EDA. Note that persons previously sensitized t EDA may experience more severe effects at a given exposure concentration and/or duration., Bronchiolar edema, kidney swelling		1hour	Critical	Threshold for lethality	
8hour	Negligible	Bronchiolar edema and kidney swelling from 8-hr exposure to approximately 484 ppm EDA. Note that persons previously sensitized t EDA may experience more severe effects at a given exposure concentration and/or duration., Bronchiolar edema, kidney swelling		Ethylhexanoic acid			149-57-5
Ethylene glycol dinitrate			628-96-6	8hour	Negligible	Teratogenic eff	
8hour	Negligible	Vasodilation, headache		14day	Negligible	Teratogenic eff	
14day	Negligible	Vasodilation, headache		1year	Negligible	Teratogenic eff	
1year	Negligible	Vasodilation, headache		Ethylhexylchloroformate, 2-			24468-13-1
Ethylene glycol monobutyl ether			111-76-2	1hour	Marginal	1/3 the AEGL-3 values	
8hour	Negligible	URT irr, Eye irr		1hour	Critical	4-hr rat BMCL07	
Ethylene oxide			75-21-8	Ethylphosphorodichloridate			1498-51-7
10min	Marginal	NOAEL for neurotoxicity and developmental toxicity		1hour	Marginal	One-tenth the AEGL-3 Values	
8hour	Negligible	CNS impair, Cancer		1hour	Critical	Four-hour threshold for lethality (BMCL05) in rats	
14day	Negligible	CNS impair, Cancer		Ethylpropyl ethanoate, 1-			620-11-1
1hour	Marginal	NOAEL for neurotoxicity and developmental toxicity		1year	Negligible	URT irr	
8hour	Marginal	NOAEL for neurotoxicity and developmental toxicity		8hour	Negligible	URT irr	
10min	Critical	Lethality		14day	Negligible	URT irr	
1hour	Critical	Lethality		Fenamiphos			22224-92-6
8hour	Critical	Lethality		8hour	Negligible	Cholinesterase inhib	
Ethylene glycol monobutyl ether			111-76-2	14day	Negligible	Cholinesterase inhib	
8hour	Negligible	URT irr, Eye irr		1year	Negligible	Cholinesterase inhib	
Ethylene glycol monobutyl ether			111-76-2	Fensulfothion			115-90-2
8hour	Negligible	URT irr, Eye irr		8hour	Negligible	Cholinesterase inhib	
Ethylene glycol monobutyl ether			111-76-2	14day	Negligible	Cholinesterase inhib	
8hour	Negligible	URT irr, Eye irr		1year	Negligible	Cholinesterase inhib	
Ethylene glycol monobutyl ether			111-76-2	Fenthion			55-38-9
8hour	Negligible	URT irr, Eye irr		8hour	Negligible	Cholinesterase inhib	
Ethylene glycol monobutyl ether			111-76-2	14day	Negligible	Cholinesterase inhib	
8hour	Negligible	URT irr, Eye irr		1year	Negligible	Cholinesterase inhib	
Ethylene glycol monobutyl ether			111-76-2	Ferbam			14484-64-1
8hour	Negligible	URT irr, Eye irr		8hour	Negligible	spleen dam, body weight eff, CNS impair	
Ethylene glycol monobutyl ether			111-76-2	14day	Negligible	spleen dam, body weight eff, CNS impair	
8hour	Negligible	URT irr, Eye irr		1year	Negligible	spleen dam, body weight eff, CNS impair	
Ethylene glycol monobutyl ether			111-76-2	Ferric oxide			1309-37-1
8hour	Negligible	URT irr, Eye irr		8hour	Negligible	Pneumoconiosis	
Ethylene glycol monobutyl ether			111-76-2	14day	Negligible	Pneumoconiosis	
8hour	Negligible	URT irr, Eye irr		1year	Negligible	Pneumoconiosis	

Table E-1: Air MEG Health Effect Basis

CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Ferrovandium			12604-58-9	Formamide			75-12-7
8hour	Negligible	URT irr, Eye irr, LRT irr		8hour	Negligible	Kidney dam, Eye irr, skin irr, Liver dam	
14day	Negligible	URT irr, Eye irr, LRT irr		14day	Negligible	Kidney dam, Eye irr, skin irr, Liver dam	
1year	Negligible	URT irr, Eye irr, LRT irr		1year	Negligible	Kidney dam, Eye irr, skin irr, Liver dam	
Fluoride			16984-48-8	Formic acid			64-18-6
8hour	Negligible	Bone dam, fluorosis		8hour	Negligible	URT irr, Eye irr, skin irr	
14day	Negligible	Bone dam, fluorosis		14day	Negligible	URT irr, Eye irr, skin irr	
1year	Negligible	Bone dam, fluorosis		1year	Negligible	URT irr, Eye irr, skin irr	
Fluorine			7782-41-4	Fuel oil no. 2			68476-30-2
10min	Negligible	No irritant effects - humans		1year	Negligible	Ataxia, disturbed gait	
14day	Negligible	Respiratory tract irritation		14day	Negligible	Ataxia, disturbed gait	
1hour	Negligible	No irritant effects - humans		8hour	Negligible	Dermatitis	
1year	Negligible	Respiratory tract irritation		Fuel oil no. 2-D			68476-34-6
8hour	Negligible	No irritant effects - humans		8hour	Negligible	Dermatitis	
10min	Marginal	Mild lung congestion - mice		14day	Negligible	Dermatitis	
1hour	Marginal	Mild lung congestion - mice		1year	Negligible	Dermatitis	
8hour	Marginal	Mild lung congestion - mice		Fuel oil no. 4			68476-31-3
10min	Critical	Severe lung congestion -mice		8hour	Negligible	Dermatitis	
1hour	Critical	Severe lung congestion -mice		14day	Negligible	Dermatitis	
8hour	Critical	Severe lung congestion -mice		1year	Negligible	Dermatitis	
Fonofos			944-22-9	Furan			110-00-9
8hour	Negligible	Cholinesterase inhib		1hour	Marginal	1016 ppm for 1 hour: threshold for adverse effects in rats [clinical signs although the severity of respiratory distress and increased secretory response not reported, no decrease in body weight occurred	
14day	Negligible	Cholinesterase inhib		1hour	Critical	2853 ppm for 1 hour: threshold for lethality in rats	
1year	Negligible	Cholinesterase inhib		Furfural			98-01-1
Formaldehyde			50-00-0	8hour	Negligible	URT irr, eye irr	
10min	Negligible	NOAEL for eye irritation -sensitive human subjects		14day	Negligible	URT irr, eye irr	
1year	Negligible	Increased incidence nasal squamous metaplasia and hyperplasia; basal cell hyperplasia; rhinitis		Furfuryl alcohol			98-00-0
1hour	Negligible	NOAEL for eye irritation -sensitive human subjects		8hour	Negligible	URT irr, eye irr	
8hour	Negligible	NOAEL for eye irritation -sensitive human subjects		14day	Negligible	URT irr, eye irr	
10min	Marginal	Mild lacrimation with adaptation humans		1year	Negligible	URT irr, eye irr	
1hour	Marginal	Mild lacrimation with adaptation humans					
8hour	Marginal	Mild lacrimation with adaptation humans					
10min	Critical	Highest non-lethal value -rat					
1hour	Critical	Highest non-lethal value -rat					
8hour	Critical	Highest non-lethal value -rat					

Table E-1: Air MEG Health Effect Basis

CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
GA			77-81-6	GB			107-44-8
10min	Negligible	Based on relative potency from GB. Based on relative potency equal to that of agent GB (see Section 4.3 and M ioduszewski et al. [1998]).		10min	Negligible	EC50 for miosis observed in adult female SD rats exposed to a range of GB vapor concentrations (0.01-0.48 mg/m3) for 10 , 60, and 240 min; and miosis data from secondary and supportive studies with marmosets; and humans	
8hour	Negligible	Based on relative potency from GB. Based on relative potency equal to that of agent GB (see Section 4.3 and M ioduszewski et al. [1998]).		1hour	Negligible	EC50 for miosis observed in adult female SD rats exposed to a range of GB vapor concentrations (0.01-0.48 mg/m3) for 10 , 60, and 240 min; and miosis data from secondary and supportive studies with marmosets; and humans, EC50 for miosis observed in adult female SD rats exposed to a range of GB vapor concentrations (0.01-0.48 mg/m3) for 10, 60, and 240 min (Mioduszewski et al. 2002b) and miosis data from secondary and supportive studies with marmosets (van Helden et al. 20	
1hour	Negligible	Based on relative potency from GB. Based on relative potency equal to that of agent GB (see Section 4.3 and M ioduszewski et al. [1998]).					
24hour	Negligible	Based on relative potency from GB. Based on relative potency equal to that of agent GB (see Section 4.3 and M ioduszewski et al. [1998]).					
Gallium arsenide			1303-00-0				
8hour	Negligible	LRT irr		8hour	Negligible	EC50 for miosis observed in adult female SD rats exposed to a range of GB vapor concentrations (0.01-0.48 mg/m3) for 10 , 60, and 240 min; and miosis data from secondary and supportive studies with marmosets; and humans	
14day	Negligible	LRT irr					
1year	Negligible	LRT irr		24hour	Negligible	EC50 for miosis observed in adult female SD rats exposed to a range of GB vapor concentrations (0.01-0.48 mg/m3) for 10 , 60, and 240 min; and miosis data from secondary and supportive studies with marmosets; and humans	

Table E-1: Air MEG Health Effect Basis

CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
GD			96-64-0	GF			329-99-7
10min	Negligible	Based on relative potency from GB. Agents GD and GF are considered approximately twice as potent as agents GA and GB for causing miosis, and they are equipotent to each other. Thus, AEGL-1 and AEGL-2 values are estimated by multiplying each time-specific		10min	Negligible	Based on relative potency from GB. Agents GD and GF are considered approximately twice as potent as agents GA and GB for causing miosis, and they are equipotent to each other. Thus, AEGL-1 and AEGL-2 values are estimated by multiplying each time-specific	
1hour	Negligible	Based on relative potency from GB. Agents GD and GF are considered approximately twice as potent as agents GA and GB for causing miosis, and they are equipotent to each other. Thus, AEGL-1 and AEGL-2 values are estimated by multiplying each time-specific		1hour	Negligible	Based on relative potency from GB. Agents GD and GF are considered approximately twice as potent as agents GA and GB for causing miosis, and they are equipotent to each other. Thus, AEGL-1 and AEGL-2 values are estimated by multiplying each time-specific	
8hour	Negligible	Based on relative potency from GB. Agents GD and GF are considered approximately twice as potent as agents GA and GB for causing miosis, and they are equipotent to each other. Thus, AEGL-1 and AEGL-2 values are estimated by multiplying each time-specific		8hour	Negligible	Based on relative potency from GB. Agents GD and GF are considered approximately twice as potent as agents GA and GB for causing miosis, and they are equipotent to each other. Thus, AEGL-1 and AEGL-2 values are estimated by multiplying each time-specific	
24hour	Negligible	Based on relative potency from GB. Agents GD and GF are considered approximately twice as potent as agents GA and GB for causing miosis, and they are equipotent to each other. Thus, AEGL-1 and AEGL-2 values are estimated by multiplying each time-specific		24hour	Negligible	Based on relative potency from GB. Agents GD and GF are considered approximately twice as potent as agents GA and GB for causing miosis, and they are equipotent to each other. Thus, AEGL-1 and AEGL-2 values are estimated by multiplying each time-specific	
Germanium tetrahydride			7782-65-2	Glycidol			556-52-5
14day	Negligible	Hematologic eff		8hour	Negligible	URT irr, Eye irr, skin irr	
1year	Negligible	Hematologic eff		14day	Negligible	URT irr, Eye irr, skin irr	
1hour	Marginal	Arsine AEGL-2 values adopted as Germane AEGL-2 values		1year	Negligible	URT irr, Eye irr, skin irr	
1hour	Negligible	Arsine AEGL-2 values adopted as Germane AEGL-2 values		Glyoxal			107-22-2
8hour	Negligible	Arsine AEGL-2 values adopted as Germane AEGL-2 values		8hour	Negligible	larynx metaplasia, URT irr	
1hour	Critical	Arsine AEGL-3 values adopted as Germane AEGL-3 values		14day	Negligible	larynx metaplasia, URT irr	
				1year	Negligible	larynx metaplasia, URT irr	
				Graphite			7782-42-5
				8hour	Negligible	Pneumoconiosis	
				14day	Negligible	Pneumoconiosis	
				1year	Negligible	Pneumoconiosis	
				Gypsum			13397-24-5
				8hour	Negligible	Nasal symptoms	
				14day	Negligible	Nasal symptoms	
				1year	Negligible	Nasal symptoms	

Table E-1: Air MEG Health Effect Basis

CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Hafnium			7440-58-6	Heptachlor epoxide			1024-57-3
8hour	Negligible	eye irr, liver dam, URT irr		1year	Negligible	Tumor type: Hepatocellular carcinomas	
14day	Negligible	eye irr, liver dam, URT irr		8hour	Negligible	Liver dam	
1year	Negligible	eye irr, liver dam, URT irr		14day	Negligible	Liver dam	
Halothane			151-67-7	Heptane, n-			142-82-5
8hour	Negligible	Liver dam, CNS impair, vasodilation		1hour	Marginal	URT irr, CNS impair	
14day	Negligible	Liver dam, CNS impair, vasodilation		1hour	Negligible	URT irr, CNS impair	
1year	Negligible	Liver dam, CNS impair, vasodilation		8hour	Negligible	URT irr, CNS impair	
HCFC-141b			1717-00-6	14day	Negligible	URT irr, CNS impair	
1hour	Negligible	No effect in humans, This concentration was a NOAEL for irritation and cardiac, lung, and respiratory effects.		1year	Negligible	URT irr, CNS impair	
8hour	Negligible	This concentration was a NOAEL for irritation and cardiac, lung, and respiratory effects.		Hexachlorobenzene			118-74-1
1hour	Marginal	Threshold for cardiac arrhythmia in the dog. Response to challenge dose of epinephrine (cardiac sensitization test), The concentration of 5,200 ppm was chosen as the basis for the AEGL-2. This concentration is the threshold for cardiac sensitization in the dog.		8hour	Negligible	Porphyrin eff, skin dam, CNS impair	
1hour	Critical	Threshold for severe cardiac response in the dog (Hardy et al. 1989a)., Threshold for severe cardiac response in the dog. Response to challenge dose of epinephrine (cardiac sensitization test).		14day	Negligible	Porphyrin eff, skin dam, CNS impair	
				1year	Negligible	Porphyrin eff, skin dam, CNS impair	
HCFC-142b			75-68-3	Hexachlorobutadiene			87-68-3
1year	Negligible	No adverse effects		8hour	Negligible	Kidney dam	
HD			505-60-2	14day	Negligible	Kidney dam	
10min	Negligible	Conjunctival injection and minor discomfort with no functional decrement in human volunteers		1year	Negligible	Kidney dam	
1hour	Negligible	Conjunctival injection and minor discomfort with no functional decrement in human volunteers		Hexachlorocyclohexane, alpha-			319-84-6
8hour	Negligible	Conjunctival injection and minor discomfort with no functional decrement in human volunteers		1year	Negligible	Tumor type: Hepatic nodules and hepatocellular carcinomas	
24hour	Negligible	Conjunctival injection and minor discomfort with no functional decrement in human volunteers		Hexachlorocyclohexane, beta-			319-85-7
Heptachlor			76-44-8	1year	Negligible	Tumor type: Hepatic nodules and hepatocellular carcinomas	
1year	Negligible	Tumor type: Hepatocellular carcinomas		Hexachlorocyclohexane, technical			608-73-1
8hour	Negligible	Liver dam		1year	Negligible	Tumor type: Liver nodules and hepatocellular carcinomas	
14day	Negligible	Liver dam		Hexachlorocyclopentadiene			77-47-4
				1year	Negligible	Effects on lung Clara cells	
				14day	Negligible	Effects on lung Clara cells	
				8hour	Negligible	URT irr	
				Hexachloroethane			67-72-1
				8hour	Negligible	Liver dam, Kidney dam	
				14day	Negligible	Liver dam, Kidney dam	
				1year	Negligible	Tumor Type: Renal adenomas and carcinomas (combined)	
				Hexachloronaphthalene			1335-87-1
				8hour	Negligible	chloracne, Liver dam	
				14day	Negligible	chloracne, Liver dam	
				1year	Negligible	chloracne, Liver dam	

Table E-1: Air MEG Health Effect Basis

CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Hexafluoroacetone			684-16-2	Hexanone, 2-			591-78-6
1hour	Negligible	kidney dam, Testicular dam		1year	Negligible	Motor conduction velocity of the sciatic-tibial nerve	
8hour	Negligible	kidney dam, Testicular dam		8hour	Negligible	testicular dam, Peripheral neuropathy	
14day	Negligible	kidney dam, Testicular dam		14day	Negligible	testicular dam, Peripheral neuropathy	
1year	Negligible	kidney dam, Testicular dam					
1hour	Marginal	NOAEL for developmental effects in rats					
1hour	Critical	Lethality threshold estimated from rat LC50 data		Hexene			592-41-6
Hexafluoropropylene			116-15-4	8hour	Negligible	CNS impair	
1hour	Negligible	Absence of notable toxic effects in rats exposed to 140 ppm HFP for 4 hrs; UF = 3 x 5		14day	Negligible	CNS impair	
8hour	Negligible	Absence of notable toxic effects in rats exposed to 140 ppm HFP for 4 hrs; UF = 3 x 7		1year	Negligible	CNS impair	
14day	Negligible	Kidney dam		Hexyl acetate, sec-			108-84-9
1year	Negligible	Kidney dam		8hour	Negligible	Eye irr, URT irr	
1hour	Marginal	Reversible nephrosis and altered renal function in rats exposed to 320 ppm HFP for 4 hrs; UF = 3x 5		14day	Negligible	Eye irr, URT irr	
1hour	Critical	Rat BMCL05 of 1677 ppm HFP, 4 hr exposure; UF = 3 x 3.		1year	Negligible	Eye irr, URT irr	
Hexamethylene diamine			124-09-4	Hexyltrichlorosilane			928-65-4
8hour	Negligible	URT irr, skin irr		1hour	Negligible	HCl AEGL-1 values divided by a molar adjustment factor of 3 adopted as AEGL-1 values for Trichlorosilanes	
14day	Negligible	URT irr, skin irr		1hour	Marginal	HCl AEGL-2 values divided by a molar adjustment factor of 3 adopted as AEGL-2 values for Trichlorosilanes	
1year	Negligible	URT irr, skin irr		8hour	Negligible	HCl AEGL-1 values divided by a molar adjustment factor of 3 adopted as AEGL-1 values for Trichlorosilanes	
Hexamethylene diisocyanate			822-06-0	1hour	Critical	HCl AEGL-3 values divided by a molar adjustment factor of 3 adopted as AEGL-3 values for Trichlorosilanes	
1year	Negligible	Hemorrhage, inflammatory exudate epithelial changes in nasal cavity		HFC-134A			811-97-2
8hour	Negligible	Respiratory sens, URT irr		1hour	Negligible	No effects humans	
14day	Negligible	Respiratory sens, URT irr		1year	Negligible	Leydig cell hyperplasia	
Hexane, commercial			110-54-3	1hour	Marginal	No effect, cardiac sensitization dogs. Response to challenge dose of epinephrine (cardiac sensitization test)	
1year	Negligible	Peripheral neuropathology (decreased MCV at 12 weeks)		8hour	Negligible	No effects humans	
8hour	Negligible	CNS impair, Peripheral neuropathy, eye irr		1hour	Critical	Marked effect, cardiac sensitization dogs. Response to challenge dose of epinephrine (cardiac sensitization test)	
14day	Negligible	CNS impair, Peripheral neuropathy, eye irr		Hexane isom			
1hour	Marginal	No AEGL-2 effects in rats		8hour	Negligible	CNS impair, eye irr, URT irr	
1hour	Critical	No lethality in rats		14day	Negligible	CNS impair, eye irr, URT irr	
Hexane, other isomers				1year	Negligible	CNS impair, eye irr, URT irr	

Table E-1: Air MEG Health Effect Basis

CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Hydrazine			302-01-2	Hydrogen Fluoride			7664-39-3
10min	Negligible	Eye and facial irritation in monkeys		10min	Negligible	Threshold, pulmonary inflammation in humans	
1year	Negligible	Hemosiderosis		10min	Marginal	NOAEL for lung effects in cannulated rats (10-min AEGL-2 value); sensory irritation in dogs (30 min and 1-, 4-, and 8-h AEGL-2 values)	
1hour	Negligible	Eye and facial irritation in monkeys		1hour	Negligible	Threshold, pulmonary inflammation in humans	
8hour	Negligible	Eye and facial irritation in monkeys		8hour	Negligible	Threshold, pulmonary inflammation in humans	
10min	Marginal	Nasal lesions in rats		1hour	Marginal	NOAEL for lung effects in cannulated rats (10-min AEGL-2 value); sensory irritation in dogs (30 min and 1-, 4-, and 8-h AEGL-2 values)	
1hour	Marginal	Nasal lesions in rats		8hour	Marginal	NOAEL for lung effects in cannulated rats (10-min AEGL-2 value); sensory irritation in dogs (30 min and 1-, 4-, and 8-h AEGL-2 values)	
8hour	Marginal	Nasal lesions in rats		10min	Critical	Lethality threshold in cannulated rats (10-min AEGL-3 value); lethality threshold in mice (30-min and 1-, 4- and 8-h AEGL-3 values)	
10min	Critical	Lethality in rats		1hour	Critical	Lethality threshold in cannulated rats (10-min AEGL-3 value); lethality threshold in mice (30-min and 1-, 4- and 8-h AEGL-3 values)	
1hour	Critical	Lethality in rats		8hour	Critical	Lethality threshold in cannulated rats (10-min AEGL-3 value); lethality threshold in mice (30-min and 1-, 4- and 8-h AEGL-3 values)	
8hour	Critical	Lethality in rats		Hydrogen peroxide			7722-84-1
Hydrogen chloride			7647-01-0	8hour	Negligible	URT irr, skin irr, Eye irr	
10min	Negligible	NOAEL in exercising asthmatic subjects		14day	Negligible	URT irr, skin irr, Eye irr	
10min	Marginal	Mouse RD50; histopathology in rats		1year	Negligible	URT irr, skin irr, Eye irr	
1hour	Negligible	NOAEL in exercising asthmatic subjects		Hydrogen Selenide			7783-07-5
1year	Negligible	Hyperplasia of nasal mucosa larynx and trachea		10min	Marginal	1/3 of the AEGL-3 values	
8hour	Negligible	NOAEL in exercising asthmatic subjects		8hour	Negligible	URT irr, nausea, eye irr	
1hour	Marginal	Mouse RD50; histopathology in rats		14day	Negligible	URT irr, nausea, eye irr	
8hour	Marginal	Mouse RD50; histopathology in rats		1year	Negligible	URT irr, nausea, eye irr	
10min	Critical	Estimated NOEL for death from 1-h rat LC50		1hour	Marginal	1/3 of the AEGL-3 values	
1hour	Critical	Estimated NOEL for death from 1-h rat LC52		8hour	Marginal	1/3 of the AEGL-3 values	
8hour	Critical	Estimated NOEL for death from 1-h rat LC54		10min	Critical	1-hour LC01 calculated from data from an LC50 study in Wistar rats	
Hydrogen cyanide			74-90-8	1hour	Critical	1-hour LC01 calculated from data from an LC50 study in Wistar rats	
10min	Negligible	No adverse health effects humans		8hour	Critical	1-hour LC01 calculated from data from an LC50 study in Wistar rats	
1hour	Negligible	No adverse health effects humans					
1year	Negligible	decreased cauda epididymis					
8hour	Negligible	No adverse health effects humans					
10min	Marginal	Slight central nervous system depression monkey					
1hour	Marginal	Slight central nervous system depression monkey					
8hour	Marginal	Slight central nervous system depression monkey					
10min	Critical	Lethality (LC01) rat					
1hour	Critical	Lethality (LC01) rat					
8hour	Critical	Lethality (LC01) rat					

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CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Hydrogen sulfide			7783-06-4	Iron pentacarbonyl			13463-40-6
10min	Negligible	Headache in asthmatic humans		14day	Negligible	Pulm edema, CNS impair	
1hour	Negligible	Headache in asthmatic humans		1year	Negligible	Pulm edema, CNS impair	
1year	Negligible	Nasal lesions of the olfactory mucosa		8hour	Negligible	Based on a 3-fold reduction in the AEGL-3 values., Based upon a three fold reduction in the AEGL-3 values.	
8hour	Negligible	Headache in asthmatic humans		1hour	Marginal	Based on a 3-fold reduction in the AEGL-3 values., Based upon a three fold reduction in the AEGL-3 values.	
14day	Negligible	Headache in asthmatic humans		1hour	Critical	Estimated lethality threshold in rats (1.0 ppm determined by BMD analysis (BASF, 1995)., Estimated lethality threshold in rats (1.0 ppm determined by BMD analysis (BASF 1995). n = 1 or 3; uncertainty factor = 10 (3 for both interspecies variability, and individual variability	
10min	Marginal	Perivascular edema in rats					
1hour	Marginal	Perivascular edema in rats					
8hour	Marginal	Perivascular edema in rats					
10min	Critical	Highest concentration causing no mortality in the rat after a 1-hour exposure					
1hour	Critical	Highest concentration causing no mortality in the rat after a 1-hour exposure					
8hour	Critical	Highest concentration causing no mortality in the rat after a 1-hour exposure					
Hydrogenated terphenyls			61788-32-7	Iron salts, soluble			Fe salts
8hour	Negligible	Liver dam		8hour	Negligible	skin irr, URT irr	
14day	Negligible	Liver dam		14day	Negligible	skin irr, URT irr	
1year	Negligible	Liver dam		1year	Negligible	skin irr, URT irr	
Hydroquinone			123-31-9	Isoamyl acetate			123-92-2
8hour	Negligible	Eye irr, eye dam		8hour	Negligible	URT irr	
14day	Negligible	Eye irr, eye dam		14day	Negligible	URT irr	
1year	Negligible	Eye irr, eye dam		1year	Negligible	URT irr	
Indene			95-13-6	Isoamyl alcohol			123-51-3
1hour	Marginal	Liver dam		8hour	Negligible	Eye irr, URT irr	
1hour	Negligible	Liver dam		14day	Negligible	Eye irr, URT irr	
8hour	Negligible	Liver dam		1year	Negligible	Eye irr, URT irr	
14day	Negligible	Liver dam					
1year	Negligible	Liver dam		Isobutyl acetate			110-19-0
Indium and compounds			7440-74-6	1hour	Negligible	URT irr, Eye irr	
8hour	Negligible	malaise, pneumonitis, dental erosion, Pulm edema		8hour	Negligible	URT irr, Eye irr	
14day	Negligible	malaise, pneumonitis, dental erosion, Pulm edema		14day	Negligible	URT irr, Eye irr	
1year	Negligible	malaise, pneumonitis, dental erosion, Pulm edema		1year	Negligible	URT irr, Eye irr	
Iodine			7553-56-2	Isobutyl alcohol			78-83-1
8hour	Negligible	URT irr, Hypothyroidism		8hour	Negligible	eye irr, Skin irr	
14day	Negligible	URT irr, Hypothyroidism		14day	Negligible	eye irr, Skin irr	
1year	Negligible	URT irr, Hypothyroidism		1year	Negligible	eye irr, Skin irr	
Iodoform			75-47-8	Isobutyl chloroformate			543-27-1
8hour	Negligible	CNS impair		1hour	Marginal	By analogy to n-butyl chloroformate	
14day	Negligible	CNS impair		1hour	Critical	By analogy to n-butyl chloroformate	
1year	Negligible	CNS impair		Isobutyronitrile			78-82-0
				1hour	Marginal	No-effect-level in rats	
				1hour	Critical	Calculated 1-hr LC01 in rats	
				Isooctyl alcohol			26952-21-6
				8hour	Negligible	URT irr	
				14day	Negligible	URT irr	
				1year	Negligible	URT irr	

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CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Isopentane			78-78-4	Kerosene			8008-20-6
1hour	Marginal	Peripheral neuropathy		1hour	Negligible	Slight sensory irritation in humans (extrapolated from mouse RD50 test)	
1hour	Negligible	Peripheral neuropathy		1year	Negligible	Decreased blood glucose	
8hour	Negligible	Peripheral neuropathy		8hour	Negligible	Slight sensory irritation in humans (extrapolated from mouse RD50 test)	
14day	Negligible	Peripheral neuropathy		14day	Negligible	URT irr, Skin irr, CNS impair	
1year	Negligible	Peripheral neuropathy		1hour	Marginal	No clinical signs during repeated exposures to 1000 mg/m ³ - rats and mice; sensory irritation at greater than 3430 mg/m ³ - rats and mice	
Isophorone diisocyanate			4098-71-9	Kerosene, hydrodesulfurized			64742-81-0
8hour	Negligible	Respiratory sens		8hour	Negligible	Skin irr, URT irr, CNS impair	
14day	Negligible	Respiratory sens		14day	Negligible	Skin irr, URT irr, CNS impair	
1year	Negligible	Respiratory sens		1year	Negligible	Skin irr, URT irr, CNS impair	
Isopropanol			67-63-0	Ketene			463-51-4
8hour	Negligible	URT irr, CNS impair, Eye irr		1hour	Negligible	No effects at 1 ppm for 7 hours	
Isopropoxyethanol			109-59-1	1hour	Negligible	No effects at 1 ppm for 7 hours	
1year	Negligible	Hematologic eff		8hour	Negligible	No effects at 1 ppm for 7 hours	
8hour	Negligible	Hematologic eff		8hour	Negligible	No effects at 1 ppm for 7 hours	
14day	Negligible	Hematologic eff		14day	Negligible	No effects at 1 ppm for 7 hours	
Isopropyl acetate			108-21-4	1hour	Marginal	Possibility of severe lung damage at 12 ppm for 4.5 hours	
8hour	Negligible	Eye irr, CNS impair, URT irr		14day	Negligible	URT irr, pulm edema	
14day	Negligible	Eye irr, CNS impair, URT irr		1year	Negligible	URT irr, pulm edema	
1year	Negligible	Eye irr, CNS impair, URT irr		1hour	Marginal	Possibility of severe lung damage at 12 ppm for 4.5 hours	
Isopropyl chloroformate			108-23-6	1hour	Critical	No mortality at 12 ppm for 4.5 hours	
1hour	Marginal	1/3 the AEGL-3 values		1hour	Critical	No mortality at 12 ppm for 4.5 hours	
1hour	Critical	Estimated lethality threshold in the rat after a 1-hour exposure		Lead and compounds (inorganic)			7439-92-1
Isopropyl glycidyl ether			4016-14-2	8hour	Negligible	hematologic eff, CNS impair, PNS impair	
8hour	Negligible	dermatitis, URT irr, eye irr		14day	Negligible	hematologic eff, CNS impair, PNS impair	
14day	Negligible	dermatitis, URT irr, eye irr		1year	Negligible	hematologic eff, CNS impair, PNS impair	
1year	Negligible	dermatitis, URT irr, eye irr		Lead chromate			7758-97-6
Isopropylamine			75-31-0	8hour	Negligible	vasoconstriction, teratogenic eff, Male repro dam, vasoconstriction, Male repro dam, teratogenic eff	
8hour	Negligible	URT irr, eye dam		14day	Negligible	vasoconstriction, teratogenic eff, Male repro dam, vasoconstriction, Male repro dam, teratogenic eff	
14day	Negligible	URT irr, eye dam		1year	Negligible	vasoconstriction, teratogenic eff, Male repro dam, vasoconstriction, Male repro dam, teratogenic eff	
1year	Negligible	URT irr, eye dam		JP-4 jet fuel			50815-00-4
Isopropylaniline, N-			768-52-5	1year	Negligible	Fatty degeneration	
8hour	Negligible	MeHb-emia		Kaolin			1332-58-7
14day	Negligible	MeHb-emia		8hour	Negligible	Pneumoconiosis	
1year	Negligible	MeHb-emia		14day	Negligible	Pneumoconiosis	
JP-4 jet fuel			50815-00-4	1year	Negligible	Pneumoconiosis	
1year	Negligible	Fatty degeneration					
Kaolin			1332-58-7				
8hour	Negligible	Pneumoconiosis					
14day	Negligible	Pneumoconiosis					
1year	Negligible	Pneumoconiosis					

Table E-1: Air MEG Health Effect Basis

CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Lewisite			541-25-3	Methacrylaldehyde			78-85-3
10min	Marginal	1/3 of AEGL-3 values		1hour	Negligible	Eye blinking frequency in human subjects	
1hour	Marginal	1/3 of AEGL-3 values		8hour	Negligible	Eye blinking frequency in human subjects	
8hour	Marginal	1/3 of AEGL-3 values		1hour	Marginal	Sensory and respiratory tract irritation	
Lindane			58-89-9	1hour	Critical	1/3 lethal concentration of 77 ppm = 26 ppm	
8hour	Negligible	Liver dam, CNS impair		Methacrylic acid			79-41-4
14day	Negligible	Liver dam, CNS impair		1hour	Negligible	Inflammation; rhinitis, slight degeneration of olfactory epithelium rats	
1year	Negligible	Liver dam, CNS impair		8hour	Negligible	Inflammation; rhinitis, slight degeneration of olfactory epithelium rats	
Lithium hydride			7580-67-8	14day	Negligible	Inflammation; rhinitis, slight degeneration of olfactory epithelium rats	
8hour	Negligible	URT irr, Skin irr, Eye irr		1year	Negligible	Inflammation; rhinitis, slight degeneration of olfactory epithelium rats	
14day	Negligible	URT irr, Skin irr, Eye irr		1hour	Marginal	Inflammation, exudate and ulceration of olfactory epithelium rats and mice	
1year	Negligible	URT irr, Skin irr, Eye irr		1hour	Critical	BMCL05; respiratory failure at lethal concentration rats	
Malathion			121-75-5	Methacrylonitrile			126-98-7
1year	Negligible	Hyperplasia of olfactory and larynx epithelium		1hour	Negligible	Transient nasal, throat, or ocular irritation in humans	
1hour	Negligible	Sporadic clinical signs in rats		8hour	Negligible	Transient nasal, throat, or ocular irritation in humans	
8hour	Negligible	Sporadic clinical signs in rats		1hour	Marginal	AEGL-3 divided by 4	
14day	Negligible	Inhibition of RBC cholinesterase		1hour	Critical	Loss of consciousness, no mortality in rats	
1hour	Marginal	Clinical signs in rats		Methamidophos			10265-92-6
1hour	Critical	Highest experimental concentration		1hour	Negligible	No clinical signs	
Malononitrile			109-77-3	8hour	Negligible	No clinical signs	
1hour	Marginal	Derived by analogy to acetonitrile AEGL-2 values		1hour	Marginal	Clinical signs of tremor, reduced motility	
1hour	Critical	Derived by analogy to acetonitrile AEGL-3 values		Methane			74-82-8
Manganese cyclopentadienyl tricarbonyl			12079-65-1	8hour	Negligible	Card sens, CNS impair	
8hour	Negligible	Skin irr, CNS impair		14day	Negligible	Card sens, CNS impair	
14day	Negligible	Skin irr, CNS impair		1year	Negligible	Card sens, CNS impair	
1year	Negligible	Skin irr, CNS impair		Methanesulfonyl chloride			124-63-0
Mercury, alkyl compounds			Hg alkyl	1hour	Marginal	One third the AEGL-3 values	
8hour	Negligible	CNS impair, kidney dam, PNS impair		1hour	Critical	4-hour rat BMCL07	
14day	Negligible	CNS impair, kidney dam, PNS impair		Mesityl oxide			
1year	Negligible	CNS impair, kidney dam, PNS impair		8hour	Negligible	CNS impair, Eye irr, URT irr	
Mercury, aryl compounds			Hg aryl	14day	Negligible	CNS impair, Eye irr, URT irr	
8hour	Negligible	CNS impair, kidney dam		1year	Negligible	CNS impair, Eye irr, URT irr	
14day	Negligible	CNS impair, kidney dam		Methylaldehyde			
1year	Negligible	CNS impair, kidney dam		Methylamine			
Mercury, elemental			7439-97-6	Methylamine			
8hour	Negligible	kidney dam, CNS impair		Methylamine			
1hour	Marginal	No fetal effects in rats		Methylamine			
1hour	Critical	Estimated lethality threshold in rats		Methylamine			

Table E-1: Air MEG Health Effect Basis

CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Methanol			67-56-1	Methyl acrylate			96-33-3
8hour	Negligible	No headache or eye irritation		1hour	Negligible	Skin irr, URT irr, eye dam, Eye irr	
1hour	Negligible	No headache or eye irritation		8hour	Negligible	Skin irr, URT irr, eye dam, Eye irr	
1hour	Marginal	No developmental toxic effects in mice		14day	Negligible	Skin irr, URT irr, eye dam, Eye irr	
1hour	Critical	Lethality in humans after oral exposure		1year	Negligible	Skin irr, URT irr, eye dam, Eye irr	
Methomyl			16752-77-5	Methyl aniline, N-			100-61-8
8hour	Negligible	Cholinesterase inhib		8hour	Negligible	CNS impair, MeHb-emia	
14day	Negligible	Cholinesterase inhib		14day	Negligible	CNS impair, MeHb-emia	
1year	Negligible	Cholinesterase inhib		1year	Negligible	CNS impair, MeHb-emia	
Methoxychlor			72-43-5	Methyl bromide			74-83-9
8hour	Negligible	CNS impair, Liver dam		10min	Marginal	NOAEL for clinical signs- rat and dog	
14day	Negligible	CNS impair, Liver dam		8hour	Marginal	NOAEL for clinical signs- rat and dog	
1year	Negligible	CNS impair, Liver dam		10min	Critical	BMCL05 - rat	
Methoxyethanol, 2-			109-86-4	8hour	Critical	BMCL05 - rat	
8hour	Negligible	repro eff, Hematologic eff		Methyl chloride			74-87-3
14day	Negligible	repro eff, Hematologic eff		1year	Negligible	Cerebellar lesions	
1year	Negligible	repro eff, Hematologic eff		14day	Negligible	Cerebellar granule cell degeneration	
Methoxyethyl acetate, 2-			110-49-6	1hour	Marginal	NOAEL for clinical signs, tissue lesions in rats	
8hour	Negligible	repro eff, Hematologic eff		8hour	Negligible	Kidney dam, teratogenic eff, CNS impair, testicular dam, Liver dam	
14day	Negligible	repro eff, Hematologic eff		1hour	Critical	Threshold for lethality in rats	
1year	Negligible	repro eff, Hematologic eff		Methyl chlorocarbonate			79-22-1
Methoxyphenol, 4-			150-76-5	1hour	Marginal	1/3 the AEGL-3 values	
8hour	Negligible	skin dam, Eye irr		1hour	Critical	Estimated lethality threshold (BMCL05) in the rat after a 4-hour exposure	
14day	Negligible	skin dam, Eye irr		Methyl chlorosilane			68937-17-7
1year	Negligible	skin dam, Eye irr		8hour	Negligible	Hydrogen chloride (HCl) AEGL-1 values adopted as AEGL-1 values for Monochlorosilanes	
Methyl 2-cyanoacrylate			137-05-3	1hour	Negligible	Hydrogen chloride (HCl) AEGL-1 values adopted as AEGL-1 values for Monochlorosilanes	
8hour	Negligible	eye irr, URT irr		1hour	Marginal	Hydrogen chloride (HCl) AEGL-2 values adopted as AEGL-2 values for Monochlorosilanes	
14day	Negligible	eye irr, URT irr		1hour	Critical	Hydrogen chloride (HCl) AEGL-2 values adopted as AEGL-3 values for Monochlorosilanes	
1year	Negligible	eye irr, URT irr		Methyl cyclopentadienyl manganese tricarbonyl			12108-13-3
Methyl acetate			79-20-9	8hour	Negligible	CNS impair, Kidney dam, Lung dam, Liver dam	
8hour	Negligible	URT irr, eye irr, ocular nerve dam, Headache		14day	Negligible	CNS impair, Kidney dam, Lung dam, Liver dam	
14day	Negligible	URT irr, eye irr, ocular nerve dam, Headache		1year	Negligible	CNS impair, Kidney dam, Lung dam, Liver dam	
1year	Negligible	URT irr, eye irr, ocular nerve dam, Headache		Methyl acetylene-propadiene mixture			59355-75-8
Methyl acetylene			74-99-7	8hour	Negligible	CNS impair	
8hour	Negligible	CNS impair		14day	Negligible	CNS impair	
14day	Negligible	CNS impair		1year	Negligible	CNS impair	
1year	Negligible	CNS impair		Methyl acetylene-propadiene mixture			59355-75-8
8hour	Negligible	CNS impair		8hour	Negligible	CNS impair	
14day	Negligible	CNS impair		14day	Negligible	CNS impair	
1year	Negligible	CNS impair		1year	Negligible	CNS impair	

Table E-1: Air MEG Health Effect Basis

CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Methyl demeton			8022-00-2	Methyl iodide			74-88-4
8hour	Negligible	Cholinesterase inhib		8hour	Negligible	NOAEL for clinical signs/effects -rat	
14day	Negligible	Cholinesterase inhib		1hour	Negligible	NOAEL for clinical signs/effects -rat	
1year	Negligible	Cholinesterase inhib		1hour	Marginal	Reversible lesions of the nasal passages	
Methyl dichloroarsine			593-89-5	14day	Negligible	CNS impair, Eye dam	
1hour	Marginal	Estimated as 1/3 reduction of AEGL 3		1year	Negligible	CNS impair, Eye dam	
1hour	Critical	Lethality threshold estimated as 1/3 reduction of 7.5-min., 30-min., 60-min., and 120-min LC50 values for dogs		1hour	Critical	Lower limit of the 95% CL based on the rat toxicity data	
Methyl dichlorosilane			75-54-7	Methyl isoamyl ketone			110-12-3
8hour	Negligible	Modification of Hydrogen Chloride AEGL-1 values		8hour	Negligible	eye irr, URT irr, Liver dam, Kidney dam, CNS impair	
1hour	Negligible	Modification of Hydrogen Chloride AEGL-1 values		14day	Negligible	eye irr, URT irr, Liver dam, Kidney dam, CNS impair	
1hour	Marginal	Modification of Hydrogen Chloride AEGL-2 values		1year	Negligible	eye irr, URT irr, Liver dam, Kidney dam, CNS impair	
1hour	Critical	3 hour LC01 in rats		Methyl isobutyl carbinol			108-11-2
Methyl ethyl ketone			78-93-3	8hour	Negligible	CNS impair, URT irr, eye irr	
1hour	Negligible	NOAEL for subjective symptoms - humans		14day	Negligible	CNS impair, URT irr, eye irr	
8hour	Negligible	NOAEL for subjective symptoms - humans		1year	Negligible	CNS impair, URT irr, eye irr	
14day	Negligible	PNS impair, CNS impair, URT irr		Methyl isobutyl ketone			108-10-1
1hour	Marginal	Threshold for narcosis- rat		8hour	Negligible	dizziness, headache, URT irr	
1hour	Critical	Threshold for lethality- mouse, rat		14day	Negligible	dizziness, headache, URT irr	
Methyl formate			107-31-3	Methyl Isocyanate			624-83-9
8hour	Negligible	eye irr, LRT irr, URT irr		10min	Marginal	Decreased fetal body weights; cardiac arrhythmias	
14day	Negligible	eye irr, LRT irr, URT irr		1hour	Marginal	Decreased fetal body weights; cardiac arrhythmias	
1year	Negligible	eye irr, LRT irr, URT irr		14day	Negligible	URT irr	
Methyl Hydrazine			60-34-4	1year	Negligible	URT irr	
10min	Marginal	3-fold reduction in AEGL-3		8hour	Marginal	Decreased fetal body weights; cardiac arrhythmias	
1hour	Marginal	3-fold reduction in AEGL-5		8hour	Negligible	Decreased fetal body weights; cardiac arrhythmias	
8hour	Negligible	liver dam, eye irr, lung cancer, URT irr		10min	Critical	Decreased pup survival during lactation	
14day	Negligible	liver dam, eye irr, lung cancer, URT irr		1hour	Critical	Decreased pup survival during lactation	
1year	Negligible	liver dam, eye irr, lung cancer, URT irr		8hour	Critical	Decreased pup survival during lactation	
8hour	Marginal	3-fold reduction in AEGL-7					
10min	Critical	1-h LC50 of 82 ppm reduced 3-fold to estimate a lethality threshold; uncertainty factor = 10					
1hour	Critical	1-h LC50 of 82 ppm reduced 3-fold to estimate a lethality threshold; uncertainty factor = 12					
8hour	Critical	1-h LC50 of 82 ppm reduced 3-fold to estimate a lethality threshold; uncertainty factor = 14					

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CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Methyl isopropyl ketone			563-80-4	Methyl n-amyl ketone			110-43-0
1hour	Marginal	Embryo dam, fetal dam, neonatal toxicity		8hour	Negligible	Eye irr, skin irr	
1hour	Negligible	Embryo dam, fetal dam, neonatal toxicity		14day	Negligible	Eye irr, skin irr	
8hour	Negligible	Embryo dam, fetal dam, neonatal toxicity		1year	Negligible	Eye irr, skin irr	
14day	Negligible	Embryo dam, fetal dam, neonatal toxicity		Methyl parathion			298-00-0
1year	Negligible	Embryo dam, fetal dam, neonatal toxicity		1hour	Marginal	Derived by 3-fold reduction of the A EGL-3 values	
Methyl isothiocyanate			556-61-6	8hour	Negligible	Cholinesterase inhib	
1hour	Negligible	NOAEL for eye irritation at several time points humans		14day	Negligible	Cholinesterase inhib	
8hour	Negligible	NOAEL for eye irritation at several time points humans		1year	Negligible	Cholinesterase inhib	
1hour	Marginal	A EGL-3 values divided by 3; steep concentration response curve for lethality		1hour	Critical	Derived based upon a 4-hr BMCL05 of 66.6 mg/m ³ for lethality in rats; UF = 3 (intersp.) and 10 (intrasp.); n = 1 or 5	
1hour	Critical	1- and 4-hour highest non-lethal concentrations rat; The 10-minute through 1-hour and the 4- and 8-hour A EGL-3 values are based on different data sets.		Methyl tertiary butyl ether			1634-04-4
Methyl mercaptan			74-93-1	1year	Negligible	Hypoactivity, lack of startle response, blepharospasm	
1hour	Marginal	Shallow breathing and hypoactivity in mice		1hour	Negligible	NOAEL in human exposure at 50 ppm	
1hour	Critical	LC01 in rats		8hour	Negligible	NOAEL in human exposure at 50 ppm	
Methyl methacrylate			80-62-6	14day	Negligible	Increased incidence of ataxia and duck walk gait	
1hour	Negligible	No effect level for notable discomfort; no significant acute effects in workers exposed to 25-50 ppm up to 8 hours/d		1hour	Marginal	Ataxia, piloerection and decreased hindlimb strength with no loss of consciousness; NOEL for inability to escape at 4,000 ppm	
1hour	Marginal	No effect level for irreversible health effects; atrophy of olfactory epithelium up to complete demucosation rat		1hour	Critical	Calculated BMCL05 from LC50 data	
1year	Negligible	Degeneration/atrophy of olfactory epithelium (male rats)		Methyl vinyl ketone			98-94-4
8hour	Negligible	No effect level for notable discomfort; no significant acute effects in workers exposed to 25-50 ppm up to 8 hours/d		1hour	Negligible	NOAEL for respiratory tract irritatio	
14day	Negligible	No effect level for notable discomfort; no significant acute effects in workers exposed to 25-50 ppm up to 8 hours/d		8hour	Negligible	NOAEL for respiratory tract irritatio	
1hour	Critical	BMCL05 for lethality; severe breathing problems up to respiratory failure, rat		1hour	Marginal	LOAEL for respiratory tract irritatio	
				1hour	Critical	Lethality at 4 ppm	
				Methyl-5-nitroaniline, 2-			99-55-8
				8hour	Negligible	Liver dam	
				14day	Negligible	Liver dam	
				1year	Negligible	Liver dam	
				Methylal			109-87-5
				8hour	Negligible	Eye irr, CNS impair	
				14day	Negligible	Eye irr, CNS impair	
				1year	Negligible	Eye irr, CNS impair	
				Methylamine			74-89-5
				1hour	Negligible	Mild sensory (nasal) irritation in rat	
				8hour	Negligible	Mild sensory (nasal) irritation in rat	
				14day	Negligible	URT irr, Eye irr, Skin irr	
				1year	Negligible	URT irr, Eye irr, Skin irr	
				1hour	Marginal	Reversible nasal lesions in rats	
				1hour	Critical	LC01 in rats	

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CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Methylaniline, 2-			95-53-4	Methylenedianiline, 4,4'-			101-77-9
8hour	Negligible	MeHb-emia, kidney irr, bladder irr, bladder cancer, Eye irr		1hour	Negligible	Liver dam	
14day	Negligible	MeHb-emia, kidney irr, bladder irr, bladder cancer, Eye irr		8hour	Negligible	Liver dam	
1year	Negligible	MeHb-emia, kidney irr, bladder irr, bladder cancer, Eye irr		14day	Negligible	Liver dam	
Methylcyclohexane			108-87-2	Methylnaphthalene, 1-			90-12-0
8hour	Negligible	CNS impair, Kidney dam, URT irr, Liver dam		8hour	Negligible	LRT irr, lung dam	
14day	Negligible	CNS impair, Kidney dam, URT irr, Liver dam		14day	Negligible	LRT irr, lung dam	
1year	Negligible	CNS impair, Kidney dam, URT irr, Liver dam		1year	Negligible	LRT irr, lung dam	
Methylcyclohexanol			25639-42-3	Methylnaphthalene, 2-			91-57-6
8hour	Negligible	URT irr, eye irr		8hour	Negligible	lung dam, LRT irr	
14day	Negligible	URT irr, eye irr		14day	Negligible	lung dam, LRT irr	
1year	Negligible	URT irr, eye irr		1year	Negligible	lung dam, LRT irr	
Methylcyclohexanone, o-			583-60-8	Methylpropene, 2-			115-11-7
8hour	Negligible	CNS impair, eye irr, URT irr		8hour	Negligible	body weight eff, URT irr	
14day	Negligible	CNS impair, eye irr, URT irr		14day	Negligible	body weight eff, URT irr	
1year	Negligible	CNS impair, eye irr, URT irr		1year	Negligible	body weight eff, URT irr	
Methylene chloride			75-09-2	Methylstyrene, alpha-			98-83-9
1year	Negligible	Cytoplasmic vacuolization, fatty infiltration		8hour	Negligible	URT irr, female repro dam, kidney dam	
1hour	Negligible	No effect level for light-headedness difficulties in enunciation in human		14day	Negligible	URT irr, female repro dam, kidney dam	
14day	Negligible	Decreased critical flicker frequency and auditory vigilance		1year	Negligible	URT irr, female repro dam, kidney dam	
1hour	Marginal	Maximum of 4% COHb (NAC/AEGL draft TSD on CO)		Methyltrichlorosilane			75-79-6
8hour	Negligible	CNS impair, COHb-emia		8hour	Negligible	HCl AEGL-1 values divided by a molar adjustment factor of 3 adopted as AEGL-1 values for Trichlorosilanes	
1hour	Critical	No mortality in rats		1hour	Negligible	HCl AEGL-1 values divided by a molar adjustment factor of 3 adopted as AEGL-1 values for Trichlorosilanes	
Methylene diphenyl diisocyanate			101-68-8	1hour	Marginal	HCl AEGL-2 values divided by a molar adjustment factor of 3 adopted as AEGL-2 values for Trichlorosilanes	
8hour	Negligible	Respiratory sens		1hour	Critical	HCl AEGL-3 values divided by a molar adjustment factor of 3 adopted as AEGL-3 values for Trichlorosilanes	
14day	Negligible	Respiratory sens		Methylene-bis(2-chloroaniline), 4,4'-			101-14-4
Methylene-bis(2-chloroaniline), 4,4'-			101-14-4	Methylene-bis(4-cyclohexylisocyanate)			5124-30-1
8hour	Negligible	MeHb-emia, Bladder cancer		1hour	Negligible	Respiratory sens, LRT irr	
14day	Negligible	MeHb-emia, Bladder cancer		8hour	Negligible	Respiratory sens, LRT irr	
1year	Negligible	MeHb-emia, Bladder cancer		14day	Negligible	Respiratory sens, LRT irr	
Methylene-bis(4-cyclohexylisocyanate)			5124-30-1	1year	Negligible	Respiratory sens, LRT irr	
1hour	Negligible	Respiratory sens, LRT irr					
8hour	Negligible	Respiratory sens, LRT irr					
14day	Negligible	Respiratory sens, LRT irr					
1year	Negligible	Respiratory sens, LRT irr					

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CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Methylvinylchlorosilane			124-70-9	Naphthalene			91-20-3
1hour	Negligible	Hydrogen chloride (HCl) AEGL-1 values divided by a molar adjustment factor of 2 adopted as AEGL-1 values for Dichlorosilanes		1year	Negligible	Nasal effects: hyperplasia and metaplasia in respiratory and olfactory epithelium, respectively	
8hour	Negligible	Hydrogen chloride (HCl) AEGL-1 values divided by a molar adjustment factor of 2 adopted as AEGL-1 values for Dichlorosilanes		8hour	Negligible	URT irr	
1hour	Marginal	HCl AEGL-2 values divided by a molar adjustment factor of 2 adopted as AEGL-2 values for Dichlorosilanes		14day	Negligible	URT irr	
1hour	Critical	HCl AEGL-3 values divided by a molar adjustment factor of 2 adopted as AEGL-3 values for Dichlorosilanes		N-Ethylmorpholine			100-74-3
Metribuzin			21087-64-9	8hour	Negligible	URT irr, eye dam	
8hour	Negligible	hematologic eff, Liver dam		14day	Negligible	URT irr, eye dam	
14day	Negligible	hematologic eff, Liver dam		1year	Negligible	URT irr, eye dam	
1year	Negligible	hematologic eff, Liver dam		Nickel			7440-02-0
Mica			12001-26-2	8hour	Negligible	Dermatitis, pneumoconiosis	
8hour	Negligible	Pneumoconiosis		14day	Negligible	Dermatitis, pneumoconiosis	
14day	Negligible	Pneumoconiosis		1year	Negligible	Dermatitis, pneumoconiosis	
1year	Negligible	Pneumoconiosis		Nickel carbonyl			13463-39-3
Molybdenum			7439-98-7	1hour	Marginal	NOAEL for severe pulmonary damage in mice; 2.17 ppm, 30 min, NOAEL for severe pulmonary damage in mice; 2.17 ppm, 30 min.	
8hour	Negligible	LRT irr, LRT irr, LRT irr		1year	Negligible	Lung cancer, Nasal cancer	
14day	Negligible	LRT irr, LRT irr, LRT irr		1hour	Critical	Estimated mouse lethality threshold (LC01 of 3.17 ppm, Estimated mouse lethality threshold (LC01 of 3.17 ppm)	
1year	Negligible	LRT irr, LRT irr, LRT irr		Nickel compounds			Ni cmpds
Monocrotophos			6923-22-4	1year	Negligible	Chronic lung inflammation, interstitial infiltrates	
8hour	Negligible	Cholinesterase inhib		Nickel insoluble inorganic compounds			Ni insol inorg
14day	Negligible	Cholinesterase inhib		8hour	Negligible	Lung cancer	
1year	Negligible	Cholinesterase inhib		14day	Negligible	Lung cancer	
Monomethylamine			74-89-5	1year	Negligible	Lung cancer	
10min	Negligible	Mild sensory (nasal) irritation in rat		Nickel refinery dust			Ni ref dust
10min	Marginal	Reversible nasal lesions in rats		1year	Negligible	Tumor type: Lung cancer	
8hour	Marginal	Reversible nasal lesions in rats		Nickel subsulfide			12035-72-2
10min	Critical	LC01 in rats		1year	Negligible	Tumor type: Lung cancer	
8hour	Critical	LC01 in rats		8hour	Negligible	Lung cancer	
Morpholine			110-91-8	14day	Negligible	Lung cancer	
8hour	Negligible	Eye dam, URT irr		Nickel, soluble salts			Ni sol salts
14day	Negligible	Eye dam, URT irr		8hour	Negligible	nasal cancer, Lung dam	
1year	Negligible	Eye dam, URT irr		14day	Negligible	nasal cancer, Lung dam	
Naled			300-76-5	1year	Negligible	nasal cancer, Lung dam	
8hour	Negligible	Cholinesterase inhib		Nicotine			54-11-5
14day	Negligible	Cholinesterase inhib		8hour	Negligible	GI dam, card impair, CNS impair	
1year	Negligible	Cholinesterase inhib		14day	Negligible	GI dam, card impair, CNS impair	
				1year	Negligible	GI dam, card impair, CNS impair	

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CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Nitrapyrin			1929-82-4	Nitrogen Dioxide			10102-44-0
8hour	Negligible	Liver dam		10min	Negligible	Slight burning of the eyes, slight headache, chest tightness or labored breathing with exercise in 7/13 asthmatics; some effects may be delayed.	
14day	Negligible	Liver dam		1hour	Negligible	Slight burning of the eyes, slight headache, chest tightness or labored breathing with exercise in 7/13 asthmatics; some effects may be delayed.	
1year	Negligible	Liver dam		8hour	Negligible	Slight burning of the eyes, slight headache, chest tightness or labored breathing with exercise in 7/13 asthmatics; some effects may be delayed.	
Nitric acid			7697-37-2	14day	Negligible	Slight burning of the eyes, slight headache, chest tightness or labored breathing with exercise in 7/13 asthmatics; some effects may be delayed.	
10min	Negligible	NOAEL for changes in pulmonary function in humans		1year	Negligible	Slight burning of the eyes, slight headache, chest tightness or labored breathing with exercise in 7/13 asthmatics; some effects may be delayed.	
1hour	Negligible	NOAEL for changes in pulmonary function in humans		10min	Marginal	burning sensation in nose and chest cough, dyspnea, sputum production in normal volunteers; some effects may be delayed	
8hour	Negligible	NOAEL for changes in pulmonary function in humans		1hour	Marginal	burning sensation in nose and chest cough, dyspnea, sputum production in normal volunteers; some effects may be delayed	
14day	Negligible	NOAEL for changes in pulmonary function in humans		8hour	Marginal	burning sensation in nose and chest cough, dyspnea, sputum production in normal volunteers; some effects may be delayed	
1year	Negligible	NOAEL for changes in pulmonary function in humans		10min	Critical	Marked irritation; histopath in lungs; fibrosis and edema of cardiac tissue; necrosis in liver; no deaths in monkeys; some effects may be delayed	
10min	Marginal	Transient weight loss in rats 1-2 days after a 1-hour exposure to 47C ppm		1hour	Critical	Marked irritation; histopath in lungs; fibrosis and edema of cardiac tissue; necrosis in liver; no deaths in monkeys; some effects may be delayed	
1hour	Marginal	Transient weight loss in rats 1-2 days after a 1-hour exposure to 47C ppm		8hour	Critical	Marked irritation; histopath in lungs; fibrosis and edema of cardiac tissue; necrosis in liver; no deaths in monkeys; some effects may be delayed	
8hour	Marginal	Transient weight loss in rats 1-2 days after a 1-hour exposure to 47C ppm					
10min	Critical	Estimated LC01 from lethality data in rats					
1hour	Critical	Estimated LC01 from lethality data in rats					
8hour	Critical	Estimated LC01 from lethality data in rats					
Nitroaniline, 2-			88-74-4				
1year	Negligible	Irritation					
Nitroaniline, 4-			100-01-6				
8hour	Negligible	liver dam, MeHb-emia, eye irr					
14day	Negligible	liver dam, MeHb-emia, eye irr					
1year	Negligible	liver dam, MeHb-emia, eye irr					
Nitrobenzene			98-95-3				
8hour	Negligible	MeHb-emia					
14day	Negligible	MeHb-emia					
Nitroethane			79-24-3				
1hour	Negligible	liver dam, CNS impair, URT irr					
8hour	Negligible	liver dam, CNS impair, URT irr					
14day	Negligible	liver dam, CNS impair, URT irr					
1year	Negligible	liver dam, CNS impair, URT irr					

Table E-1: Air MEG Health Effect Basis

CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Nitrogen mustard			538-07-8	Nitrosodimethylamine, N-			62-75-9
1hour	Marginal	Threshold for ocular irritation in humans sufficient to compromise operational effectiveness		1year	Negligible	Tumor type: Liver tumors	
1hour	Critical	Lethality threshold in rats estimated as 3-fold reduction of LCt50 values		Nitroso-di-n-butylamine, N-			924-16-3
Nitrogen tetroxide			10544-72-6	1year	Negligible	Tumor type: Bladder and esophagu tumors	
1hour	Negligible	Analogy to NO4		Nitrosopyrrolidine, N-			930-55-2
8hour	Negligible	Analogy to NO6		1year	Negligible	Tumor type: Hepatocellular carcinoma and adenoma	
1hour	Marginal	Analogy to NO4		Nitrotoluene, m-			99-08-1
1hour	Critical	Analogy to NO4		8hour	Negligible	MeHb-emia	
Nitrogen trifluoride			7783-54-2	14day	Negligible	MeHb-emia	
1hour	Negligible	Less than or equal to 15% MetHb: 60-minute exposure of dogs and monkeys to 2000 ppm		1year	Negligible	MeHb-emia	
8hour	Negligible	Less than or equal to 15% MetHb: 60-minute exposure of dogs and monkeys to 2000 ppm		Nitrotoluene, o-			88-72-2
1hour	Marginal	Estimated 43% MetHb: midpoint of AEGL-1 and AEGL-3, dog data		8hour	Negligible	MeHb-emia	
14day	Negligible	Kidney dam, MeHb-emia, Liver darr		14day	Negligible	MeHb-emia	
1year	Negligible	Kidney dam, MeHb-emia, Liver darr		1year	Negligible	MeHb-emia	
1hour	Critical	Regression analysis of dog lethality data of Vernot et al. (1973) calculated with the ten Berge program (2006)		Nitrotoluene, p-			99-99-0
Nitroglycerin			55-63-0	8hour	Negligible	MeHb-emia	
1hour	Negligible	Vasodilation		14day	Negligible	MeHb-emia	
8hour	Negligible	Vasodilation		1year	Negligible	MeHb-emia	
14day	Negligible	Vasodilation		Nitrous oxide			10024-97-2
1year	Negligible	Vasodilation		8hour	Negligible	embryo/fetal dam, hematologic eff, CNS impair	
Nitromethane			75-52-5	14day	Negligible	embryo/fetal dam, hematologic eff, CNS impair	
1year	Negligible	Fibroadenoma, adenoma, and carcinoma		1year	Negligible	embryo/fetal dam, hematologic eff, CNS impair	
8hour	Negligible	URT irr, Thyroid eff, lung dam		Nonane			111-84-2
14day	Negligible	URT irr, Thyroid eff, lung dam		1year	Negligible	Marginally depressed body weight	
Nitrophenol, 2-			88-75-5	8hour	Negligible	CNS impair	
1year	Negligible	Squamous metaplasia of the nasal epithelium		14day	Negligible	CNS impair	
Nitropropane, 1-			108-03-2	Nonyltrichlorosilane			5283-67-0
8hour	Negligible	URT irr, eye irr, liver dam		1hour	Negligible	HCl AEGL-1 values divided by a molar adjustment factor of 3 adopted as AEGL-1 values for Trichlorosilanes	
14day	Negligible	URT irr, eye irr, liver dam		8hour	Negligible	HCl AEGL-1 values divided by a molar adjustment factor of 3 adopted as AEGL-1 values for Trichlorosilanes	
1year	Negligible	URT irr, eye irr, liver dam		1hour	Marginal	HCl AEGL-2 values divided by a molar adjustment factor of 3 adopted as AEGL-2 values for Trichlorosilanes	
Nitropropane, 2-			79-46-9	1hour	Critical	HCl AEGL-3 values divided by a molar adjustment factor of 3 adopted as AEGL-3 values for Trichlorosilanes	
8hour	Negligible	liver cancer, Liver dam		Nitrosodiethylamine, N-			
14day	Negligible	liver cancer, Liver dam		1year	Negligible	Tumor type: Liver tumors	
Nitrosodiethylamine, N-			55-18-5				
1year	Negligible	Tumor type: Liver tumors					

Table E-1: Air MEG Health Effect Basis

CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Octachloronaphthalene			2234-13-1	Osmium tetroxide			20816-12-0
8hour	Negligible	Liver dam		1hour	Marginal	Lower limit of occupational exposure (0.02 ppm for 2 hrs) producing reversible ocular irritation and headache; UF =3; Cnxt=k, where n = 1 or 5	
14day	Negligible	Liver dam		8hour	Negligible	skin irr, Eye irr, URT irr	
1year	Negligible	Liver dam		14day	Negligible	skin irr, Eye irr, URT irr	
Octadecyltrichlorosilane			112-04-9	1year	Negligible	skin irr, Eye irr, URT irr	
1hour	Negligible	HCl AEGL-1 values divided by a molar adjustment factor of 3 adopted as AEGL-1 values for Trichlorosilanes		1hour	Critical	No-effect level for lethality (20 ppm 8 hrs) in rats and mice; UF =3 x 3; Cnxt=k, where n=3.	
8hour	Negligible	HCl AEGL-1 values divided by a molar adjustment factor of 3 adopted as AEGL-1 values for Trichlorosilanes		Oxalic acid			144-62-7
1hour	Marginal	HCl AEGL-2 values divided by a molar adjustment factor of 3 adopted as AEGL-2 values for Trichlorosilanes		8hour	Negligible	skin irr, Eye irr, URT irr	
1hour	Critical	HCl AEGL-3 values divided by a molar adjustment factor of 3 adopted as AEGL-3 values for Trichlorosilanes		14day	Negligible	skin irr, Eye irr, URT irr	
Octane			111-65-9	1year	Negligible	skin irr, Eye irr, URT irr	
1hour	Negligible	URT irr		Oxybis(benzenesulfonyl hydrazide), 4,4'-			80-51-3
8hour	Negligible	URT irr		8hour	Negligible	Teratogenic eff	
14day	Negligible	URT irr		14day	Negligible	Teratogenic eff	
1year	Negligible	URT irr		1year	Negligible	Teratogenic eff	
Octyltrichlorosilane			5283-66-9	Oxygen difluoride			7783-41-7
1hour	Negligible	HCl AEGL-1 values divided by a molar adjustment factor of 3 adopted as AEGL-1 values for Trichlorosilanes		1hour	Marginal	One-third reduction of AEGL-5	
8hour	Negligible	HCl AEGL-1 values divided by a molar adjustment factor of 3 adopted as AEGL-1 values for Trichlorosilanes		1hour	Critical	1-h BMCL05 of 7.48 ppm for rhesus monkeys; total UF=3; time scaling n =1.	
1hour	Marginal	HCl AEGL-2 values divided by a molar adjustment factor of 3 adopted as AEGL-2 values for Trichlorosilanes		Ozone			10028-15-6
1hour	Critical	HCl AEGL-3 values divided by a molar adjustment factor of 3 adopted as AEGL-3 values for Trichlorosilanes		1hour	Negligible	Pulm func, Pulm func, Pulm func, Pulm func	
Oil mist, mineral			8012-95-1	8hour	Negligible	Pulm func, Pulm func, Pulm func, Pulm func	
8hour	Negligible	URT irr, URT irr		Paraffin wax fume			8002-74-2
14day	Negligible	URT irr, URT irr		8hour	Negligible	nausea, URT irr	
1year	Negligible	URT irr, URT irr		14day	Negligible	nausea, URT irr	
Oleum			8014-95-7	1year	Negligible	nausea, URT irr	
1hour	Negligible	Respiratory irritation in humans		Paraquat			4685-14-7
8hour	Negligible	Respiratory irritation in humans		8hour	Negligible	Lung dam, Lung dam	
1hour	Critical	Lethality in mice		14day	Negligible	Lung dam, Lung dam	
				1year	Negligible	Lung dam, Lung dam	

Table E-1: Air MEG Health Effect Basis

CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Parathion			56-38-2	Pentane, n-			109-66-0
10min	Marginal	BMC01 (28.9 mg/m ³) for tremors in rats exposed for 4 hrs; UF= 3 x 10; r = 1 or 3		1hour	Marginal	Peripheral neuropathy	
1hour	Marginal	BMC01 (28.9 mg/m ³) for tremors in rats exposed for 4 hrs; UF= 3 x 10; r = 1 or 5		1hour	Negligible	Peripheral neuropathy	
8hour	Marginal	BMC01 (28.9 mg/m ³) for tremors in rats exposed for 4 hrs; UF= 3 x 10; r = 1 or 7		8hour	Negligible	Peripheral neuropathy	
8hour	Negligible	Cholinesterase inhib		14day	Negligible	Peripheral neuropathy	
14day	Negligible	Cholinesterase inhib		Peracetic acid			79-21-0
1year	Negligible	Cholinesterase inhib		1hour	Negligible	Threshold for irritation	
10min	Critical	BMC01 (37.5 mg/m ³) for lethality in rats exposed for 4 hrs; UF= 3 x 10; r = 1 or 3		8hour	Negligible	Threshold for irritation	
1hour	Critical	BMC01 (37.5 mg/m ³) for lethality in rats exposed for 4 hrs; UF= 3 x 10; r = 1 or 5		1hour	Marginal	Mild irritation	
8hour	Critical	BMC01 (37.5 mg/m ³) for lethality in rats exposed for 4 hrs; UF= 3 x 10; r = 1 or 7		1hour	Critical	Highest concentration causing no deaths	
Pentaborane			19624-22-7	Perchloroethylene			127-18-4
1hour	Marginal	NOEL for CNS toxicity in dogs		1year	Negligible	Increased reaction times	
1hour	Critical	Lethality threshold (BMCL05) for rats		14day	Negligible	Increased latency of pattern reversal visual-evoked potential; performance deficit for vigilance and eye-hand coordination	
8hour	Negligible	CNS convul, CNS impair		Perchloromethyl mercaptan			594-42-3
14day	Negligible	CNS convul, CNS impair		1hour	Negligible	Nasal epithelial changes in rats exposed to 0.13 ppm for 6 hr/d, 5 d/wk for 2 weeks	
1year	Negligible	CNS convul, CNS impair		8hour	Negligible	Nasal epithelial changes in rats exposed to 0.13 ppm for 6 hr/d, 5 d/wk for 2 weeks	
Pentachloronaphthalene			1321-64-8	14day	Negligible	Nasal epithelial changes in rats exposed to 0.13 ppm for 6 hr/d, 5 d/wk for 2 weeks	
8hour	Negligible	Liver dam, chloracne		1year	Negligible	Nasal epithelial changes in rats exposed to 0.13 ppm for 6 hr/d, 5 d/wk for 2 weeks	
14day	Negligible	Liver dam, chloracne		1hour	Marginal	1/3 the AEGL-3 values	
1year	Negligible	Liver dam, chloracne		1hour	Critical	No mortality in rats exposed to 9 ppm for 1 hour	
Pentachloronitrobenzene			82-68-8	Perfluorobutyl ethylene			19430-93-4
8hour	Negligible	Liver dam		8hour	Negligible	Hematologic eff	
14day	Negligible	Liver dam		14day	Negligible	Hematologic eff	
1year	Negligible	Liver dam		1year	Negligible	Hematologic eff	
Pentachlorophenol			87-86-5	Persulfates			persulfate
8hour	Negligible	card impair, CNS impair, URT irr, ey irr		8hour	Negligible	Skin irr	
14day	Negligible	card impair, CNS impair, URT irr, ey irr		14day	Negligible	Skin irr	
1year	Negligible	card impair, CNS impair, URT irr, ey irr		1year	Negligible	Skin irr	
Pentaerythritol			115-77-5	Phenol			108-95-2
8hour	Negligible	Eye irr, URT irr		1hour	Negligible	No effects in rats	
14day	Negligible	Eye irr, URT irr		8hour	Negligible	No effects in rats	
1year	Negligible	Eye irr, URT irr		1hour	Marginal	Irritation and CNS depression in rat	
				14day	Negligible	CNS impair, URT irr, lung dam	
				1year	Negligible	CNS impair, URT irr, lung dam	

Table E-1: Air MEG Health Effect Basis

CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Phenothiazine			92-84-2	Phenylenediamine, p-			106-50-3
8hour	Negligible	Eye photosen, skin irr		8hour	Negligible	Skin sens, URT irr	
14day	Negligible	Eye photosen, skin irr		14day	Negligible	Skin sens, URT irr	
1year	Negligible	Eye photosen, skin irr		1year	Negligible	Skin sens, URT irr	
Phenyl chloroformate			1885-14-9	Phenylhydrazine			100-63-0
1hour	Marginal	1/3 the AEGL-3 values		8hour	Negligible	URT irr, Anemia, skin irr	
1hour	Critical	4-hr rat BMCL07		14day	Negligible	URT irr, Anemia, skin irr	
Phenyl dichloroarsine			696-28-6	Phorate			298-02-2
1hour	Marginal	Estimated as 1/3 reduction of AEGL 3		1hour	Marginal	Derived by 3-fold reduction of the AEGL-3 values	
1hour	Critical	Estimated lethality threshold in mic		1hour	Negligible	Derived by 3-fold reduction of the AEGL-3 values	
Phenyl ether vapor			101-84-8	Phosdrin			7786-34-7
8hour	Negligible	URT irr, eye irr, nausea		8hour	Negligible	Cholinesterase inhib	
14day	Negligible	URT irr, eye irr, nausea		14day	Negligible	Cholinesterase inhib	
1year	Negligible	URT irr, eye irr, nausea		1year	Negligible	Cholinesterase inhib	
Phenyl glycidyl ether			122-60-1	Phosgene			75-44-5
8hour	Negligible	Testicular dam		10min	Marginal	Chemical pneumonia	
14day	Negligible	Testicular dam		1year	Negligible	Collagen staining indicative of fibrosis	
1year	Negligible	Testicular dam		1hour	Marginal	Chemical pneumonia	
Phenyl isocyanate.			103-71-9	Phosgene			75-44-5
1hour	Negligible	Exposure of rats to 0.2 ppm for 45 min.; threshold for respiratory tract irritation; UF=3x3; no time scaling		8hour	Marginal	Chemical pneumonia	
8hour	Negligible	Exposure of rats to 0.2 ppm for 45 min.; threshold for respiratory tract irritation; UF=3x3; no time scaling		8hour	Negligible	Chemical pneumonia	
1hour	Marginal	Multiple 6-hr exposures of rats to 0.8 ppm; exposure level was a no-effect level for AEGL-2 severity; UF=3x3; n=1 or 5		10min	Critical	The highest concentration causing no mortality in the rat after a 10-min exposure (36 ppm) was utilized for the 10-min value.	
1hour	Critical	3-fold reduction of rat 4-hr LC50 (4.6 ppm/3=1.5 ppm) as an estimate of the lethality threshold; UF=3x3, n=1 or 5		1hour	Critical	The highest concentration causing no mortality in the rat after a 30-min exposure 30-min experimental no-effect-level for death (15 ppm) was used as a threshold for death in rats for the 30-min, 1-, 4-, and 8-h values.	
Phenyl mercaptan			108-98-5	Phosgene			75-44-5
1hour	Marginal	3-fold reduction of AEGL-3 values		8hour	Critical	The highest concentration causing no mortality in the rat after a 30-min exposure 30-min experimental no-effect-level for death (15 ppm) was used as a threshold for death in rats for the 30-min, 1-, 4-, and 8-h values.	
1hour	Negligible	skin irr, CNS impair, eye irr		Phenylenediamine, m-			108-45-2
8hour	Negligible	skin irr, CNS impair, eye irr		8hour	Negligible	skin irr, Liver dam	
14day	Negligible	skin irr, CNS impair, eye irr		14day	Negligible	skin irr, Liver dam	
1year	Negligible	skin irr, CNS impair, eye irr		1year	Negligible	skin irr, Liver dam	
1hour	Critical	LC01 in rats		Phenylenediamine, o-			95-54-5
Phenylenediamine, m-			108-45-2	Phenylenediamine, o-			95-54-5
8hour	Negligible	skin irr, Liver dam		8hour	Negligible	Anemia	
14day	Negligible	skin irr, Liver dam		14day	Negligible	Anemia	
1year	Negligible	skin irr, Liver dam		1year	Negligible	Anemia	

Table E-1: Air MEG Health Effect Basis

CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Phosphine			7803-51-2	Phthalic anhydride			85-44-9
1year	Negligible	Decreased body weight		8hour	Negligible	Eye irr, skin irr, URT irr	
1hour	Marginal	Red mucoid nasal discharge in rats exposed to 10 ppm of phosphine fo 6 h		14day	Negligible	Eye irr, skin irr, URT irr	
8hour	Negligible	headache, CNS impair, URT irr, GI ir		Phthalodinitrile, m-			626-17-5
14day	Negligible	headache, CNS impair, URT irr, GI irr		8hour	Negligible	Eye irr, URT irr	
1hour	Critical	Concentration causing no death in rats exposed to 18 ppm of phosphine for 6 h		14day	Negligible	Eye irr, URT irr	
				1year	Negligible	Eye irr, URT irr	
Phosphoric acid			7664-38-2	Picloram			1918-02-1
1year	Negligible	Bronchiolar fibrosis		8hour	Negligible	Liver dam, Kidney dam	
8hour	Negligible	URT irr, Eye irr, skin irr		14day	Negligible	Liver dam, Kidney dam	
14day	Negligible	URT irr, Eye irr, skin irr		1year	Negligible	Liver dam, Kidney dam	
Phosphorous Oxychloride			10025-87-3	Picric acid			88-89-1
8hour	Negligible	URT irr		8hour	Negligible	Skin sens, dermatitis, eye irr	
14day	Negligible	URT irr		14day	Negligible	Skin sens, dermatitis, eye irr	
1year	Negligible	URT irr		1year	Negligible	Skin sens, dermatitis, eye irr	
1hour	Critical	Estimate of lethality threshold in rats (16.1 ppm) based upon 3-fold reduction in 4-hr LC50 of 48.4 ppm.		Pindone			83-26-1
Phosphorous Trichloride			7719-12-2	8hour	Negligible	Coagulation	
14day	Negligible	Eye irr, URT irr, skin irr		14day	Negligible	Coagulation	
1year	Negligible	Eye irr, URT irr, skin irr		1year	Negligible	Coagulation	
Phosphorus			7723-14-0	Pinene, alpha-			80-56-8
1hour	Marginal	Mild pulmonary congestion in mic		8hour	Negligible	CNS impair, lung dam, skin irr, URT irr	
Phosphorus (yellow)			0-143*	14day	Negligible	CNS impair, lung dam, skin irr, URT irr	
8hour	Negligible	LRT irr, GI irr, URT irr, liver dam		1year	Negligible	CNS impair, lung dam, skin irr, URT irr	
14day	Negligible	LRT irr, GI irr, URT irr, liver dam		Piperidine			110-89-4
1year	Negligible	LRT irr, GI irr, URT irr, liver dam		1hour	Negligible	NOEL for nasal irritation	
Phosphorus oxychloride			10025-87-3	8hour	Negligible	NOEL for nasal irritation	
10min	Critical	Estimate of lethality threshold in rats (16.1 ppm) based upon 3-fold reduction in 4-hr LC50 of 48.4 ppm.		1hour	Marginal	nasal irritation	
8hour	Critical	Estimate of lethality threshold in rats (16.1 ppm) based upon 3-fold reduction in 4-hr LC50 of 48.4 ppm.		1hour	Critical	threshold for lethality	
Phosphorus pentachloride			10026-13-8	Platinum, metal			7440-06-4
8hour	Negligible	URT irr, eye irr		8hour	Negligible	Asthma, URT irr	
14day	Negligible	URT irr, eye irr		14day	Negligible	Asthma, URT irr	
1year	Negligible	URT irr, eye irr		1year	Negligible	Asthma, URT irr	
Phosphorus pentasulfide			1314-80-3	Platinum, soluble salts			Pt sol salts
8hour	Negligible	URT irr		8hour	Negligible	URT irr, Asthma	
14day	Negligible	URT irr		14day	Negligible	URT irr, Asthma	
1year	Negligible	URT irr		1year	Negligible	URT irr, Asthma	
Phosphorus, white			12185-10-3	Polychlorinated biphenyls			1336-36-3
14day	Negligible	Coughing, throat irritation during talking		1year	Negligible	Tumor type: Liver hepatocellular adenomas, carcinomas, cholangiomas, or cholangiocarcinomas	

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CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Polyvinyl chloride			9002-86-2	Propionic acid			79-09-4
1year	Negligible	pulm function changes, LRT irr, Pneumoconiosis		8hour	Negligible	URT irr, Skin irr, Eye irr	
8hour	Negligible	pulm function changes, LRT irr, Pneumoconiosis		14day	Negligible	URT irr, Skin irr, Eye irr	
14day	Negligible	pulm function changes, LRT irr, Pneumoconiosis		1year	Negligible	URT irr, Skin irr, Eye irr	
Portland cement			65997-15-1	Propionitrile			107-12-0
8hour	Negligible	asthma, resp symptoms, Pulm func		1hour	Marginal	Headache, nausea, vomiting, dizziness, confusion in a human subject	
14day	Negligible	asthma, resp symptoms, Pulm func		1hour	Critical	Highest concentration causing no death in rats	
1year	Negligible	asthma, resp symptoms, Pulm func		Propyl acetate, n-			109-60-4
Propane			74-98-6	8hour	Negligible	Eye irr, URT irr	
8hour	Negligible	CNS depression		14day	Negligible	Eye irr, URT irr	
1hour	Negligible	CNS depression		1year	Negligible	Eye irr, URT irr	
1hour	Marginal	Cardiac sensitization		Propyl alcohol, n-			71-23-8
14day	Negligible	Card sens, CNS impair		8hour	Negligible	Eye irr, URT irr	
1year	Negligible	Card sens, CNS impair		14day	Negligible	Eye irr, URT irr	
1hour	Critical	Cardiac sensitization		1year	Negligible	Eye irr, URT irr	
Propargyl alcohol			107-19-7	Propyl chlorocarbonate			109-61-5
1hour	Negligible	25.3 ppm, 6-hr multiple exposure a: NOAEL for histopathologic changes respiratory tract of mice		1hour	Marginal	1/3 the AEGL-3 values	
8hour	Negligible	25.3 ppm, 6-hr multiple exposure a: NOAEL for histopathologic changes respiratory tract of mice		1hour	Critical	1-hour rat BMCL07	
1hour	Marginal	90 ppm, 6-hr multiple exposure (4 days) produced lesions in olfactory and respiratory epithelium.		Propyl nitrate, n-			627-13-4
14day	Negligible	Kidney dam, Liver dam, Eye irr		8hour	Negligible	headache, Nausea	
1year	Negligible	Kidney dam, Liver dam, Eye irr		14day	Negligible	headache, Nausea	
1hour	Critical	Estimated lethality threshold (2-hr BMCL05 of 584 ppm) in mice.		1year	Negligible	headache, Nausea	
Propiolactone, beta-			57-57-8	Propylene			115-07-1
8hour	Negligible	URT irr, Skin cancer		8hour	Negligible	Asphyxia, URT irr	
14day	Negligible	URT irr, Skin cancer		14day	Negligible	Asphyxia, URT irr	
1year	Negligible	URT irr, Skin cancer		1year	Negligible	Asphyxia, URT irr	
Propionaldehyde			123-38-6	Propylene chlorohydrin			127-00-4
1hour	Negligible	Mild irritation to the mucosal surfaces in humans		8hour	Negligible	Liver dam	
8hour	Negligible	Mild irritation to the mucosal surfaces in humans		14day	Negligible	Liver dam	
1year	Negligible	Atrophy of olfactory epithelium		1year	Negligible	Liver dam	
1hour	Marginal	Absence of irreversible effects in a repeated inhalation study		Propylene glycol			57-55-6
14day	Negligible	URT irr		1year	Negligible	Nasal hemorrhaging	
1hour	Critical	Mortality in an acute and subacute inhalation toxicity study with acetaldehyde in rats		Propylene glycol dinitrate			6423-43-4
				8hour	Negligible	Mild headaches in humans	
				1hour	Negligible	Mild headaches in humans	
				1year	Negligible	Decreased hematocrit, hemoglobin red blood cells, reticulocytes; increased methemoglobin	
				1hour	Marginal	Severe headaches and slight imbalance in humans	
				1hour	Critical	Convulsions in monkeys	
				Propylene glycol monoacrylate			999-61-1
				8hour	Negligible	URT irr, Eye irr	
				14day	Negligible	URT irr, Eye irr	
				1year	Negligible	URT irr, Eye irr	

Table E-1: Air MEG Health Effect Basis

CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Propylene glycol monomethyl ether			107-98-2	Propyltrichlorosilane			141-57-1
1year	Negligible	Mild reversible sedation		1hour	Negligible	HCl AEGL-1 values divided by a molar adjustment factor of 3 adopted as AEGL-1 values for Trichlorosilanes	
8hour	Negligible	Eye irr, CNS impair		8hour	Negligible	HCl AEGL-1 values divided by a molar adjustment factor of 3 adopted as AEGL-1 values for Trichlorosilanes	
14day	Negligible	Eye irr, CNS impair		1hour	Marginal	HCl AEGL-2 values divided by a molar adjustment factor of 3 adopted as AEGL-2 values for Trichlorosilanes	
Propylene Oxide			75-56-9	1hour	Critical	HCl AEGL-3 values divided by a molar adjustment factor of 3 adopted as AEGL-3 values for Trichlorosilanes	
10min	Negligible	Humans: Strong odor and irritation noted in monitoring study; average of 4 exposure concentrations and durations: 380 ppm for 177 minutes, 525 ppm for 121 minutes, 392 ppm for 135 minutes, 460 ppm for 116 minutes		Pyrethrum			8003-34-7
10min	Marginal	Dyspnea in mice at 387 ppm for 4 hours		8hour	Negligible	LRT irr, Liver dam	
1hour	Negligible	Humans: Strong odor and irritation noted in monitoring study; average of 4 exposure concentrations and durations: 380 ppm for 177 minutes, 525 ppm for 121 minutes, 392 ppm for 135 minutes, 460 ppm for 116 minutes		14day	Negligible	LRT irr, Liver dam	
8hour	Negligible	Humans: Strong odor and irritation noted in monitoring study; average of 4 exposure concentrations and durations: 380 ppm for 177 minutes, 525 ppm for 121 minutes, 392 ppm for 135 minutes, 460 ppm for 116 minutes		1year	Negligible	LRT irr, Liver dam	
1hour	Marginal	Dyspnea in mice at 387 ppm for 4 hours		Pyridine			110-86-1
8hour	Marginal	Dyspnea in mice at 387 ppm for 4 hours		8hour	Negligible	Liver dam, Skin irr, Kidney dam	
10min	Critical	Calculated 4-hour BMCL05 of 1161 ppm in rats		14day	Negligible	Liver dam, Skin irr, Kidney dam	
14day	Negligible	Eye irr, URT irr		1year	Negligible	Liver dam, Skin irr, Kidney dam	
1hour	Critical	Calculated 4-hour BMCL05 of 1161 ppm in rats		Quinone			106-51-4
8hour	Critical	Calculated 4-hour BMCL05 of 1161 ppm in rats		8hour	Negligible	Eye irr, skin dam	
Propylenechlorohydrin			78-89-7	14day	Negligible	Eye irr, skin dam	
8hour	Negligible	Liver dam		1year	Negligible	Eye irr, skin dam	
14day	Negligible	Liver dam		RDX			121-82-4
1year	Negligible	Liver dam		8hour	Negligible	Liver dam	
Propyleneimine			75-55-8	14day	Negligible	Liver dam	
1hour	Marginal	NOEL for extreme respiratory difficulty		1year	Negligible	Liver dam	
8hour	Negligible	URT irr, kidney dam		Refractory ceramic fibers			ref ceramic fiber
1hour	Critical	Lethality threshold		1year	Negligible	Minimal-to-mild pulmonary inflammation	
14day	Negligible	URT irr, kidney dam		Resorcinol			108-46-3
1year	Negligible	URT irr, kidney dam		8hour	Negligible	skin irr, Eye irr	
Propyltrichlorosilane			141-57-1	14day	Negligible	skin irr, Eye irr	
1hour	Negligible	HCl AEGL-1 values divided by a molar adjustment factor of 3 adopted as AEGL-1 values for Trichlorosilanes		1year	Negligible	skin irr, Eye irr	
8hour	Negligible	HCl AEGL-1 values divided by a molar adjustment factor of 3 adopted as AEGL-1 values for Trichlorosilanes		Rhodium			7440-16-6
1hour	Marginal	HCl AEGL-2 values divided by a molar adjustment factor of 3 adopted as AEGL-2 values for Trichlorosilanes		8hour	Negligible	Insoluble - LRT irr, Metal - URT irr	
1hour	Critical	HCl AEGL-3 values divided by a molar adjustment factor of 3 adopted as AEGL-3 values for Trichlorosilanes		14day	Negligible	Insoluble - LRT irr, Metal - URT irr	
Pyrethrum			8003-34-7	1year	Negligible	Insoluble - LRT irr, Metal - URT irr	
8hour	Negligible	LRT irr, Liver dam		Rhodium soluble compounds			RH sol
14day	Negligible	LRT irr, Liver dam		8hour	Negligible	Asthma	
1year	Negligible	LRT irr, Liver dam		14day	Negligible	Asthma	
Pyridine			110-86-1	1year	Negligible	Asthma	
8hour	Negligible	Liver dam, Skin irr, Kidney dam		Rhodium soluble compounds			RH sol
14day	Negligible	Liver dam, Skin irr, Kidney dam		8hour	Negligible	Asthma	
1year	Negligible	Liver dam, Skin irr, Kidney dam		14day	Negligible	Asthma	
Quinone			106-51-4	1year	Negligible	Asthma	
8hour	Negligible	Eye irr, skin dam		Rhodium soluble compounds			RH sol
14day	Negligible	Eye irr, skin dam		8hour	Negligible	Asthma	
1year	Negligible	Eye irr, skin dam		14day	Negligible	Asthma	
RDX			121-82-4	1year	Negligible	Asthma	
8hour	Negligible	Liver dam		Rhodium soluble compounds			RH sol
14day	Negligible	Liver dam		8hour	Negligible	Asthma	
1year	Negligible	Liver dam		14day	Negligible	Asthma	
Refractory ceramic fibers			ref ceramic fiber	1year	Negligible	Asthma	
1year	Negligible	Minimal-to-mild pulmonary inflammation		Rhodium soluble compounds			RH sol
Resorcinol			108-46-3	8hour	Negligible	Asthma	
8hour	Negligible	skin irr, Eye irr		14day	Negligible	Asthma	
14day	Negligible	skin irr, Eye irr		1year	Negligible	Asthma	
1year	Negligible	skin irr, Eye irr		Rhodium soluble compounds			RH sol
Rhodium			7440-16-6	8hour	Negligible	Asthma	
8hour	Negligible	Insoluble - LRT irr, Metal - URT irr		14day	Negligible	Asthma	
14day	Negligible	Insoluble - LRT irr, Metal - URT irr		1year	Negligible	Asthma	
1year	Negligible	Insoluble - LRT irr, Metal - URT irr		Rhodium soluble compounds			RH sol
Rhodium soluble compounds			RH sol	8hour	Negligible	Asthma	
8hour	Negligible	Asthma		14day	Negligible	Asthma	
14day	Negligible	Asthma		1year	Negligible	Asthma	
1year	Negligible	Asthma		Rhodium soluble compounds			RH sol

Table E-1: Air MEG Health Effect Basis

CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Ronnel			299-84-3	Silicon tetrafluoride			7783-61-1
8hour	Negligible	Cholinesterase inhib		1hour	Negligible	Irritation in rats	
14day	Negligible	Cholinesterase inhib		8hour	Negligible	Irritation in rats	
1year	Negligible	Cholinesterase inhib		1hour	Marginal	One third the AEGL-3 values	
Rotenone			83-79-4	1hour	Critical	Estimated 1-hr lethality threshold in rats	
8hour	Negligible	CNS impair, eye irr, URT irr		Silicon tetrahydride			7803-62-5
14day	Negligible	CNS impair, eye irr, URT irr		1hour	Negligible	No-effect level	
1year	Negligible	CNS impair, eye irr, URT irr		1hour	Marginal	Concentration with reversible renal lesions	
Rubber dust			9006-04-6	1hour	Critical	No-effect level for lethality, irreversible renal lesions	
8hour	Negligible	Respiratory sens		8hour	Negligible	skin irr, URT irr	
14day	Negligible	Respiratory sens		14day	Negligible	skin irr, URT irr	
1year	Negligible	Respiratory sens		1year	Negligible	skin irr, URT irr	
sec-Butyl chloroformate			17462-58-7	Silver			7440-22-4
1hour	Marginal	By analogy to n-butyl chloroformate		8hour	Negligible	Argyria	
1hour	Critical	By analogy to n-butyl chloroformate		14day	Negligible	Argyria	
Selenium			7782-49-2	1year	Negligible	Argyria	
8hour	Negligible	URT irr, Eye irr		Silver soluble compounds			Ag sol cmpds
14day	Negligible	URT irr, Eye irr		8hour	Negligible	Argyria	
1year	Negligible	URT irr, Eye irr		14day	Negligible	Argyria	
Selenium hexafluoride			7783-79-1	1year	Negligible	Argyria	
1hour	Negligible	NOEL for irritation in rabbit, guinea pig, rats, and mice (1 ppm, 4-hrs)		Sodium bisulfite			7631-90-5
8hour	Negligible	NOEL for irritation in rabbit, guinea pig, rats, and mice (1 ppm, 4-hrs)		8hour	Negligible	Skin irr, URT irr, Eye irr	
1hour	Marginal	One-third of the AEGL-3 values		14day	Negligible	Skin irr, URT irr, Eye irr	
1hour	Critical	Highest concentration causing no mortality in rabbit, guinea pig, rats, and mice (1 ppm, 4-hrs)		1year	Negligible	Skin irr, URT irr, Eye irr	
14day	Negligible	Pulm edema		Sodium fluoroacetate			62-74-8
1year	Negligible	Pulm edema		8hour	Negligible	nausea, CNS impair, card impair	
Sesone			136-78-7	14day	Negligible	nausea, CNS impair, card impair	
8hour	Negligible	GI irr		1year	Negligible	nausea, CNS impair, card impair	
14day	Negligible	GI irr		Sodium metabisulfite			7681-57-4
1year	Negligible	GI irr		8hour	Negligible	URT irr	
Silica, crystalline quartz			14808-60-7	14day	Negligible	URT irr	
8hour	Negligible	Pulm fibrosis, lung cancer		1year	Negligible	URT irr	
14day	Negligible	Pulm fibrosis, lung cancer		Sodium tetraborate			1330-43-4
1year	Negligible	Pulm fibrosis, lung cancer		8hour	Negligible	URT irr	
Silica, crystalline tripoli			1317-95-9	14day	Negligible	URT irr	
8hour	Negligible	lung cancer, Pulm fibrosis		1year	Negligible	URT irr	
14day	Negligible	lung cancer, Pulm fibrosis		Stearates			stearates
1year	Negligible	lung cancer, Pulm fibrosis		8hour	Negligible	Skin irr, URT irr, Eye irr	
Silicon carbide, nonfibrous, inhalable			Sil carb inhal	14day	Negligible	Skin irr, URT irr, Eye irr	
8hour	Negligible	URT irr, URT irr		1year	Negligible	Skin irr, URT irr, Eye irr	
14day	Negligible	URT irr, URT irr					
1year	Negligible	URT irr, URT irr					

Table E-1: Air MEG Health Effect Basis

CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Stibine			7803-52-3	Sulfur Dioxide			7446-09-5
1hour	Marginal	No effect level for irreversible toxicity		10min	Negligible	NOEL for bronchoconstriction in exercising asthmatics	
1hour	Critical	Highest exposure with no mortality (191 ppm for 30 min) in rats and guinea pigs		1hour	Negligible	NOEL for bronchoconstriction in exercising asthmatics	
8hour	Negligible	kidney dam, Hemolysis, LRT irr		8hour	Negligible	NOEL for bronchoconstriction in exercising asthmatics	
14day	Negligible	kidney dam, Hemolysis, LRT irr		14day	Negligible	NOEL for bronchoconstriction in exercising asthmatics	
1year	Negligible	kidney dam, Hemolysis, LRT irr		1year	Negligible	NOEL for bronchoconstriction in exercising asthmatics	
Stoddard solvent			8052-41-3	Sulfur hexafluoride			2551-62-4
1hour	Negligible	CNS impair, Kidney dam, nausea, Eye dam, Skin dam		10min	Marginal	Moderate bronchoconstriction in exercising asthmatics	
8hour	Negligible	CNS impair, Kidney dam, nausea, Eye dam, Skin dam		1hour	Marginal	Moderate bronchoconstriction in exercising asthmatics	
14day	Negligible	CNS impair, Kidney dam, nausea, Eye dam, Skin dam		8hour	Marginal	Moderate bronchoconstriction in exercising asthmatics	
1year	Negligible	CNS impair, Kidney dam, nausea, Eye dam, Skin dam		10min	Critical	Calculated BMCLC05 in the rat after a 4-h exposure	
Strontium chromate			7789-06-2	Sulfur trioxide			7446-11-9
8hour	Negligible	Cancer		1hour	Critical	Calculated BMCLC05 in the rat after a 4-h exposure	
14day	Negligible	Cancer		8hour	Critical	Calculated BMCLC05 in the rat after a 4-h exposure	
1year	Negligible	Cancer		Sulfur hexafluoride			2551-62-4
Strychnine			57-24-9	8hour	Negligible	Asphyxia	
8hour	Negligible	CNS impair		14day	Negligible	Asphyxia	
14day	Negligible	CNS impair		1year	Negligible	Asphyxia	
1year	Negligible	CNS impair		Sulfur trioxide			7446-11-9
Styrene			100-42-5	10min	Negligible	Respiratory irritation in humans	
1year	Negligible	Decreased color discrimination and reaction time		1hour	Negligible	Respiratory irritation in humans	
8hour	Negligible	Peripheral neuropathy, CNS impair, URT irr		8hour	Negligible	Respiratory irritation in humans	
Sucrose			57-50-1	10min	Marginal	Absence of severe or disabling effects	
8hour	Negligible	Dental erosion		1hour	Marginal	Absence of severe or disabling effects	
14day	Negligible	Dental erosion		8hour	Marginal	Absence of severe or disabling effects	
1year	Negligible	Dental erosion		Sulfometuron methyl			74222-97-2
Sulfometuron methyl			74222-97-2	10min	Critical	Lethality in mice	
8hour	Negligible	Hematologic eff		1hour	Critical	Lethality in mice	
14day	Negligible	Hematologic eff		8hour	Critical	Lethality in mice	
1year	Negligible	Hematologic eff					

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CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Sulfuric Acid			7664-93-9	Temephos			3383-96-8
10min	Negligible	Respiratory irritation in humans		8hour	Negligible	Cholinesterase inhib	
1hour	Negligible	Respiratory irritation in humans		14day	Negligible	Cholinesterase inhib	
8hour	Negligible	Respiratory irritation in humans		1year	Negligible	Cholinesterase inhib	
10min	Marginal	Absence of severe or disabling effects		Terbufos			13071-79-9
1hour	Marginal	Absence of severe or disabling effects		8hour	Negligible	Cholinesterase inhib	
8hour	Marginal	Absence of severe or disabling effects		14day	Negligible	Cholinesterase inhib	
10min	Critical	Lethality in mice		1year	Negligible	Cholinesterase inhib	
1hour	Critical	Lethality in mice		Tert-amyl methyl ether			994-05-8
14day	Negligible	Pulm func		8hour	Negligible	Embryo/fetal dam, CNS impair	
1year	Negligible	Pulm func		14day	Negligible	Embryo/fetal dam, CNS impair	
8hour	Critical	Lethality in mice		1year	Negligible	Embryo/fetal dam, CNS impair	
Sulfuryl chloride			7791-25-5	Tert-butyl alcohol			75-65-0
1hour	Marginal	Data insufficient for derivation of AEGL-2 threshold. Due to steep exposure-response relationship, AEGL-2 values estimated as one-third reduction of AEGL-3 values		8hour	Negligible	CNS impair	
1hour	Critical	BMCL05 of 70.1 ppm estimated as lethality threshold in rats following 4-hour exposure to sulfuryl chloride		14day	Negligible	CNS impair	
Sulfuryl fluoride			2699-79-8	1year	Negligible	CNS impair	
1hour	Marginal	Reduction of AEGL-3 for steep dose response relationship		Tert-pentane			463-82-1
1hour	Critical	Highest concentration with no lethality		1hour	Marginal	Peripheral neuropathy	
8hour	Negligible	CNS impair		1hour	Negligible	Peripheral neuropathy	
14day	Negligible	CNS impair		8hour	Negligible	Peripheral neuropathy	
1year	Negligible	CNS impair		14day	Negligible	Peripheral neuropathy	
Sulprofos			35400-43-2	1year	Negligible	Peripheral neuropathy	
8hour	Negligible	Cholinesterase inhib		Tetrachloroethane, 1,1,1,2-			630-20-6
14day	Negligible	Cholinesterase inhib		1year	Negligible	Tumor type: Hepatocellular adenoma or carcinoma	
1year	Negligible	Cholinesterase inhib		Tetrachloroethane, 1,1,2,2-			79-34-5
Talc			14807-96-6	1year	Negligible	Tumor Type: hepatocellular carcinomas	
8hour	Negligible	LRT irr		8hour	Negligible	Liver dam	
14day	Negligible	LRT irr		14day	Negligible	Liver dam	
1year	Negligible	LRT irr		Tetrachloronaphthalene			1335-88-2
Tellurium and compounds			13494-80-9	8hour	Negligible	Liver dam	
8hour	Negligible	Halitosis		14day	Negligible	Liver dam	
14day	Negligible	Halitosis		1year	Negligible	Liver dam	
1year	Negligible	Halitosis		Tetraethoxysilane			78-10-4
Tellurium hexafluoride			7783-80-4	8hour	Negligible	eye irr, URT irr, kidney dam	
14day	Negligible	LRT irr		14day	Negligible	eye irr, URT irr, kidney dam	
1year	Negligible	LRT irr		1year	Negligible	eye irr, URT irr, kidney dam	
				Tetraethyl dithiopyrophosphate			3689-24-5
				8hour	Negligible	Cholinesterase inhib	
				14day	Negligible	Cholinesterase inhib	
				1year	Negligible	Cholinesterase inhib	
				Tetraethyl lead			78-00-2
				8hour	Negligible	CNS impair	
				14day	Negligible	CNS impair	
				1year	Negligible	CNS impair	

Table E-1: Air MEG Health Effect Basis

CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Tetraethyl pyrophosphate			107-49-3	Tetramethyl lead			75-74-1
8hour	Negligible	Cholinesterase inhib		8hour	Negligible	CNS impair	
14day	Negligible	Cholinesterase inhib		14day	Negligible	CNS impair	
1year	Negligible	Cholinesterase inhib		1year	Negligible	CNS impair	
Tetrafluoroethylene			116-14-3	Tetramethyl succinonitrile			3333-52-6
1hour	Negligible	No-adverse kidney effects rats and mice		8hour	Negligible	CNS convul, Headache, nausea	
1hour	Negligible	No-adverse kidney effects rats and mice		14day	Negligible	CNS convul, Headache, nausea	
8hour	Negligible	No-adverse kidney effects rats and mice		1year	Negligible	CNS convul, Headache, nausea	
8hour	Negligible	No-adverse kidney effects rats and mice		Tetranitromethane			509-14-8
1hour	Marginal	Changes in urinary clinical chemistr values rat		1hour	Marginal	Mild reversible lung irritation in rat:	
1hour	Marginal	Changes in urinary clinical chemistr values rat		1hour	Negligible	Mild reversible lung irritation in rat:	
1hour	Critical	Benchmark dose (BMCL05) - hamst		1hour	Critical	NOEL for lethality in rats	
1hour	Critical	Benchmark dose (BMCL05) - hamst		8hour	Negligible	Eye irr, URT cancer, URT irr	
14day	Negligible	Kidney cancer, Liver cancer, Kidney dam, Liver dam		14day	Negligible	Eye irr, URT cancer, URT irr	
1year	Negligible	Kidney cancer, Liver cancer, Kidney dam, Liver dam		1year	Negligible	Eye irr, URT cancer, URT irr	
14day	Negligible	Kidney cancer, Liver cancer, Kidney dam, Liver dam		Thioglycolic acid			68-11-1
1year	Negligible	Kidney cancer, Liver cancer, Kidney dam, Liver dam		1hour	Negligible	skin irr, Eye irr	
Tetrahydrofuran			109-99-9	8hour	Negligible	skin irr, Eye irr	
8hour	Negligible	URT irr, kidney dam, CNS impair		14day	Negligible	skin irr, Eye irr	
14day	Negligible	URT irr, kidney dam, CNS impair		1year	Negligible	skin irr, Eye irr	
1year	Negligible	URT irr, kidney dam, CNS impair		Thionyl chloride			7719-09-7
Tetrakis (hydroxymethyl) phosphonium chloride			124-64-1	1hour	Marginal	Dyspnea (not incapacitating or irreversible)	
8hour	Negligible	Skin irr		1hour	Critical	Threshold of lethality	
14day	Negligible	Skin irr		Thiram			137-26-8
1year	Negligible	Skin irr		8hour	Negligible	Hematologic eff, Body weight eff	
Tetrakis (hydroxymethyl) phosphonium sulfate			55566-30-8	14day	Negligible	Hematologic eff, Body weight eff	
8hour	Negligible	Skin irr		1year	Negligible	Hematologic eff, Body weight eff	
14day	Negligible	Skin irr		Tin oxide			18282-10-5
1year	Negligible	Skin irr		8hour	Negligible	Pneumoconiosis, URT irr, headache eye irr, nausea	
Tetramethoxysilane			681-84-5	14day	Negligible	Pneumoconiosis, URT irr, headache eye irr, nausea	
1hour	Marginal	No-effect level for irreversible effec		1year	Negligible	Pneumoconiosis, URT irr, headache eye irr, nausea	
1hour	Negligible	No-effect level for irreversible effec		Tin, inorganic			7440-31-5
8hour	Negligible	No-effect level for irreversible effec		8hour	Negligible	Pneumoconiosis, eye irr, URT irr, headache, nausea	
1hour	Critical	Threshold for lethality		14day	Negligible	Pneumoconiosis, eye irr, URT irr, headache, nausea	
14day	Negligible	URT irr, eye dam		1year	Negligible	Pneumoconiosis, eye irr, URT irr, headache, nausea	
1year	Negligible	URT irr, eye dam		Titanium dioxide			13463-67-7
				8hour	Negligible	LRT irr	
				14day	Negligible	LRT irr	
				1year	Negligible	LRT irr	

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CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Titanium tetrachloride			7550-45-0	Tributyl phosphate			126-73-8
1year	Negligible	Reversible increased relative lung wgt; mild lung dust cell reaction		8hour	Negligible	eye irr, Nausea, headache, URT irr	
1hour	Marginal	Exposure of rats to 1.3 ppm for 6 h/d, 5 d/wk for 4 wks resulted in no clinical signs, but next exposure conc. approaches lethality threshold		14day	Negligible	eye irr, Nausea, headache, URT irr	
1hour	Critical	One-third of rat LC50 values		1year	Negligible	eye irr, Nausea, headache, URT irr	
t-Octyl mercaptan			141-59-3	Trichloro(dichlorophenyl) silane			27137-85-5
1hour	Marginal	One-third the AEGL-3 values		1hour	Negligible	HCl AEGL-1 values divided by a molar adjustment factor of 3 adopted as AEGL-1 values for Trichlorosilanes	
1hour	Critical	Threshold for lethality (BMCL05) in female rats		8hour	Negligible	HCl AEGL-1 values divided by a molar adjustment factor of 3 adopted as AEGL-1 values for Trichlorosilanes	
Toluene			108-88-3	1hour	Marginal	HCl AEGL-2 values divided by a molar adjustment factor of 3 adopted as AEGL-2 values for Trichlorosilanes	
1year	Negligible	Neurological effects		1hour	Critical	HCl AEGL-3 values divided by a molar adjustment factor of 3 adopted as AEGL-3 values for Trichlorosilanes	
Toluene 2,4-diisocyanate			584-84-9	Trichloro-1,2,2-trifluoroethane, 1,1,2-			76-13-1
1hour	Negligible	Chest tightness, eye and throat irritation		8hour	Negligible	CNS impair	
8hour	Negligible	Chest tightness, eye and throat irritation		Trichloroacetic acid			76-03-9
1hour	Marginal	Severe eye and throat irritation, lacrimation		1hour	Negligible	URT irr, Eye irr	
1hour	Critical	4-h LC50 in the mouse		8hour	Negligible	URT irr, Eye irr	
Toluene diisocyanate mixture, 2,4-/2,6-			26471-62-5	14day	Negligible	URT irr, Eye irr	
1year	Negligible	Chronic lung-function decline		1year	Negligible	URT irr, Eye irr	
Toluenediisocyanate, 2,6-			91-08-7	Trichlorobenzene, 1,2,4-			120-82-1
1hour	Negligible	Chest tightness, eye and throat irritation		1year	Negligible	Significant changes in coproporphyrin and uroporphyrin excretion	
1hour	Marginal	Severe eye and throat irritation, lacrimation		Trichloroethane, 1,1,1-			71-55-6
8hour	Negligible	Chest tightness, eye and throat irritation		8hour	Negligible	Eye irritation and slight dizziness in humans	
1hour	Critical	4-h LC50 in the mouse		1year	Negligible	Increased GFA protein	
Toluidine, m-			108-44-1	1hour	Negligible	Eye irritation and slight dizziness in humans	
8hour	Negligible	MeHb-emia, Eye irr, kidney irr, bladder irr		14day	Negligible	Decreased psychomotor performance	
14day	Negligible	MeHb-emia, Eye irr, kidney irr, bladder irr		1hour	Marginal	EC50 for ataxia in rats	
1year	Negligible	MeHb-emia, Eye irr, kidney irr, bladder irr		1hour	Critical	Estimated concentration causing no deaths in rats	
Toluidine, p-			106-49-0	Trichloroethane, 1,1,2-			79-00-5
8hour	Negligible	MeHb-emia		1year	Negligible	Tumor type: Hepatocellular carcinoma	
14day	Negligible	MeHb-emia		1hour	Negligible	CNS impair, liver dam	
1year	Negligible	MeHb-emia		8hour	Negligible	CNS impair, liver dam	
Toxaphene			8001-35-2	14day	Negligible	CNS impair, liver dam	
1year	Negligible	Tumor type: Hepatocellular carcinomas and neoplastic nodules					
8hour	Negligible	CNS convul, liver dam					
14day	Negligible	CNS convul, liver dam					

Table E-1: Air MEG Health Effect Basis

CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Trichloroethylene			79-01-6	Trichlorophenoxyacetic acid			93-76-5
14day	Negligible	Headache, fatigue, drowsiness		8hour	Negligible	PNS impair	
1year	Negligible	Decreased wakefulness and post-exposure sleeping heart rate		14day	Negligible	PNS impair	
1hour	Negligible	Marginal CNS-effects in only 1 out of eight volunteers exposed to 300 ppm for 2 hours		1year	Negligible	PNS impair	
8hour	Negligible	Marginal CNS-effects in only 1 out of eight volunteers exposed to 300 ppm for 2 hours		Trichlorophenylsilane			98-13-5
1hour	Marginal	Light-headedness, dizziness, or lethargy in combination with reduced performance in neurobehavioral test in volunteers at 1000 ppm for 2 hours (sub AEGL-2 level)		1hour	Negligible	HCl AEGL-1 values divided by a molar adjustment factor of 3 adopted as AEGL-1 values for Trichlorosilanes	
1hour	Critical	NOEL for mortality in mice: 4600 ppm for 4 hours		8hour	Negligible	HCl AEGL-1 values divided by a molar adjustment factor of 3 adopted as AEGL-1 values for Trichlorosilanes	
Trichloroethylsilane			115-21-9	1hour	Marginal	HCl AEGL-2 values divided by a molar adjustment factor of 3 adopted as AEGL-2 values for Trichlorosilanes	
1hour	Negligible	HCl AEGL-1 values divided by a molar adjustment factor of 3 adopted as AEGL-1 values for Trichlorosilanes		1hour	Critical	HCl AEGL-3 values divided by a molar adjustment factor of 3 adopted as AEGL-3 values for Trichlorosilanes	
8hour	Negligible	HCl AEGL-1 values divided by a molar adjustment factor of 3 adopted as AEGL-1 values for Trichlorosilanes		Trichloropropane, 1,2,3-			96-18-4
1hour	Marginal	HCl AEGL-2 values divided by a molar adjustment factor of 3 adopted as AEGL-2 values for Trichlorosilanes		14day	Negligible	Decreased olfactory epithelium	
1hour	Critical	HCl AEGL-3 values divided by a molar adjustment factor of 3 adopted as AEGL-3 values for Trichlorosilanes		1year	Negligible	Decreased olfactory epithelium	
Trichlorofluoromethane			75-69-4	8hour	Negligible	URT irr, Kidney dam, Liver dam, eye irr	
1year	Negligible	Small decrements in cognitive performance		Trichloropropene, 1,2,3-			96-19-5
Trichlorofon			52-68-6	1year	Negligible	Nasal irritation	
8hour	Negligible	Cholinesterase inhib		Tricresol			1319-77-3
14day	Negligible	Cholinesterase inhib		8hour	Negligible	URT irr	
1year	Negligible	Cholinesterase inhib		14day	Negligible	URT irr	
Trichloronaphthalene			1321-65-9	1year	Negligible	URT irr	
8hour	Negligible	chloracne, Liver dam		Triethanolamine			102-71-6
14day	Negligible	chloracne, Liver dam		8hour	Negligible	Eye irr, skin irr	
1year	Negligible	chloracne, Liver dam		14day	Negligible	Eye irr, skin irr	
Trichlorophenol, 2,4,6-			88-06-2	1year	Negligible	Eye irr, skin irr	
1year	Negligible	Tumor type: Leukemia		Triethylamine			121-44-8
				1year	Negligible	No observed adverse effects (other effect: Inflammation of the nasal passage.)	
				8hour	Negligible	Visual impair	
				14day	Negligible	Visual impair	
				Trifluorobromomethane			75-63-8
				8hour	Negligible	Card impair, CNS impair	
				Triglycidyl isocyanurate			2451-62-9
				8hour	Negligible	Male repro dam	
				14day	Negligible	Male repro dam	
				1year	Negligible	Male repro dam	

Table E-1: Air MEG Health Effect Basis

CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Trimellitic anhydride			552-30-7	Trimethylbenzene, 1,2,4-			95-63-6
8hour	Negligible	Respiratory sens		1hour	Negligible	Average ED50 for rotarod performance following a 4 hour exposure	
14day	Negligible	Respiratory sens		1hour	Marginal	Eye and nose irritation and lethargy in rats exposed to 2000 ppm for 6 hours	
1year	Negligible	Respiratory sens		1year	Negligible	Decreased clotting time., Pulmonar toxicity	
Trimethoxysilane			2487-90-3	Trimethylbenzene, 1,3,5-			108-67-8
1hour	Marginal	1/3 of AEGL 3 values		1hour	Negligible	Average ED50 for rotarod performance following a 4 hour exposure	
1hour	Critical	LC01 values		1hour	Negligible	Average ED50 for rotarod performance following a 4 hour exposure	
Trimethyl benzene			25551-13-7	Trimethylbenzene, 1,3,5-			108-67-8
8hour	Negligible	asthma, CNS impair, hematologic ef		1hour	Negligible	Average ED50 for rotarod performance following a 4 hour exposure	
14day	Negligible	asthma, CNS impair, hematologic ef		1year	Negligible	Neurobehavioral impairment	
1year	Negligible	asthma, CNS impair, hematologic ef		1year	Negligible	Neurobehavioral impairment	
Trimethyl phosphite			121-45-9	Trimethylbenzene, 1,3,5-			108-67-8
1hour	Negligible	NOEL for clinical signs in rat		1hour	Negligible	Average ED50 for rotarod performance following a 4 hour exposure	
8hour	Negligible	NOEL for clinical signs in rat		1hour	Negligible	Average ED50 for rotarod performance following a 4 hour exposure	
1hour	Marginal	Lens opacities in rats		1hour	Negligible	Average ED50 for rotarod performance following a 4 hour exposure	
1hour	Critical	Estimated 3-hr lethality threshold ir mic		1year	Negligible	Neurobehavioral impairment	
14day	Negligible	Eye irr, cholinesterase inhib		1year	Negligible	Neurobehavioral impairment	
1year	Negligible	Eye irr, cholinesterase inhib		8hour	Negligible	Average ED50 for rotarod performance following a 4 hour exposure	
Trimethylacetyl chloride			3282-30-2	Trimethylbenzene, 1,3,5-			108-67-8
1hour	Marginal	One third the AEGL-3 values		8hour	Negligible	Average ED50 for rotarod performance following a 4 hour exposure	
1hour	Critical	6-hour exposure causing no mortality in the rat		8hour	Negligible	Average ED50 for rotarod performance following a 4 hour exposure	
Trimethylamine			75-50-3	Trimethylchlorosilane			75-77-4
8hour	Negligible	No-effect level in occupational exposures		8hour	Negligible	Hydrogen chloride (HCl) AEGL-1 values adopted as AEGL-1 values	
1hour	Negligible	No-effect level in occupational exposures		1hour	Negligible	Hydrogen chloride (HCl) AEGL-1 values adopted as AEGL-1 values	
1hour	Marginal	Estimated threshold for lung toxicit and neurotoxicity in rats		1hour	Marginal	Hydrogen chloride (HCl) AEGL-2 values adopted as AEGL-2 values	
1hour	Critical	BMCL05 in rats		1hour	Critical	Hydrogen chloride (HCl) AEGL-3 values adopted as AEGL-3 values	
14day	Negligible	URT irr		Trinitrophenylmethylnitramine			479-45-8
1year	Negligible	URT irr		8hour	Negligible	URT irr	
Trimethylbenzene, 1,2,3-			526-73-8	14day	Negligible	URT irr	
1hour	Negligible	Average ED50 for rotarod performance following a 4 hour exposure		1year	Negligible	URT irr	
8hour	Negligible	Average ED50 for rotarod performance following a 4 hour exposure		Trinitrotoluene, 2,4,6-			118-96-7
1hour	Marginal	Eye and nose irritation and lethargy in rats exposed to 2000 ppm for 6 hours		8hour	Negligible	cataract, liver dam, MeHb-emia	
				14day	Negligible	cataract, liver dam, MeHb-emia	
				1year	Negligible	cataract, liver dam, MeHb-emia	

Table E-1: Air MEG Health Effect Basis

CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Triorthocresyl phosphate			78-30-8	Uranium, highly soluble salts			HZ1800-90-T
8hour	Negligible	Cholinesterase inhib		1year	Negligible	Very slight renal degeneration in approximately 50% of dogs	
14day	Negligible	Cholinesterase inhib		Valeraldehyde, n-			110-62-3
1year	Negligible	Cholinesterase inhib		8hour	Negligible	Skin irr, URT irr, Eye irr	
Triphenyl phosphate			115-86-6	14day	Negligible	Skin irr, URT irr, Eye irr	
8hour	Negligible	Cholinesterase inhib		1year	Negligible	Skin irr, URT irr, Eye irr	
14day	Negligible	Cholinesterase inhib		Vanadium			7440-62-2
1year	Negligible	Cholinesterase inhib		14day	Negligible	Histiocytic infiltrate and inflammation in lungs	
Tris(2-chloroethyl)amine			555-77-1	1year	Negligible	Hyperplasia of alveolar and bronchiolar epithelium, degeneration and hyperplasia of epiglottis epithelium, and goblet cell hyperplasia in nasal respiratory epithelium	
1hour	Marginal	Threshold for ocular irritation in humans sufficient to compromise operational effectiveness		Vanadium pentoxide			1314-62-1
1hour	Critical	Lethality threshold in rats estimated as 3-fold reduction of LCt50 values		14day	Negligible	Histiocytic infiltrate and inflammation in lungs	
Tungsten			7440-33-7	1year	Negligible	Histiocytic infiltrate and inflammation in lungs	
8hour	Negligible	LRT irr		8hour	Negligible	LRT irr, URT irr	
14day	Negligible	LRT irr		Vinyl acetate			108-05-4
1year	Negligible	LRT irr		1hour	Negligible	22 ppm for 4 hours represents no-effect level for notable discomfort in humans	
Tungsten, soluble compounds			W sol	1year	Negligible	Nasal inflammation; mild bronchitis	
8hour	Negligible	pulm fibrosis, CNS impair		8hour	Negligible	24 ppm for 4 hours represents no-effect level for notable discomfort in humans	
14day	Negligible	pulm fibrosis, CNS impair		1hour	Marginal	Reversible histopathological nasal lesions in rats at 1000 ppm for 6 hours	
1year	Negligible	pulm fibrosis, CNS impair		1hour	Critical	Reversible histopathological nasal lesions in rats at 1000 ppm for 6 hours	
Turpentine			8006-64-2	14day	Negligible	skin irr, URT irr, Eye irr, CNS impair	
1hour	Marginal	URT irr, CNS impair, skin irr, lung dam		Vinyl chloride			75-01-4
1hour	Negligible	URT irr, CNS impair, skin irr, lung dam		8hour	Negligible	mild headaches in 2/7 humans	
8hour	Negligible	URT irr, CNS impair, skin irr, lung dam		1year	Negligible	Centriobular hypertrophy	
14day	Negligible	URT irr, CNS impair, skin irr, lung dam		1hour	Negligible	mild headaches in 2/7 humans	
1year	Negligible	URT irr, CNS impair, skin irr, lung dam		14day	Negligible	Delayed ossification	
Uranium compounds			0-287*	1hour	Marginal	mild dizziness in 1/6 humans; no effect level for impaired ability to escape	
8hour	Negligible	Kidney dam		1hour	Critical	Cardiac sensitization; no effect level for lethality	
14day	Negligible	Kidney dam		Vinyl fluoride			75-01-4
1year	Negligible	Kidney dam		8hour	Negligible	mild headaches in 2/7 humans	
Uranium hexafluoride			7783-81-5	1year	Negligible	Centriobular hypertrophy	
1hour	Negligible	Modification of hydrogen fluoride AEGL-1 values, The subthreshold concentration for inflammation at 3 ppm (0.85-2.9 ppm) for 1 h, which was without sensory irritation, was chosen as the basis for the AEGL-1.		1hour	Negligible	mild headaches in 2/7 humans	
1hour	Marginal	Renal tubular pathology in dogs, Tubular pathology		14day	Negligible	Delayed ossification	
1hour	Critical	Death, Estimated 1-h NOEL for death in the rat		1hour	Marginal	mild dizziness in 1/6 humans; no effect level for impaired ability to escape	

Table E-1: Air MEG Health Effect Basis

CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Vinyl cyclohexene dioxide			106-87-6	VX			50782-69-9
8hour	Negligible	Female repro dam, male repro dam		10min	Negligible	Derived by relative potency from EC50 for miosis observed in adult female SD rats exposed to a range of GB vapor concentrations (0.01-0.48 mg/m3) for 10 , 60, and 240 min; and miosis data from secondary and supportive studies in marmosets and humans, resp	
14day	Negligible	Female repro dam, male repro dam					
1year	Negligible	Female repro dam, male repro dam					
Vinyl fluoride			75-02-5	1hour	Negligible	Derived by relative potency from EC50 for miosis observed in adult female SD rats exposed to a range of GB vapor concentrations (0.01-0.48 mg/m3) for 10 , 60, and 240 min; and miosis data from secondary and supportive studies in marmosets and humans, resp	
8hour	Negligible	Liver cancer, liver dam					
14day	Negligible	Liver cancer, liver dam					
1year	Negligible	Liver cancer, liver dam					
Vinyl toluene			25013-15-4	8hour	Negligible	Derived by relative potency from EC50 for miosis observed in adult female SD rats exposed to a range of GB vapor concentrations (0.01-0.48 mg/m3) for 10 , 60, and 240 min; and miosis data from secondary and supportive studies in marmosets and humans, resp	
8hour	Negligible	URT irr, eye irr					
14day	Negligible	URT irr, eye irr					
Vinyl trichlorosilane			75-94-5	24hour	Negligible	Derived by relative potency from EC50 for miosis observed in adult female SD rats exposed to a range of GB vapor concentrations (0.01-0.48 mg/m3) for 10 , 60, and 240 min; and miosis data from secondary and supportive studies in marmosets and humans, resp	
8hour	Negligible	HCl AEGL-1 values divided by a molar adjustment factor of 3 adopted as AEGL-1 values for Trichlorosilanes					
1hour	Negligible	HCl AEGL-1 values divided by a molar adjustment factor of 3 adopted as AEGL-1 values for Trichlorosilanes					
1hour	Marginal	HCl AEGL-2 values divided by a molar adjustment factor of 3 adopted as AEGL-2 values for Trichlorosilanes					
1hour	Critical	HCl AEGL-3 values divided by a molar adjustment factor of 3 adopted as AEGL-3 values for Trichlorosilanes					
Vinyl-2-pyrrolidone, N-			88-12-0	Warfarin			81-81-2
8hour	Negligible	Liver dam		8hour	Negligible	Coagulation	
14day	Negligible	Liver dam		14day	Negligible	Coagulation	
1year	Negligible	Liver dam		1year	Negligible	Coagulation	
Vinylcyclohexene, 4-			100-40-3	Wood dust			wood dust
8hour	Negligible	male repro dam, Female repro dam		8hour	Negligible	Pulm func	
14day	Negligible	male repro dam, Female repro dam		14day	Negligible	Pulm func	
1year	Negligible	male repro dam, Female repro dam		1year	Negligible	Pulm func	
Vinylidene fluoride			75-38-7	Wood dust, western red cedar			wood dust cedar
8hour	Negligible	Liver dam		8hour	Negligible	Asthma	
14day	Negligible	Liver dam		14day	Negligible	Asthma	
1year	Negligible	Liver dam		1year	Negligible	Asthma	
				Wood dusts (birch, mahogany, teak, walnut)			Wood dust (others)
				8hour	Negligible	Pulm func	
				14day	Negligible	Pulm func	
				1year	Negligible	Pulm func	

Table E-1: Air MEG Health Effect Basis

CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Xylene, m-			108-38-3	Zinc chromate			13530-65-9
1year	Negligible	Impaired motor coordination		8hour	Negligible	Nasal cancer	
8hour	Negligible	URT irr, CNS impair, eye irr		14day	Negligible	Nasal cancer	
14day	Negligible	URT irr, CNS impair, eye irr		1year	Negligible	Nasal cancer	
Xylene, o-			95-47-6	8hour	Negligible	Nasal cancer	
1year	Negligible	Impaired motor coordination		14day	Negligible	Nasal cancer	
8hour	Negligible	eye irr, URT irr, CNS impair		1year	Negligible	Nasal cancer	
14day	Negligible	eye irr, URT irr, CNS impair		Zinc oxide			1314-13-2
Xylene, p-			106-42-3	14day	Negligible	Metal fume fever	
1year	Negligible	Impaired motor coordination		1year	Negligible	Metal fume fever	
8hour	Negligible	URT irr, CNS impair, eye irr		8hour	Negligible	Metal fume fever	
14day	Negligible	URT irr, CNS impair, eye irr		Xylenes, total			1330-20-7
Xylenes, total			1330-20-7	1hour	Negligible	Eye irritation in human volunteers exposed to 400 ppm mixed xylenes for 30 minutes	
1hour	Negligible	Eye irritation in human volunteers exposed to 400 ppm mixed xylenes for 30 minutes		1year	Negligible	Impaired motor coordination	
1year	Negligible	Impaired motor coordination		8hour	Negligible	Eye irritation in human volunteers exposed to 400 ppm mixed xylenes for 30 minutes	
8hour	Negligible	Eye irritation in human volunteers exposed to 400 ppm mixed xylenes for 30 minutes		1hour	Marginal	Rats exposed to 1300 ppm mixed xylenes exhibited poor coordination 2 hr into a 4-hr exposure	
1hour	Marginal	Rats exposed to 1300 ppm mixed xylenes exhibited poor coordination 2 hr into a 4-hr exposure		1hour	Critical	Rats exposed to 2800 ppm for 4 hours exhibited prostration followed by a full recovery	
1hour	Critical	Rats exposed to 2800 ppm for 4 hours exhibited prostration followed by a full recovery		Xylidine			1300-73-8
Xylidine			1300-73-8	8hour	Negligible	Liver dam, MeHb-emia	
8hour	Negligible	Liver dam, MeHb-emia		14day	Negligible	Liver dam, MeHb-emia	
14day	Negligible	Liver dam, MeHb-emia		1year	Negligible	Liver dam, MeHb-emia	
1year	Negligible	Liver dam, MeHb-emia		Yttrium			7440-65-5
Yttrium			7440-65-5	8hour	Negligible	Pulm fibrosis	
8hour	Negligible	Pulm fibrosis		14day	Negligible	Pulm fibrosis	
14day	Negligible	Pulm fibrosis		1year	Negligible	Pulm fibrosis	
1year	Negligible	Pulm fibrosis		Zinc chloride fume			7646-85-7
Zinc chloride fume			7646-85-7	8hour	Negligible	URT irr, LRT irr	
8hour	Negligible	URT irr, LRT irr		14day	Negligible	URT irr, LRT irr	
14day	Negligible	URT irr, LRT irr		1year	Negligible	URT irr, LRT irr	
1year	Negligible	URT irr, LRT irr		Zinc chromate			11103-86-9
Zinc chromate			11103-86-9	8hour	Negligible	Nasal cancer	
8hour	Negligible	Nasal cancer		14day	Negligible	Nasal cancer	
14day	Negligible	Nasal cancer		1year	Negligible	Nasal cancer	
1year	Negligible	Nasal cancer		8hour	Negligible	Nasal cancer	
8hour	Negligible	Nasal cancer		14day	Negligible	Nasal cancer	
14day	Negligible	Nasal cancer		1year	Negligible	Nasal cancer	
1year	Negligible	Nasal cancer					

Footnotes for Table E-1

See Appendix B for acronym definitions

Table E-2: Water MEG Health Effect Basis

CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
2,4,6-Tribromophenol			118-79-6	Aminophenol, 4-			123-30-8
1year	Negligible	Increased serum creatinine		1year	Negligible	Tubular necrosis, uncreased levels of enzymes indicative of renal failure, measures of impaired renal function.	
Acenaphthene			83-32-9	Amitraz			33089-61-1
1year	Negligible	Hepatotoxicity		1year	Negligible	Increased mean blood sugar concentration; slight hypothermia	
Acetochlor			34256-82-1	Ammonium perchlorate			7790-98-9
1year	Negligible	Salivation, increased ALT and ornithine carbamyl transferase; significant increases in triglyceride and decreased blood glucose levels histopathological changes in kidney and testes of males		1year	Negligible	Radioactive iodide uptake inhibitor (RAIU) in the thyroid	
Acetone			67-64-1	Ammonium sulfamate			7773-06-0
1year	Negligible	Neuropathy		1year	Negligible	Decrease in body weight	
Acetone cyanohydrin			75-86-5	Aniline			62-53-3
1year	Negligible	Death		1year	Negligible	Tumor type: Spleen, combined fibrosarcoma, stromal sarcoma, capsular sarcoma and hemangiosarcoma	
Acetophenone			98-86-2	Anthracene			120-12-7
1year	Negligible	General toxicity		1year	Negligible	No effects	
Acifluorfen-sodium			62476-59-9	Apollo			74115-24-5
1year	Negligible	Mortality and kidney lesions		1year	Negligible	Liver effects; organ weight changes	
Acrolein			107-02-8	Aroclor 1016			z-0042
1year	Negligible	Forestomach squamous epithelial hyperplasia		1year	Negligible	Reduced birth weights	
Acrylamide			79-06-1	Aroclor 1254			11097-69-1
1year	Negligible	Reversible ultrastructural degeneration in sciatic nerve fibers		1year	Negligible	Ocular exudate, inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocyte	
Acrylonitrile			107-13-1	Assure			76578-14-8
7day	Negligible	Malformations		1year	Negligible	Liver cell enlargement	
14day	Negligible	Malformations		Asulam			3337-71-1
1year	Negligible	Decreased sperm count and tubular degeneration		1year	Negligible	Lower ovarian weight, lower liver/body weight	
Adipic acid			124-04-9	Atrazine			1912-24-9
1year	Negligible	Decreased body weight		1year	Negligible	Delayed estrus onset	
Alar			1596-84-5	7day	Negligible	Decreased body weight gain in pregnant females	
1year	Negligible	No adverse effects		14day	Negligible	Decreased body weight gain in pregnant females	
Aldicarb sulfone			1646-88-4	Avermectin B1			65195-55-3
1year	Negligible	Brain ChE inhibition in females		1year	Negligible	Increased retinal folds in weanlings, decreased viability and lactation indices, decreased pup body weight increase of dead pups at birth	
Aldrin			309-00-2				
1year	Negligible	Renal lesions					
Ally			74223-64-6				
1year	Negligible	Decreased body weight					
Allyl alcohol			107-18-6				
1year	Negligible	Squamous hyperplasia of the forestomach epithelium					
Amdro			67485-29-4				
1year	Negligible	Increased organ weights					
Ametryn			834-12-8				
1year	Negligible	Liver toxicity					
Aminophenol, 3-			591-27-5				
1year	Negligible	Reduced body weight and tremors					

Table E-2: Water MEG Health Effect Basis

CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Azinphos methyl			86-50-0	Bis(2-chloro-1-methylethyl) ether			108-60-1
1year	Negligible	Reduced erythrocyte ChE activity		1year	Negligible	Decrease in hemoglobin and possible erythrocyte destruction	
7day	Negligible	Reduced maternal brain ChE activity on gestation day 16		Bis(2-chloroethoxy)methane			111-91-1
14day	Negligible	Reduced maternal brain ChE activity on gestation day 16		1year	Negligible	Centrilobular hepatocellular hypertrophy	
Azobenzene			103-33-3	Bis(2-chloroethyl) ether			111-44-4
1year	Negligible	Tumor type: Abdominal cavity sarcomas		1year	Negligible	Tumor type: Hepatomas	
Baygon			114-26-1	Bis(2-ethylhexyl) phthalate			117-81-7
1year	Negligible	Mild cholinergic symptoms and RBC ChE inhibition		1year	Negligible	Increased relative liver weight	
Bayleton			43121-43-3	Bis(chloromethyl) ether			542-88-1
1year	Negligible	Decreased body weight gain, erythrocyte count and hemoglobin level		1year	Negligible	Tumor Type: Respiratory tract tumors	
Baythroid			68359-37-5	Bisphenol A			80-05-7
1year	Negligible	Decreased body weights in males, inflammatory foci in kidneys of females		1year	Negligible	Reduced mean body weight	
Benomyl			17804-35-2	Boron			7440-42-8
1year	Negligible	Decreased pup weanling weights		1year	Negligible	Decreased fetal weight (developmental)	
Bentazon			25057-89-0	14day	Negligible	Decreased fetal weight (developmental)	
1year	Negligible	Blood loss into the gastrointestinal tract; coagulation defect in male and female dogs (other effect: Dose related increase in red areas (presumed blood) in feces; coagulation defect.)		Bromate			15541-45-4
Benzene			71-43-2	1year	Negligible	Renal effects: urothelial hyperplasia	
1year	Negligible	Decreased lymphocyte count		Bromobenzene			108-86-1
Benzidine			92-87-5	1year	Negligible	Hepatocellular cytomegaly in male B6C3F1 mice	
1year	Negligible	Tumor Type: Bladder tumors		Bromodichloromethane			75-27-4
Benzo(a)pyrene			50-32-8	1year	Negligible	Significantly increased incidence of full litter resorption	
1year	Negligible	Tumor type: Forestomach, squamous cell papillomas and carcinomas		Bromoform			75-25-2
Benzoic acid			65-85-0	1year	Negligible	Hepatocellular vacuolization	
1year	Negligible	None		Butanol, 1-			71-36-3
Benzotrichloride			98-07-7	1year	Negligible	Hypoactivity and ataxia	
1year	Negligible	Tumor type: Lung, adenocarcinoma		Butyl benzyl phthalate			85-68-7
Bidrin			141-66-2	1year	Negligible	Significantly increased liver-to-body weight and liver-to-brain weight ratios	
1year	Negligible	Decreased pup survival		Butyl glycolyl butyl phthalate			85-70-1
Bifenox			42576-02-3	1year	Negligible	No adverse effect	
1year	Negligible	Treatment-related elevations of the liver enzymes ALT and OCT in serum		Butyltin compounds			z-136
Biphenthrin			82657-04-3	1year	Negligible	Immunotoxicity and reduced body weight, Hemorrhagic, partially atrophic lymph nodes	
1year	Negligible	Tremors		Cacodylic acid			75-60-5
				1year	Negligible	Progressive glomerulonephropathy	
				Cadmium, elemental			7440-43-9
				1year	Negligible	Significant proteinuria	
				Carbon tetrachloride			56-23-5
				1year	Negligible	Elevated serum SDH activity	

Table E-2: Water MEG Health Effect Basis

CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Carbosulfan			55285-14-8	Chloroform			67-66-3
1year	Negligible	Decreased body weight		1year	Negligible	Significantly increased SGPT activity	
Carboxin			5234-68-4	Chloronaphthalene, beta-			91-58-7
1year	Negligible	Reduced weight gain, organ weight changes, increased mortality		1year	Negligible	Dyspnea, Liver enlargement	
Chloral hydrate			302-17-0	Chloronitrobenzene, o-			88-73-3
1year	Negligible	CNS depression and GI irritation in humans		1year	Negligible	Decreased RBC count and decrease hemoglobin	
Chloramben			133-90-4	Chlorophenol, 2-			95-57-8
1year	Negligible	Hepatocyte degeneration		1year	Negligible	Decreased litter size and increased incidence in stillbirths	
Chlordane			57-74-9	Chlorophenol, 4-			106-48-9
1year	Negligible	Centrilobular hypertrophy, cytoplasmic inclusion bodies		7day	Negligible	Hepatocytes: foamy cytoplasm; clustering of mitochondria and endoplasmic reticulum	
Chlordecone			143-50-0	14day	Negligible	Hepatocytes: foamy cytoplasm; clustering of mitochondria and endoplasmic reticulum	
1year	Negligible	Proteinuria and increased severity of glomerulosclerosis		Chlorotoluene, o-			95-49-8
7day	Negligible	Increased startle response		1year	Negligible	Decrease in body weight gain	
14day	Negligible	Increased startle response		Chlorotoluene, p-			106-43-4
Chlorfenvinphos			470-90-6	1year	Negligible	Treatment-related lesions, Treatment-related lesions, plus increased mortality and decreased body weight	
1year	Negligible	190% increase of spleen endogenous colonies; 162% increase of spleen exogenous colonies; 50% reduction in thymus weight		Chlorpropham			101-21-3
7day	Negligible	52% inhibition of plasma cholinesterase activity; 30% inhibition of erythrocyte activity		1year	Negligible	Kidney, spleen, liver, and bone marrow toxicity	
14day	Negligible	52% inhibition of plasma cholinesterase activity; 30% inhibition of erythrocyte activity		Chlorpyrifos			2921-88-2
Chlorimuron-ethyl			90982-32-4	1year	Negligible	Runny nose; blurred vision	
1year	Negligible	Increase in WBC, decreased in RBC in females, increase in alkaline phosphatase in males		Chlorsulfuron			64902-72-3
Chlorite (sodium chlorite)			7758-19-2	1year	Negligible	Decreased body weight	
1year	Negligible	Lowered auditory startle response amplitude on postnatal day 24		Chromium (VI)			18540-29-9
Chloroaniline, 4-			106-47-8	1year	Negligible	None reported	
1year	Negligible	Increased methemoglobin		Cobalt			7440-48-4
Chlorobenzene			108-90-7	1year	Negligible	Decreased iodine uptake	
1year	Negligible	Swelling of tubular epithelium and variations in cellularity, Slight bile duct proliferation, slight swelling and vacuolation and leukocytic infiltration		Copper compounds			Cu cmpds
Chlorobenzotrifluoride, 4-			98-56-6	1year	Negligible	Gastrointestinal symptoms	
1year	Negligible	Increased cholesterol and triglycerides		7day	Negligible	Abdominal pain, nausea, and/or vomiting	
Chlorobutane, 1-			109-69-3	14day	Negligible	Abdominal pain, nausea, and/or vomiting	
1year	Negligible	Change in body weight and appearance of convulsions		Copper cyanide			544-92-3
				1year	Negligible	Decreased body and organ weights, histopathologic alterations in liver and kidney	
				Cresol, m-			108-39-4
				1year	Negligible	Decreased body weights and neurotoxicity	

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CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Cresol, o-			95-48-7	Dibromochloromethane			124-48-1
1year	Negligible	Decreased body weights and neurotoxicity		1year	Negligible	Hepatic lesions	
Cumene			98-82-8	Dibromoethane, 1,2-			106-93-4
1year	Negligible	Increased average kidney weights in female rats		1year	Negligible	Tumor type: Forestomach tumors, hemangiosarcomas, thyroid follicular cell adenomas or carcinomas	
Cyclohexanone			108-94-1	Dibutyl phthalate			84-74-2
1year	Negligible	Body weight depression		1year	Negligible	Increased mortality	
Cyhalothrin			68085-85-8	Dibutyl tin dichloride			683-18-1
1year	Negligible	Diarrhea		1year	Negligible	Depressed humoral response against SRBC.	
7day	Negligible	Diarrhea		Dichloroacetic acid			79-43-6
14day	Negligible	Diarrhea		1year	Negligible	Lesions observed in the testes, cerebrum, cerebellum, and liver.	
Cypermethrin			52315-07-8	Dichlorobenzene, 1,2-			95-50-1
1year	Negligible	G.I. tract disturbances		1year	Negligible	Increased liver weight	
7day	Negligible	Altered gait; decreased activity		Dichlorobenzene, 1,3-			541-73-1
14day	Negligible	Altered gait; decreased activity		1year	Negligible	Increased cytoplasmic vacuolization in pituitary pars distalis	
Cyromazine			66215-27-8	Dichlorobenzene, 1,4-			106-46-7
1year	Negligible	Hematologic effects		1year	Negligible	Increased serum alkaline phosphatase	
Danitol			39515-41-8	Dichlorobenzidine, 3,3'-			91-94-1
1year	Negligible	Tremors		1year	Negligible	Tumor type: Mammary adenocarcinoma	
DDD			72-54-8	Dichloroethane, 1,1-			75-34-3
1year	Negligible	Tumor type: Liver tumors		1year	Negligible	Renal injury	
DDE			72-55-9	Dichloroethane, 1,2-			107-06-2
1year	Negligible	Tumor type: Hepatocellular carcinomas, hepatomas		1year	Negligible	Tumor type: Hemangiosarcomas	
DDT			50-29-3	Dichloroethylene, cis-1,2-			156-59-2
1year	Negligible	Cellular hypertrophy; cytoplasmic eosinophilia		1year	Negligible	Increased relative kidney weight	
7day	Negligible	Increased motor activity at 4 month		Dichloroethylene, trans-			156-60-5
14day	Negligible	Increased motor activity at 4 month		1year	Negligible	Suppression of the humoral immun system	
Decabromodiphenyl ether			1163-19-5	Dichlorophenol, 2,4-			120-83-2
1year	Negligible	Neurobehavioral effects		1year	Negligible	Decrease in cell-mediated immunity	
Demeton			8065-48-3	Dichlorophenoxybutyric acid, 2,4-			94-82-6
1year	Negligible	ChE inhibition, optic nerve degeneration		1year	Negligible	Internal hemorrhage, mortality	
Di(2-ethylhexyl)adipate			103-23-1	Dichloropropane, 1,2-			78-87-5
1year	Negligible	Changes in body weight and liver weight increased liver weight of male and female parents; reduced ossification and slightly dilated ureters in fetuses; reduced offspring weight gain, total litter weight, and litter size		1year	Negligible	Slight anemia	
Diazinon			333-41-5	7day	Negligible	Slight CNS depression	
1year	Negligible	RBC AChE inhibition		Dichloropropane, 1,3-			142-28-9
Dibromo-3-chloropropane, 1,2-			96-12-8	1year	Negligible	Increased weight, Histopathological lesions	
1year	Negligible	Testicular effects		Dichloropropanol, 2,3-			616-23-9
Dibromobenzene, 1,4-			106-37-6	1year	Negligible	Myocardial degeneration, hepatotoxicity and nephrotoxicity	
1year	Negligible	Liver/body weight ratio and hepatic microsomal enzyme induction					

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Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Dichloropropene, 1,3-			542-75-6	Dimethylphenol, 2,6-			576-26-1
1year	Negligible	Basal cell hyperplasia of nongladula stomach mucosa		1year	Negligible	Body weight changes and histopathological changes of internal organs (liver,spleen and kidneys)	
Dichlorvos			62-73-7	Dimethylphenol, 3,4-			95-65-8
7day	Negligible	nhibition of brain AChE		1year	Negligible	Changes in blood pressure and bod weight; histopathological changes in liver, kidney and spleen	
14day	Negligible	nhibition of brain AChE		Dinitrobenzene, 1,2-			528-29-0
Dicyclopentadiene			77-73-6	1year	Negligible	Increased weight	
1year	Negligible	Significant decrease in kit body weight		Dinitrobenzene, 1,3-			99-65-0
Dieldrin			60-57-1	1year	Negligible	Increased splenic weight	
1year	Negligible	Learning deficit		Dinitro-o-cresol, 4,6-			534-52-1
Diethyl phthalate			84-66-2	1year	Negligible	Fatigue, dizziness	
1year	Negligible	Decreased growth rate, food consumption and altered organ weights		7day	Negligible	Fatigue, dizziness	
Diethylene glycol monobutyl ether			112-34-5	14day	Negligible	Fatigue, dizziness	
1year	Negligible	RBC changes		Dinitro-o-cyclohexyl phenol, 4,6-			131-89-5
Diethylene glycol monoethyl ether			111-90-0	1year	Negligible	Cataract formation	
1year	Negligible	Hydropic degeneration and fatty changes, Hydropic degeneration		Dinitrophenol, 2,4-			51-28-5
Diethylformamide			617-84-5	1year	Negligible	Cataract formation	
1year	Negligible	No effects		Dinitrotoluene			25321-14-6
Difenzoquat			43222-48-6	1year	Negligible	Tumor type: Liver: hepatocellular carcinomas, neoplastic nodules; mammary gland: adenomas, fibroadenomas, fibromas, adenocarcinomas/ carcinomas	
1year	Negligible	Decreased body weight		Dinitrotoluene, 2,6-			606-20-2
Diflubenzuron			35367-38-5	1year	Negligible	Neurological, Hematological, and liver histopathology	
1year	Negligible	Methemoglobin and sulfhemoglobi formation		Di-n-octyl phthalate			117-84-0
Diisopropyl methylphosphonate			1445-75-6	1year	Negligible	Cytoplasmic vacuolation; accentuationof zonation; increased ethoxyresorufin-O-deethylase activity	
1year	Negligible	No effects related to treatment		7day	Negligible	17% increase relative liver weight; reduced 7-ethoxy-coumarin O-deethylase activity	
Dimethipin			55290-64-7	14day	Negligible	17% increase relative liver weight; reduced 7-ethoxy-coumarin O-deethylase activity	
1year	Negligible	Increased absolute and relative live weight		Dioxane, 1,4-			123-91-1
Dimethyl methylphosphonate			756-79-6	1year	Negligible	Swelling in central area	
1year	Negligible	Increased resorptions		Diphenamid			957-51-7
Dimethylaniline, N,N-			121-69-7	1year	Negligible	Liver toxicity	
1year	Negligible	Splenomegaly, increased splenic hemosiderosis and hematopoiesis		Diphenylhydrazine, 1,2-			122-66-7
Dimethylbenzidine, 3,3'-			119-93-7	1year	Negligible	Tumor type: Hepatocellular carcinomas and neoplastic liver nodules	
1year	Negligible	Combined tumors		Diquat			85-00-7
Dimethylformamide			68-12-2	1year	Negligible	Minimal lens opacity and cataracts	
1year	Negligible	Decreased F2 pup weight					
Dimethylhydrazine, 1,2-			540-73-8				
1year	Negligible	Mild hepatitis					
Dimethylphenol, 2,4-			105-67-9				
1year	Negligible	Squinting, lethargy, prostration, and ataxia					

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Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Disulfoton			298-04-4	Ethylphthalyl ethyl glycolate			84-72-0
1year	Negligible	Inhibition of brain cholinesterase activity in F1 pups		1year	Negligible	Kidney damage and reduced lifespan	
Dithiane, 1,4-			505-29-3	Express			101200-48-0
1year	Negligible	Nasal olfactory lesions		1year	Negligible	Elevated serum bilirubin and AST levels, increased urinary volume	
Diuron			330-54-1	Fenamiphos			22224-92-6
1year	Negligible	Abnormal pigments in blood		1year	Negligible	ChE inhibition	
Dodine			2439-10-3	Fluometuron			2164-17-2
1year	Negligible	Thyroid toxicity		1year	Negligible	No adverse effects	
Endosulfan			115-29-7	Fluoranthene			206-44-0
1year	Negligible	Decreased humoral and cell-mediated response		1year	Negligible	Increased relative liver wgt	
Endrin			72-20-8	Fluorene			86-73-7
1year	Negligible	Convulsions, tremors, diffuse degenerative brain lesions		1year	Negligible	Decreased RBC, packed cell volume and hemoglobin	
Epichlorohydrin			106-89-8	Fluoride			16984-48-8
1year	Negligible	Fertility effects		1year	Negligible	Objectionable dental fluorosis, a cosmetic effect	
Ethephon			16672-87-0	Flurprimidol			56425-91-3
1year	Negligible	Plasma ChE inhibition		1year	Negligible	Increased incidence of hepatocellular changes including fatty change and vacuolation (M); increased susceptibility to stress factors (F)	
Ethion			563-12-2	Flutolanil			66332-96-5
1year	Negligible	Brain AChE inhibition		1year	Negligible	Decreased body weight and body weight gains in both doses; increased liver weights at high dose	
7day	Negligible	Brain AChE inhibition		Fluvalinate			69409-94-5
14day	Negligible	Brain AChE inhibition		1year	Negligible	Decreases in body weight gain; increase in plantar ulcer (females)	
Ethyl acetate			141-78-6	Fomesafen			72178-02-0
1year	Negligible	Mortality and body weight loss		1year	Negligible	Liver adenomas and carcinomas	
Ethyl chloride			75-00-3	Fonofos			944-22-9
1year	Negligible	Decreased water and food consumption		1year	Negligible	Cholinesterase inhibition, cholinergic symptoms, and increased liver weight	
Ethyl p-nitrophenyl phenylphosphorothioate			2104-64-5	Formaldehyde			50-00-0
1year	Negligible	Neurotoxicity		1year	Negligible	Thickening of limiting ridges, hyperkeratosis in forestomach, focal atrophic inflammation in glandular stomach	
Ethylbenzene			100-41-4	Fosetyl-aluminum			39148-24-8
1year	Negligible	Increased serum liver enzymes in males, increased absolute and relative liver weights in males and females, increased incidence of centrilobular hepatocyte hypertrophy in males and females		1year	Negligible	Slight testicular degeneration	
Ethylene cyanohydrin			109-78-4	Furan			110-00-9
1year	Negligible	Decreased absolute weight		1year	Negligible	Hepatic lesions	
Ethylene diamine			107-15-3	Furfural			98-01-1
1year	Negligible	Decreased weight gain, Elevated serum alanine aminotransferase		1year	Negligible	Mild hepatocellular vacuolization	
Ethylene glycol			107-21-1	Furmecyclox			60568-05-0
1year	Negligible	Increased total malformations		1year	Negligible	Tumor type: Combined liver nodule and carcinomas	
Ethylene glycol monobutyl ether			111-76-2				
1year	Negligible	Hepatocellular alteration - cells that stained eosinophilic and lacked cytoplasmic granularity					
7day	Negligible	Hemoglobinuria					
14day	Negligible	Hemoglobinuria					

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Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Glufosinate ammonium			77182-82-2	Hexachlorophene			70-30-4
1year	Negligible	Increased absolute and relative kidney weights in males		1year	Negligible	Swollen salivary glands, status spongiosis in brain and optic nerve	
Glycidaldehyde			765-34-4	Hexane, commercial			110-54-3
1year	Negligible	Weight gain retardation, enlarged adrenals, hydroptic renal pelvis and hematopoietic effects		1year	Negligible	Decreased motor nerve conduction velocity	
Glyphosate			1071-83-6	Hexanone, 2-			591-78-6
1year	Negligible	Increased incidence of renal tubular dilation in F3b offspring		1year	Negligible	Axonal swelling of the peripheral nerve	
Haloxfop-methyl			69806-40-2	Hexazinone			51235-04-2
1year	Negligible	Reduced relative kidney weights in F0, F1, and F2b adults; reduced fertility in the F1/F2b generation		1year	Negligible	Decreased body weight	
Harmony			79277-27-3	HMX			2691-41-0
1year	Negligible	Reduced body weight gains in males, reduced serum sodium in males and females		1year	Negligible	Hepatic lesions	
HD			505-60-2	Hydrazine			302-01-2
1year	Negligible	Epithelial acanthosis of forestomach		1year	Negligible	Tumor type: Hepatoma	
Heptachlor			76-44-8	Hydroquinone			123-31-9
1year	Negligible	Suppression of immune response to sheep RBC in offspring		1year	Negligible	Mononuclear cell leukemia	
Hexabromobenzene			87-82-1	Imazalil			35554-44-0
1year	Negligible	Induced serum carboxylesterase activity (other effect: Increased live to-body weight ratio; increased live porphyrins.)		1year	Negligible	Decreased body weight gain	
Hexachlorobenzene			118-74-1	Imazaquin			81335-37-7
1year	Negligible	Mitochondrial degeneration in developing ovarian follicles		1year	Negligible	Decreased body weight gain, skeletal myopathy, slight anemia, bone marrow hyperplasia, elevated serum SGOT, SGPT, CPK	
Hexachlorobutadiene			87-68-3	Iodine			7553-56-2
1year	Negligible	Tubule regeneration		1year	Negligible	Subclinical hypothyroidism with gland enlargement	
Hexachlorocyclohexane, alpha-			319-84-6	7day	Negligible	Reversible subclinical hypothyroidism	
1year	Negligible	Tumor type: Hepatic nodules and hepatocellular carcinomas		14day	Negligible	Reversible subclinical hypothyroidism	
Hexachlorocyclohexane, beta-			319-85-7	Iprodione			36734-19-7
1year	Negligible	Hyalinization of centrilobular cells		1year	Negligible	Increased RBC Heinz bodies; decreased prostate weight	
7day	Negligible	Ataxia, inactivity		Iron			7439-89-6
14day	Negligible	Ataxia, inactivity		1year	Negligible	Gastrointestinal effects	
Hexachlorocyclohexane, technical			608-73-1	Isobutyl alcohol			78-83-1
1year	Negligible	Tumor type: Liver nodules and hepatocellular carcinomas		1year	Negligible	Hypoactivity and ataxia	
Hexachlorocyclopentadiene			77-47-4	Isophorone			78-59-1
1year	Negligible	Chronic irritation		1year	Negligible	No observed effects (other effect: Kidney pathology.)	
Hexachloroethane			67-72-1	Isopropalin			33820-53-0
1year	Negligible	Atrophy and degeneration of the renal tubules		1year	Negligible	Reduced hemoglobin concentration lowered hematocrits, and altered organ weights	
				Isopropyl methyl phosphonic acid			1832-54-8
				1year	Negligible	No adverse effects observed	

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Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Isoxaben			82558-50-7	Methidathion			950-37-8
1year	Negligible	Increased BUN; decreased serum Al and AST; decreased food consumption efficiency; increased heart/body weight		1year	Negligible	Liver toxicity	
Lactofen			77501-63-4	Methoxychlor			72-43-5
1year	Negligible	Increased absolute and relative live weight; hepatocytomegaly in males		1year	Negligible	Precocious vaginal opening	
Lindane			58-89-9	Methyl bromide			74-83-9
1year	Negligible	Liver and kidney toxicity		1year	Negligible	Forestomach hyperplasia	
Lithium			7439-93-2	Methyl parathion			298-00-0
1year	Negligible	Adverse effects		1year	Negligible	Electrophysiological effects in CNS and PNS	
Londax			83055-99-6	Methyl tertiary butyl ether			1634-04-4
1year	Negligible	Liver effects		1year	Negligible	Decreased BUN values	
Malathion			121-75-5	7day	Negligible	Drowsiness	
1year	Negligible	Depression of plasma and RBC cholinesterase		14day	Negligible	Drowsiness	
Malononitrile			109-77-3	Methylcyclopentane			96-37-7
1year	Negligible	Increased relative liver weight and hepatocellular hypertrophy and vacuolization		1year	Negligible	Reduction in body weight gain	
Maneb			12427-38-2	Methylene-bis(2-chloroaniline), 4,4'-			101-14-4
1year	Negligible	Increased thyroid weight		1year	Negligible	Increased mean serum ALT and increased nodular hyperplasia of liver	
MCP			93-65-2	Methylenebis(N,N'-dimethyl)aniline, 4,4'-			101-61-1
1year	Negligible	Increased absolute and relative kidney weights		1year	Negligible	Tumor type: Thyroid, follicular cell carcinoma/adenoma	
Mepiquat chloride			24307-26-4	Methylenedianiline, 4,4'-			101-77-9
1year	Negligible	Sedation and tonic spasms; decreased food intake and body weights; hematologic effects		14day	Negligible	Increased serum alanine aminotransferase and relative liver wgt	
Mercuric chloride			7487-94-7	1year	Negligible	Atrophy of hepatocytes, increased relative liver wgt	
1year	Negligible	Autoimmune effects		7day	Negligible	Increased serum alanine aminotransferase and relative liver wgt	
Merphos			150-50-5	Methylnaphthalene, 1-			90-12-0
1year	Negligible	Ataxia, delayed neurotoxicity and weight loss		1year	Negligible	Increased incidence of pulmonary alveolar proteinosis	
Merphos oxide			78-48-8	Methylnaphthalene, 2-			91-57-6
1year	Negligible	Ataxia, delayed neurotoxicity and weight loss		1year	Negligible	Pulmonary alveolar proteinosis	
Metalaxyl			57837-19-1	Metribuzin			21087-64-9
1year	Negligible	Increased serum alkaline phosphatase levels and increased liver-to-brain weight ratio		1year	Negligible	Liver and kidney effects, decreased body weight, mortality	
Methacrylonitrile			126-98-7	Mineral oil, white			8042-47-5
1year	Negligible	Increased SGOT and SGPT levels		1year	Negligible	Laxative Effects	
Methamidophos			10265-92-6	Naled			300-76-5
1year	Negligible	ChE Inhibition		1year	Negligible	Brain ChE inhibition	
Methanol			67-56-1	Naphthalene			91-20-3
1year	Negligible	Increased SAP and SGPT, and decreased brain weight		1year	Negligible	Decreased mean terminal body weight in males	
				Napropamide			15299-99-7
				1year	Negligible	Decreased body weight gain in parental animals and pups	

Table E-2: Water MEG Health Effect Basis

CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Nitrobenzene			98-95-3	Octabromodiphenyl ether			32536-52-0
1year	Negligible	Increased methemoglobin levels		1year	Negligible	Induction of hepatic enzymes; liver histopathology	
Nitrocellulose			9004-70-0	Oryzalin			19044-88-3
1year	Negligible	Physical impairment of nutrition		1year	Negligible	Increases in serum cholesterol, alkaline phosphatase, and relative liver and kidney weights, and decreases in alanine transaminase and adrenal weights	
Nitroglycerin			55-63-0	Oxadiazon			19666-30-9
1year	Negligible	Acute adverse effects related to vasodilation		1year	Negligible	Increased levels of serum proteins and increased liver weights	
Nitrosodiethanolamine, N-			1116-54-7	Oxamyl			23135-22-0
1year	Negligible	Tumor type: Hepatocellular carcinoma, cholangiocellular carcinoma and adenoma and neoplastic nodules		14day	Negligible	Decreased body weight gain and food consumption	
Nitrosodiethylamine, N-			55-18-5	Oxamyl			23135-22-0
1year	Negligible	Tumor type: Liver tumors		1year	Negligible	Decreased body weight gain and food consumption	
Nitrosodimethylamine, N-			62-75-9	Oxyfluorfen			42874-03-3
1year	Negligible	Effects (weanling sex ration and perinatal mortality)		1year	Negligible	Increased absolute liver weight and nonneoplastic lesions	
Nitroso-di-n-butylamine, N-			924-16-3	Paclobutrazol			76738-62-0
1year	Negligible	Tumor type: Bladder and esophagu tumors		1year	Negligible	Elevated liver weights, serum cholesterol, hepatic aminopyrine N-demethylase activity, and alanine transaminase levels	
Nitrosodiphenylamine, N-			86-30-6	Paraquat dichloride			1910-42-5
1year	Negligible	Tumor type: Transitional cell carcinoma of the bladder		1year	Negligible	Chronic pneumonitis	
Nitrosodipropylamine, N-			621-64-7	Pentabromodiphenyl ether			32534-81-9
1year	Negligible	Tumor type: Hepatocellular carcinomas		1year	Negligible	Induction of hepatic enzymes	
7day	Negligible	Liver histology and enzyme activitie		Pentachlorobenzene			608-93-5
14day	Negligible	Liver histology and enzyme activitie		1year	Negligible	Liver and kidney toxicity	
Nitroso-N-methylethylamine, N-			10595-95-6	Pentachloroethane			76-01-7
1year	Negligible	Tumor type: Hepatocellular carcinomas		1year	Negligible	Adenomas and carcinomas	
Nitrosopyrrolidine, N-			930-55-2	Pentachlorophenol			87-86-5
1year	Negligible	Tumor type: Hepatocellular carcinoma and adenoma		1year	Negligible	Increased severity of cystic uteri, acceptance of 2nd mating, and birtl rate	
Nitrotoluene, m-			99-08-1	Perchloroethylene			127-18-4
1year	Negligible	Hemosiderin		1year	Negligible	Hepatotoxicity in mice, weight gain in rats	
Nitrotoluene, o-			88-72-2	Permethrin			52645-53-1
1year	Negligible	Splenic hemosiderosis, splenomegaly, splenic histopathology, Elevated methemoglobin levels, anemia		1year	Negligible	Tremors, staggered gait, hindlimb splay	
Nitrotoluene, p-			99-99-0	Phenmedipham			13684-63-4
1year	Negligible	Pigmentation		1year	Negligible	No adverse effects	
Nonane			111-84-2	Phenyl isothiocyanate			103-72-0
1year	Negligible	Proliferative forestomach lesions		1year	Negligible	Decrease in thyroid function as measured by significantly decrease serum T4 levels.	
Norflurazon			27314-13-2				
1year	Negligible	Liver and thyroid effects					
NuStar			85509-19-9				
1year	Negligible	Liver cell enlargement					

Table E-2: Water MEG Health Effect Basis

CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Phenylenediamine, m-			108-45-2	Propargyl alcohol			107-19-7
1year	Negligible	Increased relative and absolute live weights and degenerative liver lesions		1year	Negligible	Renal and hepatotoxicity	
Phosmet			732-11-6	Propham			122-42-9
1year	Negligible	Reduced body weight (males), liver cell vacuolation, cholinesterase inhibition		1year	Negligible	Increase in male spleen weight and ChE depression in females	
Phosphorus, white			12185-10-3	Propiconazole			60207-90-1
1year	Negligible	Increased number of stillborn pups		1year	Negligible	Gastric mucosal irritation	
Picloram			1918-02-1	Propylene glycol			57-55-6
1year	Negligible	Increased liver weights		1year	Negligible	Reduced RBC counts and hyperglycemia	
Pirimiphos-methyl			29232-93-7	Propylene oxide			75-56-9
1year	Negligible	Transient plasma ChE depression (other effect: Borderline ChE depression.)		1year	Negligible	Tumor type: Forestomach, squamous cell carcinoma	
Polybrominated biphenyl mixture			67774-32-7	Pursuit			81335-77-5
7day	Negligible	Decreased thyroid plasma T4 hormone		1year	Negligible	Decreased packed cell volume, hemoglobin, erythrocytes in female	
14day	Negligible	Decreased thyroid plasma T4 hormone		Pydrin			51630-58-1
Polychlorinated biphenyl (Aroclor 1016/1242): (Chl			z-0042	1year	Negligible	Neurological dysfunction	
1year	Negligible	Reduced birth weights		Pyrene			129-00-0
Polychlorinated biphenyls			1336-36-3	1year	Negligible	Nephropathy and decreased kidney weights	
1year	Negligible	Reduced birth weights		Pyridine			110-86-1
Praseodymium chloride, stable, nonradioactive			10361-79-2	1year	Negligible	Increased liver weight	
1year	Negligible	No effects, No effects		Quinalphos			13593-03-8
Prochloraz			67747-09-5	1year	Negligible	No adverse effects reported	
1year	Negligible	Increase in SAP and liver weights, liver histopathology		Quinoline			91-22-5
Prometon			1610-18-0	1year	Negligible	Tumor type: Hepatic hemangioendotheliomas or hemangiosarcomas	
1year	Negligible	No treatment related effects observed		RDX			121-82-4
Prometryn			7287-19-6	1year	Negligible	Testicular degeneration	
1year	Negligible	Liver and kidney degeneration and bone marrow atrophy		Resmethrin			10453-86-8
Propachlor			1918-16-7	1year	Negligible	Reproductive toxicity	
1year	Negligible	Decreased weight gain, food consumption; increased relative liver weights		Rotenone			83-79-4
Propanil			709-98-8	1year	Negligible	Reduced pup weight	
1year	Negligible	Increased relative spleen weight in females		Samarium chloride, stable, nonradioactive			10361-82-7
Propargite			2312-35-8	1year	Negligible	No effects, No effects	
1year	Negligible	No adverse effects observed at the HDT, Reduced body weight gain; increased resorption, reduced body weight, delayed ossification (maternal and fetal)		Savey			78587-05-0
				1year	Negligible	Hypertrophy of adrenal cortex (both sexes); hematologic effects (males)	
				Sethoxydim			74051-80-2
				1year	Negligible	Mild anemia in males	
				Sodium azide			26628-22-8
				1year	Negligible	Clinical signs (e.g., hunched posture and reduced body weight	
				Sodium cyanide			143-33-9
				1year	Negligible	Decreased left epididymal, left caudal epididymal, and testes weights, number of spermatid heads per testis, and spermatid cour	

Table E-2: Water MEG Health Effect Basis

CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Sodium fluoroacetate			62-74-8	Thiophanate-methyl			23564-05-8
1year	Negligible	Increased heart weight in females and males; decreased testis weight and altered spermatogenesis in males.		1year	Negligible	Decreased body weight, decreased spermatogenesis, and histological evidence of hyperthyroidism	
Strontium, stable			7440-24-6	Tin, inorganic			7440-31-5
1year	Negligible	Abnormal tibial epiphyseal cartilage		1year	Negligible	Reduced hemoglobin concentration	
Strychnine			57-24-9	Toluene			108-88-3
1year	Negligible	Toxicity/histopathology		1year	Negligible	Increased kidney weight	
Styrene			100-42-5	Toluene-2,6-diamine			823-40-5
7day	Negligible	Impaired learning		1year	Negligible	Decreases in body weight	
14day	Negligible	Impaired learning		Toxaphene			8001-35-2
Sulfonylbis(4-chlorobenzene),1,1'-			80-07-9	1year	Negligible	Mild anisokaryosis	
1year	Negligible	Increases in absolute liver weight		Tralomethrin			66841-25-6
Systhane			88671-89-0	1year	Negligible	Decreased body weight gain in males; increased food and water consumption in males and females (other effect: Depressed body weight in parents and pups during lactation.)	
1year	Negligible	Testicular atrophy		Tri(2-butoxyethyl) phosphate			78-51-3
TCDD, 2,3,7,8-			1746-01-6	1year	Negligible	Periportal hepatocellular hypertrophy	
1year	Negligible	Decreased thymus wgt and relative thymus wgt		7day	Negligible	Weight gain reduced during GD 6-1	
Tebuthiuron			34014-18-1	14day	Negligible	Weight gain reduced during GD 6-1	
1year	Negligible	Decreased body weight gain in F1 females		Triasulfuron			82097-50-5
Terbacil			5902-51-2	1year	Negligible	Centrilobular hepatocytomegaly in males	
1year	Negligible	Increase in thyroid/body weight ratio; slight increase in liver weights; elevated alkaline phosphatase		Tribromobenzene, 1,2,4-			615-54-3
Terbutryn			886-50-0	1year	Negligible	Increased liver-to-body weight ratio and hepatic microsomal enzyme induction	
1year	Negligible	Hematological effects in females		Tributyl phosphate			126-73-8
Tetrachlorobenzene, 1,2,4,5-			95-94-3	14day	Negligible	Reduced adjusted body weight gain on GD 0-20	
1year	Negligible	Reduced serum thyroxin		1year	Negligible	Urothelial hyperplasia	
Tetrachloroethane, 1,1,1,2-			630-20-6	7day	Negligible	Reduced adjusted body weight gain on GD 0-20	
1year	Negligible	Reduced survival in males and clinical signs of neurotoxicity in both sexes.		Tributyltin oxide			56-35-9
Tetrachloroethane, 1,1,2,2-			79-34-5	1year	Negligible	Altered immunocompetence	
1year	Negligible	Increased relative liver weight		Trichlorobenzene, 1,2,3-			87-61-6
Tetrachlorophenol, 2,3,4,6-			58-90-2	1year	Negligible	Thyroid histopathology, Reduction in male body weight gain, Liver histopathology	
1year	Negligible	Increased liver weights and centrilobular hypertrophy		Trichloroethane, 1,1,1-			71-55-6
Tetraethyl dithiopyrophosphate			3689-24-5	14day	Negligible	Reduced body weight	
1year	Negligible	Decreased RBC and plasma cholinesterase activity		1year	Negligible	Reduced body weight	
Tetraethyl lead			78-00-2	Trichloroethane, 1,1,2-			79-00-5
1year	Negligible	Histopathology of liver and thymus		1year	Negligible	Hepatotoxicity (increase in serum cholesterol, alkaline phosphatase, alanine aminotransferase, and increased liver weight)	
Tetramethylcyclohexane			30501-43-0				
1year	Negligible	none					
Thiobencarb			28249-77-6				
1year	Negligible	Decrease in body weight, increase in BUN					

Table E-2: Water MEG Health Effect Basis

CHEMICAL NAME			CASRN	CHEMICAL NAME			CASRN
Timeframe	Severity	Health Effect Basis for MEG		Timeframe	Severity	Health Effect Basis for MEG	
Trichloroethylene			79-01-6	Zinc phosphide			1314-84-7
7day	Negligible	Reduced rearing rate		1year	Negligible	Reduced food intake and body weight	
14day	Negligible	Reduced rearing rate					
Trichlorophenol, 2,4,5-			95-95-4				
1year	Negligible	Degeneration of tubule epithelium of Kidney, Cloudy swelling and foca necrosis in liver					
Trichlorophenol, 2,4,6-			88-06-2				
1year	Negligible	Decreased litter size					
Trichloropropane, 1,1,2-			598-77-6				
1year	Negligible	Mild lesions in liver, kidney and thyroid					
Trichloropropane, 1,2,3-			96-18-4				
1year	Negligible	alimentary system squamous cell neoplasms; liver hepatocellular adenomas or carcinomas, Harderian gland adenomas, uterine/cervix adenomas or carcinomas					
Trichloropropene, 1,2,3-			96-19-5				
1year	Negligible	Decreased weight					
Tridiphane			58138-08-2				
1year	Negligible	Decreased fertility index and depressed body weight of dams					
Trinitrophenylmethylnitramine			479-45-8				
1year	Negligible	Blood effects, Liver effects					
Trinitrotoluene, 2,4,6-			118-96-7				
1year	Negligible	Liver effects					
Triphenylphosphine oxide			791-28-6				
1year	Negligible	Cholinesterase inhibition					
Tris(1,3-dichloro-2-propyl) phosphate (TDCP)			13674-87-8				
1year	Negligible	12% increase in absolute kidney weight					
Tris(2-chloroethyl)phosphate			115-96-8				
1year	Negligible	Increased absolute and relative kidney weight, Increased absolute and relative liver weight					
Tris(2-ethylhexyl)phosphate			78-42-2				
1year	Negligible	Increased incidence of follicular cell hyperplasia					
Vanadium and soluble, inorganic compounds (other than Vanadium Pentoxide)			z-365				
1year	Negligible	Histopathology					
Vinclozolin			50471-44-8				
1year	Negligible	Organ weight changes					
Vinyl chloride			75-01-4				
1year	Negligible	Liver cell polymorphism					
Xylenes, total			1330-20-7				
1year	Negligible	10% decrease in body weight					

Footnotes for Table E-2

See Appendix B for acronym definitions

**APPENDIX
F****FREQUENTLY ASKED QUESTIONS
(FAQs) ABOUT MEGs**

What are military exposure guidelines?

Military exposure guidelines (MEGs) are decision aids used to assess health risk to deployed forces from chemical exposures in the environment. The MEGs are designed specifically for use within the risk management framework (Field Manual (FM) 5-19) supporting the Commander's decision-making process.

A MEG is a chemical concentration in air, water, or soil that represents an exposure threshold. There are several types of thresholds that refer to an increasing potential for mission-related health effects within the entire exposed military population. These thresholds are specifically linked to one part of the military risk management framework in FM 5-19.

Each MEG is an estimate of the exposure level above which certain types of health effects may begin to occur in individuals within the exposed population after an exposure of the specified duration. The severity of the health effects and percentage of the exposed population that might demonstrate the health effects may increase as concentrations increase above the MEG. The degree to which severity and/or incidence of health effects increase as exposure increases above a MEG is chemical-specific. Some of the MEGs are "screening levels" below which certain health effects would not be expected to occur within a deployed population under reasonable worst-case exposure conditions.

The MEGs are population-based; therefore, they are not designed for predicting health effects in specific individuals. The MEGs provide the basis for more detailed evaluation by appropriate health experts—they are not stand-alone action levels. They are often based on other U.S. Federal standards, such as unsafe levels use for emergency response planning or safe levels in the workplace as prescribed by the U.S. Occupation Safety and Health Administration. They are either the same values as U.S. Federal agency standards or guidelines or they are adjusted to match the unique exposure scenarios or subpopulations of the deployed forces.

The MEGs have been developed for many chemicals; some chemicals have MEGs for different media (e.g., air, water, and soil) and for different exposure conditions and timeframes (e.g., for short-term exposures of 1 hour or 1 day, as well as for long-term, continuous 1-year exposures). The MEGs are designed to assess a variety of military exposure scenarios, such as a single release of large amounts of a chemical, temporary exposure conditions lasting hours to days, or for continuous ambient environmental conditions, such as a regional pollution.

What kind of MEGs are available and what does 'exceedance of a MEG' mean?

The currently available set of MEGs includes values for air, water, and soil for several different exposure durations arranged along differing military hazard severity levels from Negligible to Catastrophic (see FM 5-19). For example, for a given chemical, there are four possible Air MEG values for the 1-hour exposure duration. Table F-1 presents the standard interpretation and use of the MEGs.

Table F-1. Example of the Potential Types of Air MEGs for the 1-Hour Exposure Duration for a Hypothetical Chemical and the Standard Interpretation of the Hazard Severity Level Associated with Various Field Exposures

Exposure Estimate*	MEG Name	MEG Value	Hazard Severity Designation †
≥ 340 mg/m ³	1-hour Catastrophic MEG	340 mg/m ³	Catastrophic
150 – <340 mg/m ³	1-hour Critical MEG	150 mg/m ³	Critical
30 – <150 mg/m ³	1-hour Marginal MEG	30 mg/m ³	Marginal
† 5 – <30 mg/m ³	1-hour Negligible MEG	5 mg/m ³	Negligible

Notes:

* This exposure estimate represents an average 1-hour exposure. Analytical error associated with measurements at the boundaries of the categories (e.g., 29 vs. 30 mg/m³) must be acknowledged.

† Field exposures < 5 milligrams per cubic meter (mg/m³) would not be considered to be a deployment hazard and would not be evaluated in a formal risk assessment.

‡ In reality, hazard severity blends together at the margins between each category, which reflects a graded series of health responses as exposure increases. For example, there is no practical measurement and toxicological distinction between 29 and 30 mg/m³ even though the selected severity categories will be different. The risk assessment method addresses exposures near the borders of the categories.

This standard approach for setting hazard severity levels within a risk assessment sets a useful framework, but it does not highlight the chemical-specific knowledge and the scientific uncertainties associated with the underlying data for any given assessment. The USAPHC TG 230 provides additional details on what data the MEGs are based on and what it means to exceed a MEG (i.e., where a field exposure is greater than a MEG).

The fact that a chemical concentration measured in the field is greater than a MEG should never, by itself, be interpreted to mean there is a notable or definitive risk of a specific health effect in an exposed individual. The MEGs are not stand-alone action levels. The MEGs are decision tools used within a risk assessment which informs decision makers about the potential need for actions for adjustments to military operations, potential medical treatment, and long-term health surveillance. Because MEGs are derived from protective 'threshold' estimates that often have low confidence, exceeding a MEG only indicates a potential for specified health effects increase among some members of the exposed military population. However, the

significance of the increased risk (i.e., type of health effects, severity, and number or personnel) will depend on many factors. These factors include chemical-specific, dose-response relationships, exposure-time profiles, and the frequency of human susceptibility factors (underlying illnesses, health behaviors (e.g., smoking) and at-risk genes) within the exposed population that may predispose certain individuals to certain effects.

What types of health effects are considered when developing a MEG?

When short-term MEGs are generated, health effects that may develop immediately or shortly after an exposure are considered. Generally speaking, acute/short term effects occur after single relatively brief or short-term exposures (minutes to days). Reversible and irreversible health effects are considered when developing these MEGs. Some of the short-term MEG categories also consider increased risk for developing cancer.

When long-term MEGs are generated, health effects that may develop or continue post-deployment (e.g., months or years later) are considered. In general, the long-term Negligible MEGs are protective of both cancer and the most sensitive health endpoints other than cancer that have been identified in toxicological or epidemiological studies.

How accurate does a MEG estimate a threshold for the possibility of health effects?

The quantity and quality of the health effects and toxicological data upon which the MEGs are based varies substantially across the chemicals. Since existing toxicological databases and health criteria were utilized to develop the MEGs, the quality and extensiveness of toxicological and epidemiological information underlying these guidelines is comparable and as variable as that used by other Federal agencies for worker and civilian applications.

The overall confidence that certain kinds of health effects will not occur within a population when field exposures are below a MEG is generally high. The overall confidence that effects will occur in the population when exposures are above a MEG ranges from low to moderate for most chemicals and health effects. In most cases, some type of margin of safety has been built into a MEG value to address the uncertainty resulting from gaps in toxicological data. This means that MEGs typically reflect levels that are lower than effect levels determined in scientific studies. The amount lowered (safety margin) depends on the extent of scientific uncertainties for that chemical and effect. Some MEGs, especially those for long-term exposures and health effects, have a safety margin that is several orders of magnitude lower than what would be considered safe for the animals studied in the laboratory.

What is a “screening-level” MEG?

The most commonly used MEG is the long-term (1-year) Negligible MEG, which is the lowest MEG concentration for a chemical. This 1-year Negligible MEG is often used as a “screening level” in that it addresses the worst-case deployment exposure conditions (most frequent and continuous long-term exposure conditions, e.g., Soldiers continuously exposed “on-the-job” 24 hours a day, 7 days a week, for 1 whole year). The screening-level MEG is used as the initial basis to compare field sampling data to determine if there is a potential hazard. As long as

sample data for a detected chemical is below the screening level MEG, then there is no hazard and, thus, no operational risk. If concentrations are above the 1-year Negligible MEG, then a chemical exposure may pose a military hazard and it requires further assessment, to include comparison to the other available MEGs for that chemical.

How are MEGs used?

Within the context of a health risk assessment, MEGs are used to determine the significance of field exposures to the military mission at a specific location or for a specific operation. The MEGs are used to rank the hazard severity of the exposure. See the section called “*What kind of MEGs are available and what does ‘exceedance of a MEG’ mean?*” to understand how severity is ranked.

The severity rank is then combined with estimates of hazard probability to estimate the operational risk of the field exposure (the hazard). Risk is estimated using the following risk matrix.

Military Risk Assessment Matrix

HAZARD SEVERITY	HAZARD PROBABILITY				
	Frequent (A)	Likely (B)	Occasional (C)	Seldom (D)	Unlikely (E)
Catastrophic (I)	Extremely High	Extremely High	High	High	Moderate
Critical (II)	Extremely High	High	High	Moderate	Low
Marginal (III)	High	Moderate	Moderate	Low	Low
Negligible (IV)	Moderate	Low	Low	Low	Low

Source: Army Field Manual 5-19

Can MEGs be used to estimate the number of personnel that will develop certain health effects?

The MEGs are not designed for determining casualty estimates. In general, there will not be adequate toxicity data, exposure data, and modeling to support the development of casualty estimates for most chemicals and pollutants. While the severity of the health effects and percentage of personnel potentially demonstrating health effects will generally increase as concentrations increase above the MEG, it is not considered reasonable to estimate the number of individuals that will have specific effects using the MEGs.

The MEGs are PVNTMED guidelines designed for use in determining a qualitative level of risk posed to an exposed military population. The qualitative risk rank is specified in terms that are derived from the military risk management model (see FM 5-19). The MEGs cannot be used as a planning tool for estimating the loss of effectiveness of personnel to perform daily duties due

to incapacitation or other health effects without knowing the actual level and duration of exposure to a specified chemical.

Can MEGs be used to determine which personnel will develop health effects?

The MEGs are population-based and are not designed for predicting health effects in specific individuals. While it is true that for many chemicals there are certain types of human susceptibility factors or underlying health conditions that may predispose persons to develop effects, the available information is inadequate to predict specific cases with certainty. Many, if not most, MEGs are based on civilian health criteria designed to address certain key susceptible subgroups in the civilian population (e.g., asthmatics). Even though these subgroups make up a small fraction of any given military population, the intent in using these guidelines was to ensure protective estimates that would address these Service members.

The general human factors that play a role in susceptibility to chemical exposures include the following:

- Gender: For example, females are more susceptible to effects from exposures to benzene and nerve agents.
- Underlying health conditions: For example, asthmatics (estimated 2-5 percent of troops) are more susceptible to effects from exposure to PM matter as well as other air pollutants and certain acid gases.
- Other health factors: For example, susceptibility generally changes with age, fitness level, dehydration, fatigue, nutritional status/anemia, tobacco use, and so forth.

Why were MEGs developed for Soldiers instead of using U.S. civilian health standards?

While there are some specific exceptions, in general, civilian exposure standards and guidelines are not sufficient for the military Force Health Protection mission for several reasons. For example, those guidelines are not specific to the exposure scenarios faced by deployed personnel. In general, deployed personnel can experience exposure rates (for example, amount of air inhaled, amount of water consumed) that are higher than their civilian counterparts. While an existing civilian exposure standard or guideline can often form the basis for a MEG value, the MEG development process often makes population-specific adjustments to address different exposure rates or exposure durations.

In addition, civilian standards and guidelines are generally not aligned to the military risk management hazard severity levels used to rank risks for Commanders. The MEG development process takes adjusted-civilian guidelines and aligns them according to the severity levels of Negligible, Marginal, Critical, and Catastrophic. These categories are used by PVNTMED personnel to rank risks according to mission and force health protection metrics.

Notably, U.S. short-term emergency response guidelines, such as the AEGLs and ERPGs, are examples of civilian guidelines that do align with aligned to the military risk management hazard severity levels. When available, these are used as MEGs.

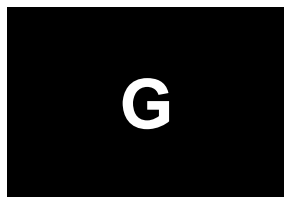
Who should use MEGs? When should MEGs be used?

The MEGs (and USAPHC TG 230) are designed for PVNTMED and medical personnel trained in the identification and evaluation of environmental health hazards. Within the Army, these individuals function at or above the Health Service Support Level II, according to DA Pam 40-11 Section 3-2 (DA Pam 2006). The MEGs are designed for use in the context of a health risk assessment for use within the military risk management framework (DA 2006). The DOD (DoDI 6490.03, 2006) and Joint Staff (CJCS 2007) policy states that MEGs are to be used to assess environmental chemical exposures that occur during military deployments. Since MEGs have been specifically developed for military deployment conditions, unless otherwise indicated, they should be used in place of other civilian or occupational standards during deployments.

The risk assessment guidance provided in USAPHC TG 230 serves as an objective base from which to make educated determinations within this framework. Risk assessors should have a basic understanding of the underlying toxicological and health basis for the MEGs. They should be familiar with basic methods of exposure assessment for chemicals in the environment. Finally, it is necessary that the risk assessor appreciate the uncertainties associated with sampling and with the assumptions used for estimating representative exposure levels and possess a high degree of understanding of basic risk communication principles. This guidance does not replace the need for basic technical training in these areas; nor does it provide guidance for sample planning or collection.

Where can I learn more?

The USAPHC TG 230 provides risk assessment guidance on how to interpret field data using the MEGs. Also, USAPHC RD 230 provides methodological details on how the MEGs were developed. These reference materials and guidance can be obtained electronically at: <http://1.usa.gov/TG-230>



RISK ASSESSMENT REFERENCE TOOLS

SECTIONS / WORKSHEETS

G.1	Risk Assessment Flowchart.....	1
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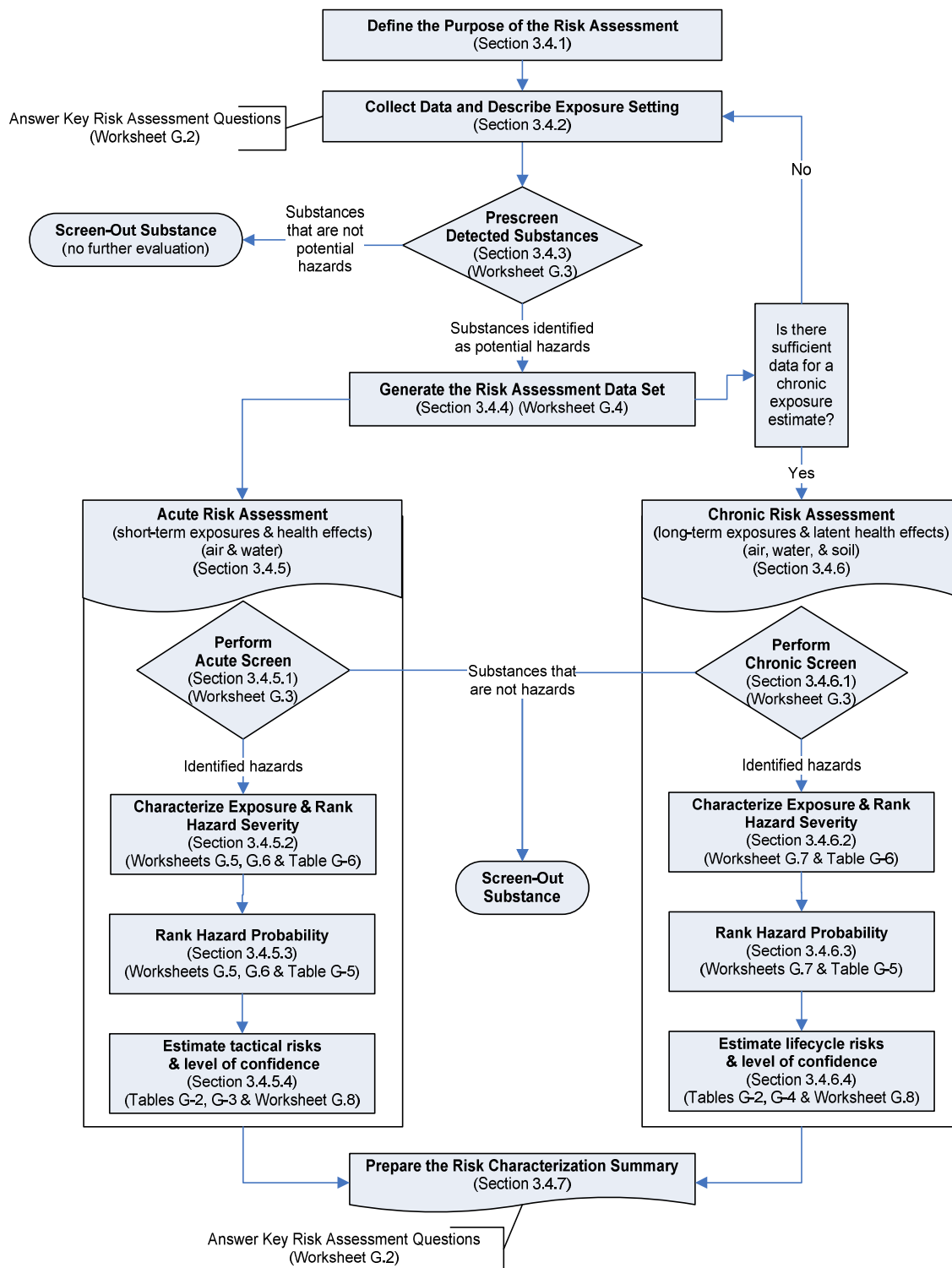
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NOTE

Risk assessors should understand the written risk assessment process described in the main body of TG 230 before use of the worksheets and tables in this appendix. There are methodological details described in Chapter 3 that are not highlighted in this Appendix.

G.1 RISK ASSESSMENT FLOWCHART



Consultation with subject matter experts — When MODERATE or higher risk levels are identified, it is recommended that subject matter experts, or other qualified medical/health professionals, be consulted in order to validate the risk assessment. If exposures actually occur, then such a validation should also review the need for increased medical surveillance and risk communication support.

G.2 Key Risk Assessment Questions

Questions to answer at the beginning of a risk assessment

- What is the purpose of the risk assessment?
- What is the exposure event or ambient environmental condition under consideration?
- What is the population at risk?
- What is the timeframe under consideration?
- What are the activity patterns of the exposed population?
- What is known about the source of the chemicals?
- What is known about the exposure setting?
- What are the exposure pathways?
- Where are the sampling locations relative to where exposure occurs?
- Is there adequate data quality to conduct a chronic assessment?

Questions to answer near the end of the risk assessment

- Has the risk assessment incorporated any of the unique considerations identified in **Section 3.5**?
- Has a level of confidence been assigned to the final risk estimates? Is data quality adequate to base risk management decisions on the risk assessment?
- When risk levels greater than LOW are identified, it is recommended that USAPHC (Prov) subject matter experts, or other qualified medical/health professionals, be consulted in order to validate the risk assessment and review the need for increased medical surveillance and risk communication support.
- Is it worth collecting additional data to increase the confidence in the risk assessment conclusion?
- Are there readily available exposure control measures that can be implemented?

G.3 HAZARD IDENTIFICATION WORKSHEET

Prescreen

- Air and Soil. Eliminate from consideration all chemical substances that do not have a single sample concentration greater than the 1-year Negligible MEG.
- Drinking Water. Eliminate from consideration all chemical substances that do not have a single sample concentration greater than the the1-year Negligible MEG for the 5L/day consumption rate or the 14-day Negligible MEG for the 15L/day consumption rate (whichever is lower)..
- Nondrinking Water. Eliminate from consideration all chemical substances that do not have a single sample concentration greater than 2.5 times the 1-year Negligible MEG for the 5 L/day rate.

Screen for Acute Hazards

- Air. Eliminate from further consideration all chemical substances with peak PEPCs less than or equal to the following MEGs.
 - For particulate matter and chemical warfare agents: 24-hour Negligible MEG.
 - For other chemicals: 14-day Negligible MEG.
 - When a 14-day Negligible MEG is equal to the 1-year Negligible MEG, or is unavailable, then use the 8-hour Negligible MEG for elimination. If an 8-hour Negligible MEG is unavailable, then use the 1-hour Negligible MEG.
- Drinking Water. Eliminate from further consideration all chemical substances with a peak PEPC that is less than or equal to the 14-day, 15-L/day Negligible MEG.
- Non-drinking Water. Eliminate from further consideration all chemical substances with a peak PEPC that is less than or equal to 2.5 times the 14-day, 5-L/day Negligible MEG.
- Soil. Not evaluated in an acute risk assessment.

Screen for Chronic Hazards

- Frequency of detection screen. Eliminate from further consideration all chemical substances that are detected less than 5 percent of the time within the sample set to be used to calculate exposure estimates for each exposure pathway.
- Air and Soil. Eliminate from further consideration all chemical substances with average deployment-length PEPCs that are less than or equal to the 1-year Negligible MEG.
- Drinking Water. Eliminate from further consideration all chemical substances with average source PEPCs that are less than or equal to the 1-year, 5-L/day Negligible MEG.
- Non-drinking Water. Eliminate from further consideration all chemical substances with average source PEPCs that are less than or equal to 2.5 times the 5-L/day, 1-year Negligible MEG.

G.4 POPULATION EXPOSURE POINT CONCENTRATIONS WORKSHEET

Population exposure point concentrations (PEPCs) are designed to be compared to the MEGs within the context of a health risk assessment. Multiple PEPCs for the same chemical are usually needed to perform a risk assessment. The PEPC definitions are found in Section 3.4.4. Note: There are methodologic details found in Chapter 3 that are not highlighted here.

Peak PEPCs

- Air. One or more peak PEPCs can be selected directly from the data set. They are the maximum detected concentrations for each of the available sample averaging times. The highest peak PEPC for a given chemical is considered to be the overall peak PEPC, and it is usually associated with the shortest available sample averaging time.
- Water. The peak PEPC for a water source is simply the maximum detected concentration of the chemical.

Average PEPCs

Average PEPC calculations require an explicit definition of the exposure duration with start and stop times. In general, the arithmetic mean is recommended for calculating the average PEPC when the size of the data set is limited. However, depending upon the number of samples and the distribution of the sample data, various estimation procedures can be used to calculate the average PEPC other than the simple arithmetic mean. Other estimation procedures should be considered for skewed data distributions, which can be common for environmental contaminant data. Average PEPC calculations (especially for air) may need to involve estimation of surrogate values for missing time periods (see Section 3.4.4.2). Also, average PEPC calculations may need to involve procedures for handling results that are less than the reporting limit (see last bullet below).

- Air (acute average PEPCs). The acute average (or event-length) PEPC across the duration of the exposure event is calculated for each chemical. While there may be multiple peak PEPCs for a chemical (i.e., one associated with each sample averaging time), there will be only one average PEPC for a chemical.
- Air (chronic average PEPC). The chronic average (or deployment-length) PEPC is calculated by averaging across the length of deployment (or the length of time of site operations). This duration is usually 1 year but should not exceed 3 years for risk assessment purposes.
- Water (acute and chronic PEPCs). The average PEPC is the average concentration across the exposure duration (i.e., the duration of use of the water/ice source). These values are calculated directly from the data set. For many water sources only one sample will be available.
- Soil (chronic average PEPCs). The average (or deployment-length) PEPC is calculated by averaging across all the collected samples within the exposure area during the time of site operations (or during the deployment). Specific soil contamination events, such as leaks and spills, should be characterized independently.
- Surrogate Values for Samples Measured as Not Detected. When a chemical is not detected in every sample, then sample values reported as not detected (i.e, U-flagged) should be assigned surrogate values equal to $\frac{1}{2}$ LOD or $\frac{1}{2}$ LOQ for the purposes of calculating average PEPCs. The $\frac{1}{2}$ LOD surrogate is recommended when the LOD is known, as it is a more accurate reflection of the information at hand. Definitions of the LOD (Limit of Detection) and LOQ (Limit of Quantitation) are provided in Section 3.4.4. Note that in chronic assessments there is a 5 rule (see Section 3.4.6.1).

G.5 HAZARD ASSESSMENT WORKSHEET FOR ACUTE AIRBORNE EXPOSURES

Characterize Exposure and Rank Hazard Severity

Both the peak PEPCs and the average PEPC across the selected exposure duration should be determined and/or calculated from the risk assessment data set. Compare to the MEGs as shown below and rank hazard severity. The decision logic presented below ranks severity according to the highest MEG that the PEPC exceeds.

<i>For most chemicals</i>	<i>Hazard Severity</i>
PEPC ≤ 14-day Negligible MEG	Negligible
PEPC > 14-day Negligible MEG but ≤ 8-hour Negligible MEG	Negligible
PEPC > 8-hour Negligible MEG but ≤ 1-hour Negligible MEG	Negligible
PEPC > 1-hour Negligible MEG but ≤ 1-hour Marginal MEG	Negligible
PEPC > 1-hour Marginal MEG but ≤ 1-hour Critical MEG	Marginal *
PEPC > 1-hour Critical MEG	Critical – Catastrophic *

<i>For particulate matter</i>	<i>Hazard Severity</i>
PEPC ≤ 24-hour Negligible MEG	Negligible
PEPC > 24-hour Negligible MEG but < 24-hour Marginal MEG	Negligible
PEPC ≥ 24-hour Marginal MEG but < 24-hour Critical MEG	Marginal
PEPC ≥ 24-hour Critical MEG	Critical * [†]

<i>For chemical warfare agents and key toxic industrial chemicals</i>	<i>Hazard Severity</i>
Unlike the other chemicals, there are multiple sets of MEGs available for these chemicals. That is, for each of the exposure durations of 10 minutes, 1 hour, 8 hours, and 24 hours, there are Negligible, Marginal, Critical, and sometimes Catastrophic MEGs. Severity should be ranked using the MEG exposure duration most closely aligned with the exposure duration experienced by the population.	
PEPC < Negligible MEG	Negligible
PEPC ≥ Negligible MEG but < Marginal MEG	Negligible
PEPC ≥ Marginal MEG but < Critical MEG	Marginal *
PEPC ≥ Critical MEG (for key toxic industrial chemicals)	Critical – Catastrophic *
PEPC ≥ Critical MEG but < Catastrophic MEG (for chemical warfare agents)	Critical *
PEPC ≥ Catastrophic MEG (for chemical warfare agents)	Catastrophic *

Notes:

* In these situations, it is recommended that USAPHC (Prov) be contacted in order to validate the severity ranking and provide technical support.

[†] An exceedance of the Critical 24-hour MEG for coarse PM₁₀ is anticipated to result in significant irritation to eyes and respiratory system, but such exposures are not ever considered 'Catastrophic' from a health standpoint. However, it is acknowledged that certain blinding windstorms conditions can be so severe so has to halt most all outdoor operations (not technically a health hazard per se).

[Continued on next page]

Rank Hazard Probability

[acute air assessment]

Factor 1 – Degree of exposure	
<i>Method A – When the PEPC is between MEGs of different severity levels for the duration</i>	Factor Score
PEPC is below the 25 th percentile of the severity range	1
PEPC is at or between the 25 th and 75 th percentiles of the severity range	2
PEPC is above the 75 th percentile of the severity range	3
$25^{\text{th}} \text{ percentile} = MEG_{lo} + \left(\frac{MEG_{hi} - MEG_{lo}}{4} \right) \quad 75^{\text{th}} \text{ percentile} = MEG_{hi} - \left(\frac{MEG_{hi} - MEG_{lo}}{4} \right)$	
<i>Method B – When the PEPC is not between MEGs of different severity levels for the duration</i>	Factor Score
PEPC ≤ Negligible MEG	1
PEPC > Negligible, Marginal, or Critical MEG (and the next higher severity MEG does not exist)	2

Factor 2 – Representativeness of the field data	
	Factor Score
Field data overestimates the population exposure	1
Field data adequately estimates population exposure	2
Field data underestimates the population exposure	3

Factor 3 – Duration of exposure	
	Factor Score
Field exposure duration : MEG exposure duration ratio is less than 1	1
Field exposure duration : MEG exposure duration ratio is from 1 to 3	2
Field exposure duration : MEG exposure duration ratio is greater than 3	3

Factor 4 – Rate of exposure: Level of activity related to inhalation rate	
	Factor Score
Light exertion. Standing in foxhole. Guard duty. Desk work. Vehicle driving.	1
Typical exertion. Equipment maintenance. March with LBE no rucksack. (Use this option for site-wide annual assessments of air quality.)	2
Heavy exertion. Forced load carriage march with 20-kg load. Repetitive lifting and carrying heavy loads (e.g., ammo handlers).	3

Hazard probability →	UNLIKELY	SELDOM	OCCASIONAL	LIKELY	FREQUENT
<i>Total factor score →</i>	4 – 6	7	8	9	10 – 12

G.6 HAZARD ASSESSMENT WORKSHEET FOR ACUTE DRINKING WATER EXPOSURES

Characterize Exposure and Rank Hazard Severity

The average PEPC across the selected exposure duration should be calculated from the risk assessment data set. Compare to the MEGs as shown below and rank hazard severity. The decision logic presented below ranks severity according to the highest MEG that the PEPC exceeds.

1. Based on the exposure duration being assessed, either the 7-day or 14-day MEGs must be chosen for these comparisons. The 7-day MEGs are designed for exposure durations less than 7 days. The 14-day MEGs are designed for exposures that are greater than 7 days in length.
2. The risk assessor must choose either the 5-L/day or 15-L/day MEGs for these comparisons. The choice must be consistent across all evaluations in the same risk assessment. This choice should be based on knowledge of site conditions, climate, and expected consumption rates in the population at risk. The 5-L/day MEGs should be used for consumption rates not to exceed 10-L/day, while the 15-L/day MEGs should be used for consumption rates of 10-L/day or higher.

<i>Exposure to MEG relationship</i>	<i>Hazard Severity</i>
PEPC \leq 7-day or 14-day Negligible MEG	Negligible
PEPC > 7-day or 14-day Negligible MEG	Negligible – Catastrophic *

* At this time Marginal and higher severity MEGs for water are not available. Until USAPHC establishes such MEGs for a chemical, the hazard severity determination for exposures greater than the Negligible MEG will need to be chemical- and site-specific. In most cases, based on USAPHC experience, the acute hazard severity ranks for PEPC estimates that are greater than the 7-day or 14-day Negligible MEGs will be Negligible. However, when an acute PEPC estimate is substantially higher than the Negligible MEG, then the severity may be Marginal or greater. The severity rank should depend on the following factors:

- The WOE and confidence in the precision of the Negligible MEG as an estimate of the threshold for the health outcomes associated with the chronic hazard severity definition (see Section 3.3.2).
- The dose-response relationships for the health endpoints under consideration in relation to the magnitude of the estimated long-term PEPC.

Subject matter experts with appropriate understanding of the underlying chemical- and endpoint- specific toxicity data should be consulted to determine most appropriate severity level when the next higher severity level MEG is unavailable.

In these situations, it is recommended that USAPHC be contacted in order to validate or determine the severity ranking and provide technical support.

[Continued on next page]

Rank Hazard Probability

[acute drinking water assessment]

Factor 1 – Degree of exposure	
<i>Method A – When the PEPC is between MEGs of different severity levels for the duration</i>	Factor Score
PEPC is below the 25 th percentile of the severity range	1
PEPC is at or between the 25 th and 75 th percentiles of the severity range	2
PEPC is above the 75 th percentile of the severity range	3
$25^{\text{th}} \text{ percentile} = MEG_{lo} + \left(\frac{MEG_{hi} - MEG_{lo}}{4} \right) \quad 75^{\text{th}} \text{ percentile} = MEG_{hi} - \left(\frac{MEG_{hi} - MEG_{lo}}{4} \right)$	
<i>Method B – When the PEPC is not between MEGs of different severity levels for the duration</i>	Factor Score
PEPC ≤ Negligible MEG	1
PEPC > Negligible, Marginal, or Critical MEG (and the next higher severity MEG does not exist)	2

Factor 2 – Representativeness of the field data	
	Factor Score
Field data overestimates the population exposure	1
Field data adequately estimates population exposure	2
Field data underestimates the population exposure	3

Factor 3 – Duration of exposure	
	Factor Score
Field exposure duration : MEG exposure duration ratio is less than 1	1
Field exposure duration : MEG exposure duration ratio is from 1 to 3	2
Field exposure duration : MEG exposure duration ratio is greater than 3	3

Factor 4 – Rate of exposure: Estimated average water consumption rate		
<i>Evaluations using a 5L/d MEG</i>	<i>Evaluations using a 15L/d MEG</i>	Factor Score
< 3 L/day	10 – 13 L/day	1
4 – 7 L/day	14 – 16 L/day	2
8 – 10 L/day	> 17 L/day	3

Hazard probability →	UNLIKELY	SELDOM	OCCASIONAL	LIKELY	FREQUENT
<i>Total factor score →</i>	4 – 6	7	8	9	10 – 12

G.7 HAZARD ASSESSMENT WORKSHEET FOR CHRONIC EXPOSURES TO AIR, DRINKING WATER, AND SOIL

Characterize Exposure and Rank Hazard Severity

Compare the calculated annual-average PEPC, or deployment-length PEPC, to the long term 1-year MEGs. For drinking water exposures, the risk assessor should choose either the 5-L/day or the 15-L/day water MEGs for comparison purposes based on knowledge of site conditions, climate, and expected consumption rates in the population at risk. The 5-L/day MEGs should be used for consumption rates not to exceed 10-L/day, while the 15-L/day MEGs should be used for consumption rates of 10-L/day or higher.

<i>Exposure to MEG relationship</i>	<i>Hazard Severity</i>
PEPC \geq 1-year Negligible MEG but < 1-year Marginal MEG	Negligible *
PEPC \geq 1-year Marginal MEG	Marginal – Critical *

* At this time only one long-term Marginal MEG is available (for PM_{2.5}) and no long-term Critical MEGs are available. Until USAPHC establishes a long-term Marginal and Critical MEG for a chemical, the hazard severity determination for an exposure greater than the Negligible MEG will need to be chemical- and site-specific. In most cases, based on USAPHC experience, the chronic hazard severity ranks for PEPC estimates that are greater than the 1-year Negligible MEG will be Negligible. However, when a long-term PEPC estimates are substantially higher than the Negligible MEG, then the severity may be Marginal or, in rare cases, Critical. The severity rank should depend on the following factors:

- The WOE and confidence in the precision of the Negligible MEG as an estimate of the threshold for the health outcomes associated with the chronic hazard severity definition (see Section 3.3.2).
- The dose-response relationships for the health endpoints under consideration in relation to the magnitude of the estimated long-term PEPC.

Subject matter experts, with appropriate understanding of the underlying chemical- and endpoint- specific toxicity data, should be consulted to determine most appropriate severity level when the next higher severity level MEG is unavailable.

In these situations, it is recommended that USAPHC be contacted in order to validate or determine the severity ranking and provide technical support.

[Continued on next page]

Rank Hazard Probability

[chronic assessments]

Factor 1 – Degree of exposure	
<i>Method A – When the PEPC is between MEGs of different severity levels for the duration</i>	<i>Factor Score</i>
PEPC is below the 25 th percentile of the severity range	1
PEPC is at or between the 25 th and 75 th percentiles of the severity range	2
PEPC is above the 75 th percentile of the severity range	3
$25^{\text{th}} \text{ percentile} = MEG_{lo} + \left(\frac{MEG_{hi} - MEG_{lo}}{4} \right) \quad 75^{\text{th}} \text{ percentile} = MEG_{hi} - \left(\frac{MEG_{hi} - MEG_{lo}}{4} \right)$	
<i>Method B – When the PEPC is not between MEGs of different severity levels for the duration</i>	<i>Factor Score</i>
PEPC ≤ Negligible MEG	1
PEPC > Negligible, Marginal, or Critical MEG (and the next higher severity MEG does not exist)	2

Factor 2 – Representativeness of the field data	
	Factor Score
Field data overestimates the population exposure	1
Field data adequately estimates population exposure	2
Field data underestimates the population exposure	3

Factor 3 – Duration of exposure	
	Factor Score
Field exposure duration : MEG exposure duration ratio is less than 1	1
Field exposure duration : MEG exposure duration ratio is from 1 to 3	2
Field exposure duration : MEG exposure duration ratio is greater than 3	3

[Continued on next page]

Rank Hazard Probability (continued)

[chronic assessments]

Factor 4 – Rate of exposure (air): Level of activity related to inhalation rate	Factor Score
Light exertion. Standing in foxhole. Guard duty. Desk work. Vehicle driving.	1
Typical exertion. Equipment maintenance. March with LBE no rucksack. (Use this option for site-wide annual assessments of air quality.)	2
Heavy exertion. Forced load carriage march with 20-kg load. Repetitive lifting and carrying heavy loads (e.g., ammo handlers).	3

Factor 4 – Rate of exposure (water): Estimated average water consumption rate	Factor Score
Average daily water consumption is less than 3 L/day (< 3L/day)	1
Average daily water consumption is between 4 and 7 L/day (4-7L/day)	2
Average daily water consumption is greater than 8 L/day (>8L/day)	3

Factor 4 – Rate of exposure (soil): Level of activity related to soil contact rate	Factor Score
Minor contact with soil on an infrequent basis (office work, maintenance work in shops).	1
Moderate contact with soil on a regular basis (frequent patrols on unpaved areas, standard construction). (Use this option for site-wide assessments of soil quality.)	2
Heavy contact with soil on a daily basis (road construction, digging defensive positions).	3

Hazard probability →	UNLIKELY	SELDOM	OCCASIONAL	LIKELY	FREQUENT
<i>Total factor score →</i>	4 – 6	7	8	9	10 – 12

G.8 LEVEL OF CONFIDENCE WORKSHEET

Assigning a level of confidence to a risk estimate requires knowledge about the limitations of the assessment tools and the uncertainty in the available data underlying the exposure assessment. Additional details for consideration are found in TG 230 Section 3.3.4.

- **High Confidence.** High confidence in a risk level implies significant understanding of all the variables used to determine the risk. It results from sampling data that is adequate to characterize typical exposures and the range of those types of exposures, as well as a good understanding of the exposure patterns of the population being characterized.
- **Medium Confidence.** Medium confidence in a risk level implies some understanding of most of the variables used to determine the risk. It results from sampling data that is plausibly adequate to characterize typical exposures and the range of those types of exposures.
- **Low Confidence.** Low confidence is assigned when sampling data may not be adequate to characterize the situation, and when the assessor is making a best scientific assessment in the absence of complete information.

Table G-1 Example Criteria for Assigning Confidence Levels

Confidence	Criteria
High	<ul style="list-style-type: none"> - Field Sampling data quality is very good – substantial samples over time/space. - Field activity patterns are well known. - True exposures are reasonably approximated. - No critical missing information. - The predicted health outcomes are highly plausible (strong toxicological weight of evidence/human data) or already demonstrated.
Medium	<ul style="list-style-type: none"> - Field data quality is relatively good. - Estimates of field exposure are likely to be greater than true exposures due to incomplete data coverage relative to actual exposure durations. - Detailed information is lacking regarding true personnel activity patterns in the field. - Predicted health outcomes are plausible but there is toxicological data but limited weight of evidence/human data is lacking.
Low	<ul style="list-style-type: none"> - Important data gaps and/or inconsistencies exist. - Exposure conditions are not well defined. - Field personnel activity patterns are basically unknown. - Predicted health outcomes are not plausible because it is not consistent with real-world events/experience.

G.9 Quick Reference Tables

Table G-2 Military Risk Assessment Matrix (FM 5-19 and FM 4-02)

HAZARD SEVERITY	HAZARD PROBABILITY				
	Frequent (A)	Likely (B)	Occasional (C)	Seldom (D)	Unlikely (E)
Catastrophic (I)	Extremely High	Extremely High	High	High	Moderate
Critical (II)	Extremely High	High	High	Moderate	Low
Marginal (III)	High	Moderate	Moderate	Low	Low
Negligible (IV)	Moderate	Low	Low	Low	Low

Consultation with subject matter experts. When Moderate or higher risk levels are identified, it is recommended that USAPHC subject matter experts, or other qualified medical/health professionals, be consulted in order to validate the risk assessment. If exposures actually occur, then such a validation should also review the need for increased medical surveillance and risk communication support.

Table G-3 Tactical Risk Definitions (FM 5-19) and Possible Medical Responses Associated with Real-Time or “Acute” Health Effects

Risk Level	Consequences to Military Operations and Force Readiness *
Extremely High	Loss of ability to accomplish the mission if hazards occur during mission. <i>Notable in-theater medical countermeasures and resources anticipated. For example, protection, treatment, and exposure documentation.</i>
High	Significant degradation of mission capabilities in terms of the required mission standard, inability to accomplish all parts of the mission, or inability to complete the mission to standard if hazards occur during the mission. <i>Some in-theater medical countermeasures and resources anticipated. For example, protection, treatment, and exposure documentation.</i>
Moderate	Expected degraded mission capabilities in terms of the required mission standard and will result in reduced mission capability if hazards occur during the mission. <i>Limited in-theater medical countermeasures and resources anticipated. For example, protection, treatment, and exposure documentation.</i>
Low	Expected losses have little or no impact on accomplishing the mission. <i>Little to no in-theater medical resources anticipated for protection and treatment. However, a summary of any negative or low level sampling results should be documented and archived particularly if some personnel express concerns.</i>

Notes:

- ¹ The italicized phrases are not part of the doctrinal definitions, but are the types of anticipated medical and preventive medicine responses associated with the expected health outcomes associated with these risk levels.
- ² In addition to the medical resources needed to treat and document acute effects, certain exposures that result in acute health effects may also be associated with effects that require post-deployment medical surveillance/follow-up. The potential for any post-deployment medical follow-up and surveillance should be addressed as part of the risk management response triggered by the “chronic” risk estimate as discussed in the following section.
- ³ For certain chemical exposures, the risk outcomes may be especially pronounced in certain people. For example, moderate risk exposures to sulfur dioxide may be very irritating to most and cause some mild impairment, but may significantly exacerbate the condition of asthmatics and require medical countermeasures.
- ⁴ Exposure documentation (per DoDI 6490.03) includes any applicable medical treatment documentation as well as exposure data incident information (to include field data and incident descriptions). In addition to required in-theater reporting channels, documentation should also be submitted through the designated DoD OEHS Data Archive (oehs@amedd.army.mil) or secure e-mail (oehsdata@usaphc.army.smil.mil). Environmental exposure data archive data reports can be viewed through the DoD OEHS Data Portal (<https://doehsportal.apgea.army.mil/doehrs-oehs/>).

Table G-4 Recommended Lifecycle Risk Definitions and Possible Medical Responses Associated with Post-Deployment “Chronic” Health Effects

Risk Level	Consequences to Military Operations and Force Readiness *
Extremely High	Significant future medical surveillance activities and medical provider resources anticipated. <i>Documentation of environmental data in designated DoD archive and designate a registry to actively track the exposed personnel. Conduct specific active surveillance and/or medical follow-up procedures for life-cycle of identified group.</i>
High	Notable future medical surveillance activities and related resources anticipated. <i>Documentation of environmental data in designated DoD archive. Specific identification and documentation of the exposed personnel. Possible passive medical surveillance related activities.</i>
Moderate	Limited future medical surveillance activities and related resources anticipated. <i>Documentation of environmental data in designated DoD archive. Consider documenting exposed groups or personnel of surveillance interest.</i>
Low	No specific medical action required. <i>Documentation of environmental data in designated DoD archive.</i>

Notes;

¹ The definitions are based on the USAPHC (Prov) interpretation of DoD and Joint Staff policies and requirements. The italicized phrases are the types of anticipated medical and preventive medicine responses associated with the expected health outcomes associated with these risk levels.

² Environmental documentation (per DoDI 6490.03) should be submitted through the designated DoD OEHS Data Archive (oehs@amedd.army.mil) or secure e-mail (oehsdata@usachppm.army.smil.mil). Environmental archive data reports can be viewed through the DoD OEHS Data Portal (<https://doehsportal.apgea.army.mil/doehrs-oehs/>).

Table G-5 TG 230 Hazard Probability Levels

Rank	Interpretation
Frequent	The health effects and mission impacts described by the selected severity level are expected to occur within the exposed population. [At this probability level at least two of the four ranking factors are scored the maximum of 3.]
Likely	The health effects and mission impacts described by the selected severity level are likely to occur within the exposed population. [At this probability level at least one of the four ranking factors are scored the maximum of 3.]
Occasional	The health effects and mission impacts described by the selected severity level are possible within the exposed population. [At this probability level the average of the four ranking factors must be a score of 2. Any ranking factor that is scored as a 3 will be balanced by a factor scored as a 1.]
Seldom	The health effects and mission impacts described by the selected severity level are remotely possible within the exposed population. [At this probability level at least one of the four probability ranking factors is scored the minimum of 1.]
Unlikely	The health effects and mission impacts described by the selected severity level are unlikely to occur within the exposed population. [At this probability level at least two of the four probability ranking factors are scored the minimum of 1.]

Table G-6 Health Effects Descriptions for Each Hazard Severity Category (CJCS 2007)*

Negligible Severity	Marginal Severity	Critical Severity	Catastrophic Severity
<p><u>Acute Effects</u></p> <p>Few exposed personnel (if any) are expected to have noticeable health effects during mission. Exposed personnel are expected to be able to effectively perform all critical tasks during mission operations. Minimal to no degradation of abilities to conduct complex tasks are expected.</p>	<p><u>Acute Effects</u></p> <p>Many exposed persons are expected to have noticeable but not incapacitating health effects. Observable effects require minimal if any medical attention but may reduce some individual physical capabilities and/or may enhance stress-related casualties. Exposed personnel able to perform most critical tasks. Note: Ability to accomplish complex tasks may be degraded.</p>	<p><u>Acute Effects</u></p> <p>Personnel are expected to have incapacitating health effects that require immediate medical treatment or support (e.g., are considered 'casualties'.) There may be limited numbers of fatalities. Personnel not experiencing these more serious effects are expected to have at least noticeable, but not incapacitating health effects. Exposed personnel will have limited ability to perform most critical tasks. Note: Ability to accomplish complex tasks likely to be degraded.</p>	<p><u>Acute Effects</u></p> <p>Casualties with severe incapacitating effects requiring immediate and significant medical attention and/or additional support for survival. Increasing number of fatalities are expected. Exposed personnel unable to perform critical tasks.</p>
and/or	and/or	and/or	not a driver
<p><u>Chronic Effects</u></p> <p>Few exposed personnel (if any) are expected to develop delayed onset, irreversible effects</p>	<p><u>Chronic Effects</u></p> <p>Many exposed personnel are plausibly expected to develop delayed onset, irreversible effects. While this may not affect the immediate physiological capabilities of individuals, commanders must consider long term implications and appropriately communicate the potential risks. Operational stress related implications may adversely impact operations particularly over extended operational periods.</p>	<p><u>Chronic Effects</u></p> <p>Majority to all exposed personnel are plausibly expected to develop delayed onset, irreversible effects due to the specified exposure. While this may not affect the immediate physiological capabilities of individuals, commanders must consider long term implications and appropriately communicate the potential risks. Psychological implications may adversely impact operations particularly over extended operational periods.</p>	<p><u>Chronic Effects</u></p> <p>This level of hazard severity is reserved for the most serious of conditions where immediate survivability against acute effects is the priority. Those that survive may be at increased risk for certain chronic effects.</p>

Notes:

This matrix applies to all health hazards encountered during deployment. Health effects associated with chemical exposures are typically either acute or chronic, but in some cases may be both. In general, short term one-time chemical exposures are primarily associated with acute effects, while repeated long term exposures are associated with chronic effects.

* Format modified from the original Joint Staff Memorandum MCM-0028-07 (CJCS 2007) version for ease of presentation, to include the elimination of the 'no effects' category.

TG-230 Risk Assessment Worksheet – Air

CHEMICAL NAME	CAS NUMBER
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Prescreen	Enter the highest concentration from your sample set for this chemical (mg/m ³) (If only one sample enter that concentration here)	2a	
	Enter the 1-year Negligible MEG for this chemical (found in Appendix C-1) (If no 1-year MEG is available go to Step 3)	2b	
If line 2b is greater than or equal to line 2a enter "No Hazard Identified" on lines 7 and 12, and in the Risk Summary Table. If line 2b is less than line 2a continue on to section 3.			

			Acute	
			Peak	Average
Acute Assessment	PEPC	There are many ways to estimate a PEPC from sampling data. This worksheet uses the simplest and most common method. See section 3.4.4.2 in TG-230 for more information.		
		Enter the highest concentration from the sample set (mg/m ³)	3a	
		Enter the average concentration of the sample set (mg/m ³)	3b	
	Screen	Enter the Acute Screening MEG See Section 3.4.5.1 in TG-230 Use the default selection of the 14d NEG MEG UNLESS 1. The 14d NEG MEG is equal to the 1-year NEG MEG use the 8 hour NEG MEG 2. If there is no 14d NEG MEG use the 8hour NEG MEG 3. If there is no 8hour NEG MEG use the 1hour NEG MEG 4. If the chemical is a CWA or Particulate matter, use the 24h NEG MEG If none of these MEGs are available an acute assessment cannot be performed for this chemical at this time. Contact AIPH for further guidance	4	
	Severity	Enter the collection time of an individual sample (hrs)	5a	
		Enter the MEG timeframe that most closely matches line 5 Select only timeframes that have MEGs available for this chemical	5b	
		Select the severity category for this exposure See Section 3.4.5.2 in TG-230 1. Compare the PEPC from line 3 with the MEGs with the timeframe from line 5b 2. Select the highest severity category that does not exceed the MEG 3. If the severity selected is higher than Negligible, have this assessment reviewed by AIPH.	5c	
	Probability	Rank the degree of exposure See factor 1 in Exhibit 3-3 in TG-230 1. Identify the bounding MEGs for the severity category selected. The greatest MEG that is less than the PEPC is the lower bound The lowest MEG that is greater than the PEPC is the upper bound 2. Determine where the PEPC is within this bound If less than the lower bound, or in the lower 25% of the range score a 1 If in the middle 50% of the range score a 2 If in the upper 25% of the range score a 3 3. If the PEPC exceeds the highest severity MEG score a 2	6a	
		Rank the representativeness of the data See factor 2 in Exhibit 3-3 in TG-230 1. Consider how closely the sampling mimics the exposure scenario. If unknown select a score of 2 for this factor. If the data overestimates the population exposure score a 1 If the data adequately estimates population exposure score a 2 If the data underestimates the population exposure score a 3	6b	
		Rank duration of exposure See factor 3 in Exhibit 3-3 in TG-230 1. Divide line 5a by line 5b If the result is less than 1 score a 1 If the result is greater than or equal to 1 and less than 3 score a 2 If the result is greater than or equal to 3 score a 3	6c	
		Rank the rate of exposure See factor 4 in Exhibit 3-3 in TG-230 If duties of exposed personnel require only light exertion score a 1 If duties of exposed personnel require a moderate level of exertion score a 2 If duties of exposed personnel require a heavy level of exertion score a 3	6d	
		Sum lines 6a-6d (for both peak and average PEPCs) and enter the total here Using the probability chart on the reverse of this sheet select the acute-peak and acute average probability that corresponds to the score on line 6e.	6e	
Risk	Using the Severity from line 5c and the Probability from line 6f, lookup the acute risk levels for both the peak and average exposures and enter them on line 7. These are your Tactical Risk levels	7		

TG-230 Risk Assessment Worksheet – Air

CHEMICAL NAME	CAS NUMBER
---------------	------------

Chronic Assessment	PEPC <i>There are many ways to estimate a PEPC from sampling data. This worksheet uses the simplest and most common method. See section 3.4.4.2 in TG-230 for more information</i>	8	Chronic
	Enter the average concentration of the sample set (mg/m ³)		
	Screen If there are Non-Detect samples in your sample set divide the number of samples that have detections by the total number of samples, multiply by 100 and enter the value here.....	9a	%
	Enter the chronic screening MEG <i>See Section 3.4.6.1 in TG-230</i> Use the default selection of the 1year NEG MEG <i>If the 1year NEG MEG is not available a chronic assessment cannot be performed for this chemical at this time. Contact AIPH for further guidance.....</i>	9b	
	If line 9a is less than 5% or 9b is greater than line 8, there is no chronic hazard.		
	Severity Enter the time period the sample set spans (months/years)	10a	
	Select the severity category for this exposure <i>See Section 3.4.6.2 in TG-230</i> 1. Compare the PEPC from line 8 with the 1year NEG MEG (if any chemical except PM 2.5 contact AIPH) 2. Select the highest severity category that does not exceed the MEG 3. If the severity selected is higher than Negligible, have this assessment reviewed by PHC	10b	
	Probability Rank the degree of exposure <i>See factor 1 in Exhibit 3-3 in TG-230</i> 1. Identify the bounding MEGs for the severity category selected. The greatest MEG that is less than the PEPC is the lower bound The lowest MEG that is greater than the PEPC is the upper bound 2. Determine where the PEPC is within this bound If less than the lower bound, or in the lower 25% of the range score a 1 If in the middle 50% of the range score a 2 If in the upper 25% of the range score a 3 3. If the PEPC exceeds the highest severity MEG score a 2	11a	
	Rank the representativeness of the data <i>See factor 2 in Exhibit 3-3 in TG-230</i> 1. Consider how closely the sampling mimics the exposure scenario. If unknown select a score of 2 for this factor. If the data overestimates the population exposure score a 1 If the data adequately estimates population exposure score a 2 If the data underestimates the population exposure score a 3	11b	
	Rank duration of exposure <i>See factor 3 in Exhibit 3-3 in TG-230</i> 1. Divide line 10a by 1 year If the result is less than 1 score a 1 If the result is greater than or equal to 1 and less than 3 score a 2 If the result is greater than or equal to 3 score a 3	11c	
	Rank the rate of exposure <i>See factor 4 in Exhibit 3-3 in TG-230</i> If duties of exposed personnel require only light exertion score a 1 If duties of exposed personnel require a moderate level of exertion score a 2 If duties of exposed personnel require a heavy level of exertion score a 3.....	11d	
Sum lines 11a-11d (for both peak and average PEPCs) and enter the total here	11e		
Using the probability chart below select the chronic probability that corresponds to the score on line 11e	11f		
Risk Using the severity from line 10b and the probability from line 11f, lookup the chronic risk levels and enter it on line 12. This is your Lifecycle Risk	12		

Risk Summary

		Tactical	Lifecycle
Risk	Enter Risk level from lines 7 and 12. <i>See Tables 3-2 and 3-3 for risk level definitions.</i> If there are multiple Tactical Risk levels enter a range (i.e. Low to Moderate) <i>See Section 4 in TG-230 for information on communicating risk levels</i>		
Confidence	Enter the overall confidence in each risk level. <i>See Section 3.3.4 in TG-230 for help in assessing confidence</i>		

Hazard probability rank →	Unlikely	Seldom	Occasional	Likely	Frequent
Total factor score →	4 – 6	7	8	9	10 – 12
HAZARD SEVERITY	HAZARD PROBABILITY				
	Frequent (A)	Likely (B)	Occasional (C)	Seldom (D)	Unlikely (E)
Catastrophic (I)	Extremely High	Extremely High	High	High	Moderate
Critical (II)	Extremely High	High	High	Moderate	Low
Marginal (III)	High	Moderate	Moderate	Low	Low
Negligible (IV)	Moderate	Low	Low	Low	Low

For risk assessment assistance with this form contact the Army Institute of Public Health – Environmental Health Risk Assessment Program at 410-436-2953 DSN: 584-2953

TG-230 Risk Assessment Worksheet – Water

CHEMICAL NAME	CAS NUMBER
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Prescreen	Enter the highest concentration from your sample set for this chemical (mg/L) (If only one sample enter that concentration here)	2a	
	Enter the lower of the 1-year Negligible 5L/day MEG or 14-day Negligible 15L/day MEG for this chemical (found in Appendix C-2) (If no MEG is available go to Step 3)	2b	

If line 2b is greater than or equal to line 2a enter "No Hazard Identified" on lines 7 and 12, and in the Risk Summary Table.
If line 2b is less than line 2a continue on to section 3.

PEPC	<i>There are many ways to estimate a PEPC from sampling data. This worksheet uses the simplest and most common method. See section 3.4.4.2 in TG-230 for more information.</i>	Acute													
		Peak	Average												
PEPC	Enter the highest concentration from the sample set (mg/L).....	3a													
	Enter the average concentration of the sample set (mg/L).....	3b													
	Enter the estimated water consumption rate for the sample location (L/day) If less than 10L/day use the 5L/day MEGs, otherwise use the 15L/day MEGs	3c													
Screen	Enter the Acute Screening MEG <i>See Section 3.4.5.1 in TG-230</i> Use the default selection of the 14d NEG 15L/day MEG <i>If this MEG is not available an acute assessment cannot be performed for this chemical at this time. Contact AIPH for further guidance.....</i>	4													
	If line 4 is greater than line 3a, there is no acute hazard. Skip to the chronic assessment section														
Severity	Enter the time frame an individual sample represents (hrs)	5a													
	Enter the MEG timeframe that most closely matches line 5 <i>Select only timeframes that have MEGs available for this chemical</i>	5b													
	Select the severity category for this exposure <i>See Section 3.4.5.2 in TG-230</i> 1. Compare the PEPC from line 3 with the MEGs with the timeframe from line 5b 2. Select the highest severity category that does not exceed the MEG 3. If the severity selected is higher than Negligible, have this assessment reviewed by AIPH.	5c													
Acute Assessment	Rank the degree of exposure <i>See factor 1 in Exhibit 3-3 in TG-230</i> 1. Identify the bounding MEGs for the severity category selected. The greatest MEG that is less than the PEPC is the lower bound The lowest MEG that is greater than the PEPC is the upper bound 2. Determine where the PEPC is within this bound If less than the lower bound, or in the lower 25% of the range score a 1 If in the middle 50% of the range score a 2 If in the upper 25% of the range score a 3 3. If the PEPC exceeds the highest severity MEG score a 2	6a													
	Rank the representativeness of the data <i>See factor 2 in Exhibit 3-3 in TG-230</i> 1. Consider how closely the sampling mimics the exposure scenario. If unknown select a score of 2 for this factor. If the data overestimates the population exposure score a 1 If the data adequately estimates population exposure score a 2 If the data underestimates the population exposure score a 3	6b													
	Rank duration of exposure <i>See factor 3 in Exhibit 3-3 in TG-230</i> 1. Divide line 5a by line 5b If the result is less than 1 score a 1 If the result is greater than or equal to 1 and less than 3 score a 2 If the result is greater than or equal to 3 score a 3	6c													
	Rank the rate of exposure <i>See factor 4 in Exhibit 3-3 in TG-230</i>														
	<table border="1" style="font-size: x-small; border-collapse: collapse; width: 100%;"> <thead> <tr> <th>Using 5L/day MEG</th> <th>Using 15L/day MEG</th> <th>Factor Score</th> </tr> </thead> <tbody> <tr> <td><3 L/day</td> <td>10-13 L/day</td> <td>1</td> </tr> <tr> <td>4-7 L/day</td> <td>14-16 L/day</td> <td>2</td> </tr> <tr> <td>8-10 L/day</td> <td>>17 L/day</td> <td>3</td> </tr> </tbody> </table>	Using 5L/day MEG	Using 15L/day MEG	Factor Score	<3 L/day	10-13 L/day	1	4-7 L/day	14-16 L/day	2	8-10 L/day	>17 L/day	3	6d	
Using 5L/day MEG	Using 15L/day MEG	Factor Score													
<3 L/day	10-13 L/day	1													
4-7 L/day	14-16 L/day	2													
8-10 L/day	>17 L/day	3													
	Sum lines 6a-6d (for both peak and average PEPCs) and enter the total here	6e													
	Using the probability chart on the reverse of this sheet select the acute-peak and acute average probability that corresponds to the score on line 6e.	6f													
Risk	Using the Severity from line 5c and the Probability from line 6f, lookup the acute risk levels for both the peak and average exposures and enter them on line 7. These are your Tactical Risk levels	7													

TG-230 Risk Assessment Worksheet – Water

CHEMICAL NAME	CAS NUMBER
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Chronic Assessment	PEPC <i>There are many ways to estimate a PEPC from sampling data. This worksheet uses the simplest and most common method. See section 3.4.4.2 in TG-230 for more information</i>	8	Chronic	
	Enter the average concentration of the sample set (mg/L)			
	Screen If there are Non-Detect samples in your sample set divide the number of samples that have detections by the total number of samples, multiply by 100 and enter the value here.....	9a	%	
	Enter the chronic screening MEG <i>See Section 3.4.6.1 in TG-230</i> Use the default selection of the 1year NEG MEG <i>If the 1year NEG MEG is not available a chronic assessment cannot be performed for this chemical at this time. Contact AIPH for further guidance.....</i>	9b		
	If line 9a is less than 5% or 9b is greater than line 8, there is no chronic hazard.			
	Severity Enter the time period the sample set spans (months/years)	10a		
	Select the severity category for this exposure <i>See Section 3.4.6.2 in TG-230</i> 1. Compare the PEPC from line 8 with the applicable 1year NEG MEG 2. Select the highest severity category that does not exceed the MEG (if > NEG MEG contact AIPH) 3. If the severity selected is higher than Negligible, have this assessment reviewed by AIPH.....	10b		
	Probability Rank the degree of exposure <i>See factor 1 in Exhibit 3-3 in TG-230</i> 1. Identify the bounding MEGs for the severity category selected. The greatest MEG that is less than the PEPC is the lower bound The lowest MEG that is greater than the PEPC is the upper bound 2. Determine where the PEPC is within this bound If less than the lower bound, or in the lower 25% of the range score a 1 If in the middle 50% of the range score a 2 If in the upper 25% of the range score a 3 3. If the PEPC exceeds the highest severity MEG score a 2	11a		
	Rank the representativeness of the data <i>See factor 2 in Exhibit 3-3 in TG-230</i> 1. Consider how closely the sampling mimics the exposure scenario. If unknown select a score of 2 for this factor. If the data overestimates the population exposure score a 1 If the data adequately estimates population exposure score a 2 If the data underestimates the population exposure score a 3	11b		
	Rank duration of exposure <i>See factor 3 in Exhibit 3-3 in TG-230</i> 1. Divide line 10a by 1 year If the result is less than 1 score a 1 If the result is greater than or equal to 1 and less than 3 score a 2 If the result is greater than or equal to 3 score a 3	11c		
	Rank the rate of exposure <i>See factor 4 in Exhibit 3-3 in TG-230</i>			

Using 5L/day MEG	Factor Score
Average daily water consumption is less than 3 L/day (< 3L/day)	1
Average daily water consumption is between 4 and 7 L/day (4-7L/day)	2
Average daily water consumption is greater than 8 L/day (>8L/day)	3

Sum lines 11a-11d (for both peak and average PEPCs) and enter the total here	11e	
Using the probability chart below select the chronic probability that corresponds to the score on line 11e	11f	
Risk Using the severity from line 10b and the probability from line 11f, lookup the chronic risk levels and enter it on line 12. This is your Lifecycle Risk	12	

Risk Summary

		Tactical	Lifecycle
Risk	Enter Risk level from lines 7 and 12. <i>See Tables 3-2 and 3-3 for risk level definitions.</i> If there are multiple Tactical Risk levels enter a range (i.e. Low to Moderate) <i>See Section 4 in TG-230 for information on communicating risk levels</i>		
Confidence	Enter the overall confidence in each risk level. <i>See Section 3.3.4 in TG-230 for help in assessing confidence</i>		

Hazard probability rank →	Unlikely	Seldom	Occasional	Likely	Frequent
Total factor score →	4 – 6	7	8	9	10 – 12
HAZARD SEVERITY	HAZARD PROBABILITY				
	Frequent (A)	Likely (B)	Occasional (C)	Seldom (D)	Unlikely (E)
Catastrophic (I)	Extremely High	Extremely High	High	High	Moderate
Critical (II)	Extremely High	High	High	Moderate	Low
Marginal (III)	High	Moderate	Moderate	Low	Low
Negligible (IV)	Moderate	Low	Low	Low	Low

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TG-230 Risk Assessment Worksheet – Soil

CHEMICAL NAME	1a	CAS NUMBER	1b
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Prescreen	Enter the highest concentration from your sample set for this chemical (mg/kg) (If only one sample enter that concentration here)	2a	
	Enter the 1-year Negligible MEG for this chemical (found in Appendix C-3) (If no 1-year MEG is available go to Step 3)	2b	
	If line 2b is greater than or equal to line 2a enter "No Hazard Identified" on line 12, and in the Risk Summary Table. If line 2b is less than line 2a continue on to section 3.		

Acute Assessment		Lines 3-7. Currently acute threats from soil exposures are not assessed in TG-230. See section 2.3.3 for rationale.										
Chronic Assessment	PEPC	There are many ways to estimate a PEPC from sampling data. This worksheet uses the simplest and most common method. See section 3.4.4.2 in TG-230 for more information	Chronic									
	Screen	Enter the average concentration of the sample set (mg/kg).....	8									
	Severity	If there are Non-Detect samples in your sample set divide the number of samples that have detections by the total number of samples, multiply by 100 and enter the value here.....	9a	%								
		Enter the chronic screening MEG See Section 3.4.6.1 in TG-230 Use the default selection of the 1year NEG MEG If the 1year NEG MEG is not available a chronic assessment cannot be performed for this chemical at this time. Contact AIPH for further guidance.....	9b									
	Probability	Enter the time period the sample set spans (months/years)	10a									
		Select the severity category for this exposure See Section 3.4.6.2 in TG-230 1. Compare the PEPC from line 8 with the applicable 1year NEG MEG 2. Select the highest severity category that does not exceed the MEG (if PEPC > NEG MEG contact AIPH) 3. If the severity selected is higher than Negligible, have this assessment reviewed by AIPH.....	10b									
	Risk	Rank the degree of exposure See factor 1 in Exhibit 3-3 in TG-230 1. Identify the bounding MEGs for the severity category selected. The greatest MEG that is less than the PEPC is the lower bound The lowest MEG that is greater than the PEPC is the upper bound 2. Determine where the PEPC is within this bound If less than the lower bound, or in the lower 25% of the range score a 1 If in the middle 50% of the range score a 2 If in the upper 25% of the range score a 3 3. If the PEPC exceeds the highest severity MEG score a 2	11a									
		Rank the representativeness of the data See factor 2 in Exhibit 3-3 in TG-230 1. Consider how closely the sampling mimics the exposure scenario. If unknown select a score of 2 for this factor. If the data overestimates the population exposure score a 1 If the data adequately estimates population exposure score a 2 If the data underestimates the population exposure score a 3	11b									
		Rank duration of exposure See factor 3 in Exhibit 3-3 in TG-230 1. Divide line 10a by 1 year If the result is less than 1 score a 1 If the result is greater than or equal to 1 and less than 3 score a 2 If the result is greater than or equal to 3 score a 3	11c									
		Rank the rate of exposure See factor 4 in Exhibit 3-3 in TG-230	<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Level of Activity</th> <th style="text-align: center;">Factor Score</th> </tr> </thead> <tbody> <tr> <td>Minor contact (office work/shop maintenance)</td> <td style="text-align: center;">1</td> </tr> <tr> <td>Moderate contact (frequent patrols /standard construction) (default)</td> <td style="text-align: center;">2</td> </tr> <tr> <td>Heavy contact (road construction/digging defensive positions)</td> <td style="text-align: center;">3</td> </tr> </tbody> </table>	Level of Activity	Factor Score	Minor contact (office work/shop maintenance)	1	Moderate contact (frequent patrols /standard construction) (default)	2	Heavy contact (road construction/digging defensive positions)	3	11d
	Level of Activity	Factor Score										
	Minor contact (office work/shop maintenance)	1										
Moderate contact (frequent patrols /standard construction) (default)	2											
Heavy contact (road construction/digging defensive positions)	3											
Sum lines 11a-11d (for both peak and average PEPCs) and enter the total here		11e										
Using the probability chart on reverse select the chronic probability that corresponds to the score on line 11e		11f										
Using the severity from line 10b and the probability from line 11f, lookup the chronic risk levels and enter it on line 12. This is your Lifecycle Risk		12										

Risk Summary

		Lifecycle
Risk	Enter Risk level from line 12. See Table 3-3 for risk level definitions. See Section 4 in TG-230 for information on communicating risk levels	
Confidence	Enter the overall confidence in each risk level. See Section 3.3.4 in TG-230 for help in assessing confidence	

TG-230 Risk Assessment Worksheet – Soil

CHEMICAL NAME	1a	CAS NUMBER	1b
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Hazard probability rank →	Unlikely	Seldom	Occasional	Likely	Frequent
Total factor score →	4 – 6	7	8	9	10 – 12
HAZARD SEVERITY	HAZARD PROBABILITY				
	Frequent (A)	Likely (B)	Occasional (C)	Seldom (D)	Unlikely (E)
Catastrophic (I)	Extremely High	Extremely High	High	High	Moderate
Critical (II)	Extremely High	High	High	Moderate	Low
Marginal (III)	High	Moderate	Moderate	Low	Low
Negligible (IV)	Moderate	Low	Low	Low	Low

**Appendix
H****Hypothetical Case Studies**

	CONTENTS	
Case Study		Starting Page
1	Catastrophic Release of Chlorine and Methyl Isobutyl Ketone in the Air	H-1-1
2	Airborne Particulate Matter and Nickel at a Base Camp	H-2-1
3	Acrolein, Dioxins, and Mercury Contamination in Air	H-3-1
4	Methylene Chloride and Ethylbenzene Contamination in Water	H-4-1
5	Arsenic Contamination in Drinking Water from Different Water Sources	H-5-1
6	Naphthalene and Bis(2-Ethylhexyl)Adipate Contamination in Non-Drinking Water	H-6-1

NOTE

These case studies do not represent risk assessments performed at real sites. These are hypothetical case studies that illustrate the TG 230 risk assessment methodology and application of MEGs for characterizing risks using military risk management (FM 5-19).

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CASE STUDY 1**Catastrophic Release of Chlorine and Methyl Isobutyl Ketone in the Air****Teaching Points**

- Performs an acute assessment for a hypothetical industrial accident near a base camp.
- Illustrates how to determine exposure event duration.
- Demonstrates hazard probability factor 1 method A (the 25th and 75th MEG percentiles).
- Addresses potential latent/long-term health effects from an acute exposure
- Demonstrates USAPHC SME input into the process.

1. BACKGROUND

This is a hypothetical case study designed to illustrate the TG 230 risk assessment process. This case study is based on evaluating the effects of a hypothetical catastrophic release of chlorine and Methyl isobutyl ketone from an industrial facility. Projected air concentrations of these two toxic industrial chemicals (TICs) were generated by a quantitative air dispersion model in order to conduct a Composite Risk Management evaluation for a nearby basecamp.

2. DEFINE THE PURPOSE OF THE RISK ASSESSMENT

Refer to TG 230 Section 3.4.1 for guidance. Appendix G provides a process flow-chart.

This study is prospective in nature and is to be used for planning purposes. The evaluation is centered on determining the potential acute risk associated with a brief (16-hour) exposure to potentially high levels of the subject chemicals in ambient air.

3. COLLECT DATA AND DESCRIBE EXPOSURE SETTING

Refer to TG 230 Section 3.4.2 for guidance.

3.1. Data sampling summary

Include a description of who collected the data and how data were collected (i.e. sampling method).

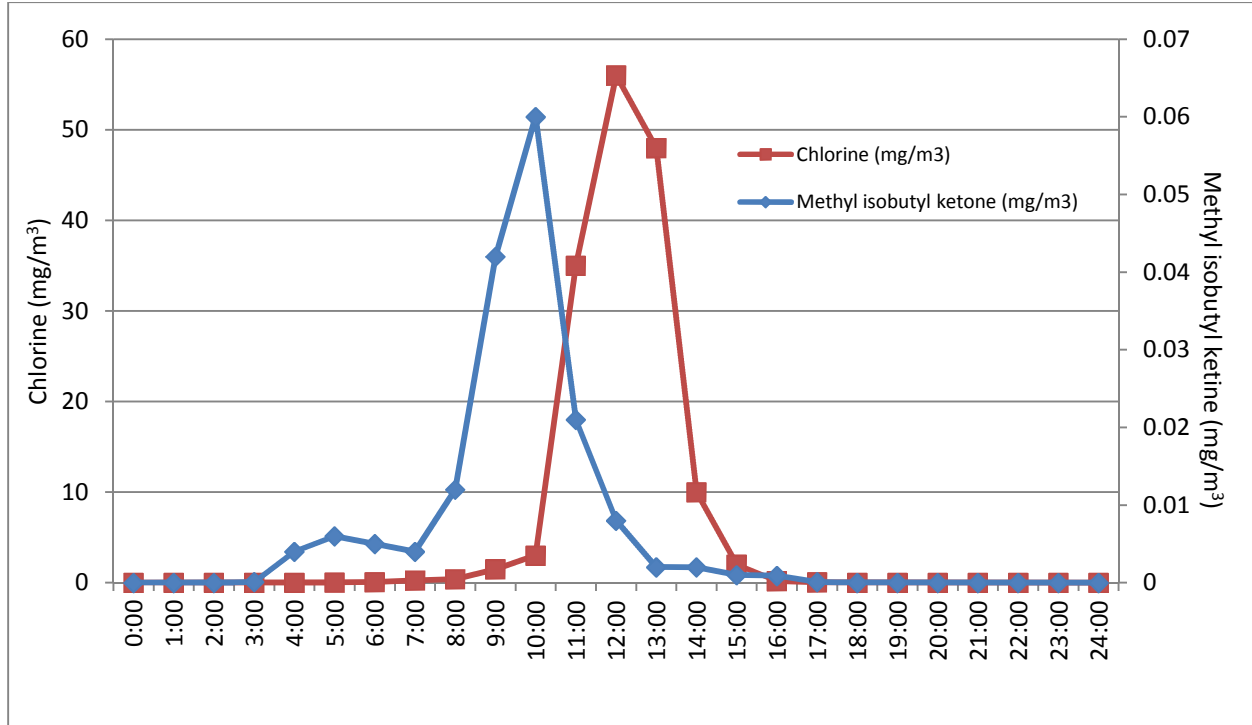
Since this risk assessment is based on evaluating a hypothetical scenario, no sampling data were collected. Instead, concentrations in ambient air were determined by a quantitative air dispersion model and were provided by the Defense Threat Reduction Agency (DTRA).

CASE STUDY 1**Catastrophic Release of Chlorine and Methyl Isobutyl Ketone in the Air****3.2. Available sampling data and statistics**

<i>Time After Release (Hours)</i>	<i>Methyl isobutyl ketone (mg/m³)</i>	<i>Chlorine (mg/m³)</i>
0:00	0	0
1:00	0	0
2:00	0	0
3:00	0.0001	0.0002
4:00	0.004	0.002
5:00	0.006	0.035
6:00	0.005	0.075
7:00	0.004	0.26
8:00	0.012	0.4
9:00	0.042	1.5
10:00	0.06	3
11:00	0.021	35
12:00	0.008	56
13:00	0.002	48
14:00	0.002	10
15:00	0.001	2
16:00	0.0009	0.2
17:00	0.0001	0.05
18:00	0	0.0001
19:00	0	0
20:00	0	0
21:00	0	0
22:00	0	0
23:00	0	0
24:00	0	0
Maximum Concentration	0.06	56
24 Hour Average Concentration	0.0067	6.3

CASE STUDY 1

Catastrophic Release of Chlorine and Methyl Isobutyl Ketone in the Air



3.3.MEG Tables

**Chlorine
7782-50-5**

	Air (mg/m3)					
CAT						
CRIT	145	58	20.6			
MARG	8.12	5.8	2.06			
NEG	1.45	1.45	1.45		0.29	0.00014
	10 min	1 hr	8 hr	24 hr	14 day	1 year

**Methyl isobutyl ketone
108-10-1**

	Air (mg/m3)					
CAT						
CRIT		2000				
MARG		2000				
NEG		300	205		205	0.548
	10 min	1 hr	8 hr	24 hr	14 day	1 year

CASE STUDY 1**Catastrophic Release of Chlorine and Methyl Isobutyl Ketone in the Air****3.4. Chemical information**

Provide general information about the chemical(s) and the general source(s) in the environment.

Chlorine: The Agency for Toxic Substances and Disease Registry (ATSDR) has a publically available ToxFAQ™ and Toxicological Profile for this chemical. What follows is general information obtained from these sources.

Chlorine gas is not usually detected in the environment. Exposure to chlorine can occur following an accident, such as a leak or spill from a chlorine tank or the improper use of swimming pool chemicals. Chlorine gas is too reactive to be detected in environmental media at hazardous waste sites. Any chlorine gas released at these sites would be quickly converted to other substances. If chlorine is released into the air, the chlorine will evaporate very quickly forming a greenish-yellow cloud that is heavier than air and can be carried by the wind several miles from the source. Chlorine is broken down by sunlight within a matter of several minutes. Exposure to low levels of chlorine can result in nose, throat, and eye irritation. At higher levels, breathing chlorine gas may result in changes in breathing rate and coughing, and damage to the lungs. In general, people who suffer from respiratory conditions such as allergies or hay fever, reactive airways dysfunction syndrome, or who are heavy smokers, tend to experience more severe effects than healthy subjects or nonsmokers. Chlorine is not known to cause cancer.

Methyl isobutyl ketone: The Environmental Protection Agency has a publically available Toxicological Review of this chemical, which is also known as MIBK. This chemical is also included in the National Institute for Occupational Safety and Health Pocket Guide. What follows is general information obtained from these sources.

MIBK is used mainly as a coating solvent in cellulose and resin based coating systems. It is also used as a separating agent for metals from solutions of their salts and in the mining industries to extract plutonium from uranium. MIBK is also used in the production of paints, pesticide formulations, adhesives, wax/oil separation, leather finishing, textile coating, and specialty surfactants for inks and as a denaturant for ethanol formulations. Another increasingly important use of MIBK is in the production of rubber antioxidants. Potential health effects from MIBK exposure include irritation of the eyes, skin, mucous membrane; headache, narcosis, coma; dermatitis; in animals: liver, kidney damage. Data are inadequate for an assessment of human carcinogenic potential.

3.5. Describe the Exposure Setting

Refer to TG 230 Section 3.4.2 for guidance. The description should answer as many of the pre-assessment key questions from Worksheet G.2 as possible. If an answer is unavailable, then indicate that information is missing.

The exposure event is the major release of these toxic industrial chemicals into ambient air near (within 2 km) a basecamp occupied by U.S. personnel. The population at risk is the entire population at the nearby basecamp. The event takes place over a very confined timeframe. The modeled air concentrations cover a 24 hour period. Positive ambient air levels were reported

CASE STUDY 1**Catastrophic Release of Chlorine and Methyl Isobutyl Ketone in the Air**

spanning 16 hours. The chemicals were released during a hypothetical storage tank failure at an industrial facility that stores large quantities of these compounds.

The only exposure pathway of concern for this evaluation is inhalation of ambient air. During this emergency situation, it was assumed that most personnel would be engaged in some type of emergency-response task and therefore have elevated inhalation rates and their rate of exposure would be typical of heavy exertion.

There are insufficient data to conduct a chronic risk assessment because the data set represents only a brief exposure duration based on 24 hours of modeling data. In addition, it is meant to evaluate the potential acute risk to troops, and so a chronic evaluation is not needed by the decision maker in this case.

- What is the population at risk?
- What is the timeframe under consideration?
- What is the exposure event or ambient environmental condition under consideration?
- What is known about the source of the chemicals?
- What are the exposure pathways?
- What else is known about the exposure setting?
- What are the activity patterns of the population at risk?
- Where are the sampling locations relative to where exposure occurs?
- Is there adequate data quality to conduct a chronic assessment?

4. PRESCREEN

Refer to TG 230 Section 3.4.3 and Worksheet G.3 for guidance. Enter the results into the table below.

Chemical Name	Maximum Sample Concentration	1 Year Negligible MEG	Result
Chlorine	56 mg/m ³	0.00014 mg/m ³	Retain as a hazard
Methyl isobutyl ketone	0.06 mg/m ³	0.548 mg/m ³	Exclude as a hazard

5. GENERATE THE RISK ASSESSMENT DATA SET

Refer to TG 230 Section 3.4.4 and Worksheet G.4 for guidance. Enter the results into the table below.

Chemical Name	Acute Exposure		Chronic Exposure
	Peak PEPC	Average PEPC	Average PEPC
Chlorine	56 mg/m ³ *	9.8 mg/m ³ **	Not needed

* This is a 1h "average."

** This is a 16h average.

5.1. Acute PEPCs

Since this is modeled data, there is no sample averaging time *per se*; however, the time splits for the model are hourly. This is analogous to 1 hour sampling times. The acute peak PEPC is the highest modeled concentration for 1 hour. This occurs 12 hours after the release.

CASE STUDY 1**Catastrophic Release of Chlorine and Methyl Isobutyl Ketone in the Air**

The duration of the exposure event is roughly 24 hours; however, positive concentrations were modeled for only 16 hours. Positive chlorine concentrations at the base camp are predicted to occur from 3 to 18 hours after the release (see section 3.2 of the case study). In this situation, it would be best to characterize the event as lasting for 16 hours (see graphic). In other words, the population at risk is exposed to chlorine for 16 hours. Therefore, the acute average chlorine PEPC is the 16-hour average concentration.

Note: In situations with many chemicals, there may be multiple ways to view the event duration because the time-profile of each chemical may vary due to different chemical properties. For example, some chemicals may move through an area faster than others. Because exposure to multiple chemicals can be important in some cases, the defined event duration should consider the overlap of time periods that are relevant to all the chemicals.

5.2. Chronic PEPC

A chronic risk assessment is not being conducted. See Section 7 for a discussion of potential latent/long-term health effects.

6. ACUTE RISK ASSESSMENT

Refer to TG 230 Section 3.4.5 for guidance.

6.1. Screen for Acute Hazards

Refer to TG 230 Section 3.4.5.1 and Worksheet G.3 for guidance to perform screen for acute hazards. Enter the results into the table below.

Chemical Name	Peak PEPC	Screening MEG		Result
Chlorine	56 mg/m ³	0.29 mg/m ³	14d NEG	Retain as an acute hazard

6.2. Rank Acute Hazard Severity

Refer to TG 230 Section 3.4.5.2 for guidance. The peak and average PEPC across the selected exposure duration are used to select a hazard severity for each PEPC using Worksheet G.5 (airborne exposures) or Worksheet G.6 (water exposures).

Chemical Name	PEPC		Comparison MEG		Hazard Severity
Chlorine	Peak	56 mg/m ³ *	5.8 mg/m ³	1h MARG	Marginal***
	Average	9.8 mg/m ³ **	2.06 mg/m ³	8h MARG	Marginal***

* This is a 1h "average."

** This is a 16h average.

*** Note that in the risk assessment methodology, these high severity ranks are accompanied by a recommendation that USAPHC be contacted in order to validate, or determine, the severity ranking (see TG 230 Figure 3-3 or Worksheet G.5).

CASE STUDY 1**Catastrophic Release of Chlorine and Methyl Isobutyl Ketone in the Air**

Because chlorine is considered a key toxic industrial chemical (TIC), the bottom ranking chart in TG 230 Figure 3-3 (or Worksheet G.5) is used to rank severity.

Peak PEPC: Because the Peak PEPC represents a 1h “sampling time,” it is compared to the 1h MEGs. The Peak PEPC is between the 1h Marginal and Critical MEGs, meaning that the severity rank is Marginal.

Average PEPC: Because the Average PEPC represents a 16h exposure, it is compared to the 8h MEGs because 24h MEGs are unavailable. The 8h MEGs are closer in duration than the 14d MEG. The Average PEPC falls between the 1h Marginal and Critical MEGs. Therefore, hazard severity is ranked as Marginal.

Note: These severity ranks require that USAPHC subject matter experts, or other qualified medical/health professionals, be consulted in order to validate the severity ranking.

USAPHC Opinion for this Hypothetical Case Study:

Though the Peak PEPC (56 mg/m^3) is very close to the 1h Critical MEG (58 mg/m^3), a hazard severity of Marginal would be chosen because the concentration is still below the Critical MEG. Being this close to the next higher severity level MEG will be incorporated later into the process during the scoring for hazard probability factor 1 (degree of exposure).

The Average PEPC is associated with an event duration of 16h, which does not match any of the MEG durations. Therefore, an extra degree of uncertainty exists in the accuracy of the severity rank for the average exposure. Additional confidence can be obtained by calculating an 8h average and comparing this with the 8h MEGs. The highest 8h average chlorine concentration is 19 mg/m^3 . And represents the time period from 8 to 15 hours after the release. The 8h average exposure falls between the 8h Marginal and Critical MEGs, indicating that such an exposure represents a Marginal severity. This result corroborates the initial ranking.

6.3. Rank Acute Hazard Probability

Refer to TG 230 Section 3.4.5.3 for guidance. Assess the hazard probability for each PEPC using Worksheet G.5 (airborne exposures) or Worksheet G.6 (water exposures).

Acute Peak PEPC scoring for Chlorine

Acute Peak PEPC		Hazard Probability Scoring				Total Score	Hazard Probability
		Degree of exposure	Representativeness of field data	Duration of exposure	Rate of exposure		
Chlorine	56 mg/m^3	3	2	2	3	10	Frequent

The following text explains the rationale underlying the scoring.

CASE STUDY 1**Catastrophic Release of Chlorine and Methyl Isobutyl Ketone in the Air**

- **Factor 1 (Degree of exposure).** The Peak PEPC is between the 1h Marginal and Critical MEGs. Therefore, Method A is used. The PEPC is within the upper 25th percentile of the Marginal severity range. This scores as a 3.

$$25^{\text{th}} \text{ percentile} = MEG_{lo} + \left(\frac{MEG_{hi} - MEG_{lo}}{4} \right) = 5.8 + \left(\frac{58 - 5.8}{4} \right) = 19 \text{ mg/m}^3$$

$$75^{\text{th}} \text{ percentile} = MEG_{hi} - \left(\frac{MEG_{hi} - MEG_{lo}}{4} \right) = 58 - \left(\frac{58 - 5.8}{4} \right) = 45 \text{ mg/m}^3$$

- **Factor 2 (Representativeness of field data).** Modeled data are based on many nonspecific assumptions. In this particular example there has been no further information provided that allow for the further determination of the representativeness of these data. As a result, there is no indication that the model produces overly high or low estimates of true population exposures. Therefore, this scores as a 2.
- **Factor 3 (Duration of exposure).** The exposure duration of the Peak PEPC is 1 hour and the comparison MEGs are 1 hour, so the ratio is 1. This scores as a 2.
- **Factor 4 (Rate of exposure).** It was assumed that personnel would be physically active during the emergency and so based on this level of anticipated activity, the rate of exposure was given a score of 3.

Acute Average PEPC scoring for Chlorine

Acute Average PEPC		Hazard Probability Scoring				Total Score	Hazard Probability
		Degree of exposure	Representativeness of field data	Duration of exposure	Rate of exposure		
Chlorine	9.8 mg/m ³	2	2	2	3	9	Likely

The following text explains the rationale underlying the scoring.

- **Factor 1 (Degree of exposure).** The Average PEPC is between the 8h Marginal and Critical MEGs. Therefore, Method A is used. The PEPC is within the middle 50th percentile of the Marginal severity range. This scores as a 2.

$$25^{\text{th}} \text{ percentile} = MEG_{lo} + \left(\frac{MEG_{hi} - MEG_{lo}}{4} \right) = 2.06 + \left(\frac{20.6 - 2.06}{4} \right) = 6.69 \text{ mg/m}^3$$

$$75^{\text{th}} \text{ percentile} = MEG_{hi} - \left(\frac{MEG_{hi} - MEG_{lo}}{4} \right) = 20.59 - \left(\frac{20.6 - 2.06}{4} \right) = 15.96 \text{ mg/m}^3$$

- **Factor 2 (Representativeness of field data).** Modeled data are based on many nonspecific assumptions. In this particular example there has been no further information provided that

CASE STUDY 1**Catastrophic Release of Chlorine and Methyl Isobutyl Ketone in the Air**

allow for the further determination of the representativeness of these data. As a result, there is no indication that the model produces overly high or low estimates of true population exposures. Therefore, this scores as a 2.

- **Factor 3 (Duration of exposure).** The exposure duration of the Average PEPC is 16 hours and the comparison MEGs are 8 hours, so the ratio is 2. This scores as a 2.
- **Factor 4 (Rate of exposure).** It was assumed that personnel would be physically active during the emergency and so based on this level of anticipated activity, the rate of exposure was given a score of 3.

6.4. Estimate of Tactical Risk and Level of Confidence

Refer to TG 230 Section 3.4.5.4 for guidance. Use the risk assessment matrix in Table G-2 to combine the hazard severity and hazard probability selections to derive a Risk Level. Use the guidance in Worksheet G.8 to set levels of confidence.

Acute Hazard		Severity	Probability	Risk Level	Confidence
Chlorine	Peak	Marginal	Frequent	HIGH	Medium
	Average	Marginal	Likely	MODERATE	Medium

Conclusion statement

Additional detail is provided in the overall Risk Characterization section at the end.

The airborne chlorine hazard associated with the industrial accident poses a High–Moderate tactical risk. The chlorine plume will impact the base camp between 3–18 hours after the industrial release with the highest risk occurring 12 hours after the initial release. Predicted acute health effects may range from burning of the eyes and throat, cough and choking sensations to the sense of suffocation, chest pain, shortness of breath, nausea, vomiting, and hoarseness. These effects may be incapacitating for some personnel. The predicted peak 1 hour exposure is practically the same as the level where personnel are expected to have incapacitating health effects. These will require immediate medical treatment or support and may even be fatal if left untreated. (See TG 230 Table C-3 for potential effects.)

Note: When Moderate or higher risk levels are identified, it is recommended that USAPHC subject matter experts, or other qualified medical/health professionals, be consulted in order to validate the risk assessment.

USAPHC Opinion for this Hypothetical Case Study:

Earlier in the case study, the USAPHC opinion on the hazard severity ranking was obtained. In this case, the peak exposure would be ranked as a Marginal severity. This High risk hazard could result in the loss of the ability to accomplish part of the mission. At the very least, this hazard is likely to produce significant

CASE STUDY 1**Catastrophic Release of Chlorine and Methyl Isobutyl Ketone in the Air**

degradation of mission capabilities. There is also a potential for latent/long-term health effects in some personnel because both the 1h and 8h Marginal MEGs are exceeded and those MEGs are based on AEGL-2 values, which for chlorine are thresholds for irreversible effects such as lung tissue damage leading to respiratory impairment and/or disease.

Rationale for confidence levels

Consider all of the information at hand and communicate to the decision maker the level of confidence they have in the risk level being presented. Use the guidance in Worksheet G.8 to set levels of confidence.

This evaluation is based on a purely hypothetical exposure to chlorine in ambient air resulting from a modeled release. As such, there is no actual exposure, activity pattern, or environmental media concentration on which to base the evaluation. Modeled data are based on many nonspecific assumptions. In this particular example there has been no further information provided that allow for the further determination of the representativeness of these data. The inherent uncertainty in this type of evaluation reduces the confidence level to MEDIUM.

7. CHRONIC RISK ASSESSMENT

Refer to TG 230 Section 3.4.6 for guidance.

There is insufficient data to conduct a chronic risk assessment because the data set represents only a brief exposure duration based on 24 hours of modeling data. In addition, it is meant to evaluate the potential acute risk to troops due to this isolated incident and so a chronic evaluation is not pertinent in this situation.

However, an important distinction should be understood. The chronic assessment is based on the evaluation of chronic exposure and not on the likelihood of latent/long-term health effects due to high acute/short-term exposures. TG 230 Section 3.3.2.2 and other areas of the TG provide additional information.

In this case study, with a High risk from chlorine exposure, there may be a potential for latent/long-term health effects to arise post-exposure and/or post-deployment. The recommended lifecycle medical responses found in TG 230 Table 3-3 and Table G-4 would be appropriate to consider for this population if this exposure were to actually occur. The recommended possible medical actions to consider for this case study are shown below.

For High Risk outcomes:

Documentation of exposure data in designated DoD archive. Specific identification and documentation of the exposed personnel. Possible passive medical surveillance related activities.

CASE STUDY 1 Catastrophic Release of Chlorine and Methyl Isobutyl Ketone in the Air

8. RISK CHARACTERIZATION SUMMARY

Refer to TG 230 Section 3.4.7 and tables G-2 through G-6 for guidance.

8.1. Summary Table

The summary should present the risk level(s), associated anticipated impacts to the tactical and lifecycle missions, and the level of confidence associated with the assessments. Recommended actions should be presented.

OEH Hazard		Tactical Risk Estimate	Lifecycle Risk Estimate	Current Recommended Actions**
Media/Source	Chemical	(acute effects)	(chronic effects)	
Airborne Chemicals from an Industrial Accident	Chlorine	<p>Moderate-High *</p> <p>Significant degradation of mission capabilities in terms of the required mission standard, inability to accomplish all parts of the mission, or inability to complete the mission to standard if hazards occur during the mission. <i>Some in-theater medical countermeasures and resources anticipated. For example, protection, treatment, and exposure documentation.</i></p> <p>Confidence in the assessment is medium on a low-medium-high scale.</p>	<p>No lifecycle risk directly estimated</p>	<p>If there is a release, follow established emergency response procedures. These may involve masking and moving upwind, or sheltering in place and sealing up living spaces. For specific information on smaller chlorine releases see the USAPHC Fact Sheet on Chlorine IED's (36-015-0407)</p>

*This summary prepared in consultation with USAPHC subject matter experts.

** These actions are recommended in order to protect against exposure if this accident were to occur. They do not include recommendations for medical follow-up if the event actually occurs.

8.2. Potential Health Effects

Refer to the tables in TG 230 Appendices B, C, D, and E. Additional information is also available in RD 230. This section should present the potential health effects that are relevant in the final assessments. When risk levels are Moderate or higher, the identification of potential health effects should be based on consultations with appropriately trained subject matter experts at USAPHC or other such service organization.

- **Acute exposure:** Acute health effects may range from burning of the eyes and throat, cough and choking sensations to the sense of suffocation, chest pain, shortness of breath, nausea, vomiting, and hoarseness. These effects may be incapacitating for some personnel. There is a potential for latent/long-term health effects for the most highly exposed, such as lung tissue damage leading to respiratory impairment and/or disease.
- **Chronic exposure:** Chronic exposure will not occur in this scenario.

8.3. Answers to Key Post-Risk Assessment Questions

CASE STUDY 1**Catastrophic Release of Chlorine and Methyl Isobutyl Ketone in the Air**

Refer to Worksheet G.2. These questions should be considered when preparing a risk assessment. The case study answers provide teaching points.

- Has the risk assessment incorporated any of the unique considerations identified in TG 230 Section 3.5? The TG 230 Section 3.5 identifies no considerations that are relevant to this case study.
- Is data quality adequate to base risk management decisions on the risk assessment? Yes. The quality of the data is limited by the accuracy of the air dispersion model that was used to generate the ambient air concentrations. While the accuracy of the model has not been quantified, it is assumed to be a reasonable estimate of what the true concentrations would be during a similar event.
- Is it worth collecting additional data to increase the confidence in the risk assessment conclusion? Further refinement of the model parameters could be done, but may not be necessary or beneficial.
- Are there readily available exposure control measures that can be implemented? During an actual emergency, appropriate personal protective equipment (PPE) would be worn by the population at risk. There are available protective masks that can be used for escape and to protect against chlorine-limited chlorine exposure.

8.4. Bottom-line-up-front briefing statements (BLUF Statements)

Refer to TG 230 Section 4 for over-arching risk communication guidance. The following bullets should represent succinct case-study specific points that should be emphasized when communicating to stakeholders.

- This risk assessment evaluated the health risk associated with toxic industrial chemicals associated with the hypothetical industrial accident 2km from the base camp.
- Airborne chlorine poses a health hazard to the base camp population if released.
- Population exposures to chlorine will occur from 3 to 18 hours after the release from the facility.
- Airborne chlorine will pose a MODERATE–HIGH RISK. The confidence in the assessment is medium, but additional analysis is not feasible.
- The highest risk is associated with the peak exposure that the population will experience, which occurs 12 hours after the initial release and will last roughly 2 hours. Predicted acute health effects may range from burning of the eyes and throat, cough and choking sensations to the sense of suffocation, chest pain, and shortness of breath, nausea, vomiting, and hoarseness. These effects may be incapacitating for some personnel and last for a short period of time post-exposure. The predicted peak 1 hour exposure is practically the same as the level where personnel are expected to have incapacitating health effects that require

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immediate medical treatment or support or that may even be fatal. Latent/long-term health effects are possible at these exposure levels, specifically lung tissue damage leading to respiratory impairment and/or disease.

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**Catastrophic Release of Chlorine and
Methyl Isobutyl Ketone in the Air**

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CASE STUDY 2**Airborne Particulate Matter and Nickel at a Base Camp****Teaching Points**

- Performs both an acute and chronic assessment with 4 months of data.
- Shows how incomplete data coverage over time can be used to assess exposure.
- Deals with multiple MEG choices for a metal, based on the form of the metal.
- Demonstrates USAPHC SME input into the process.

1. BACKGROUND

This is a hypothetical case study designed to illustrate the TG 230 risk assessment process. This assessment focuses on the use of routine sampling data to determine the health risk to personnel deployed at a base camp. This is a well-established camp with some routine air quality measurements taken over the course of four months.

2. DEFINE THE PURPOSE OF THE RISK ASSESSMENT

Refer to TG 230 Section 3.4.1 for guidance. Appendix G provides a process flow-chart.

The purpose of the assessment is to evaluate the health risk to military population from airborne particulates and metals during a 15-month deployment, January 2008 – April 2009.

3. COLLECT DATA AND DESCRIBE EXPOSURE SETTING

Refer to TG 230 Section 3.4.2 for guidance.

3.1. Data Sampling Summary

Include a description of who collected the data and how data were collected (i.e. sampling method).

Ambient air particulate matter samples were collected by PVNTMED personnel using a low volume sampling pump using different sampling heads/impactors to distinguish between particulates less than 10 and less than 2.5 microns in aerodynamic diameter. Nickel was analyzed from the filters used to collect the PM₁₀ samples.

3.2. Available Sampling Data and Statistics

See next pages

CASE STUDY 2**Airborne Particulate Matter and Nickel at a Base Camp**

Sample Date	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	PM _{2.5} / PM ₁₀ **	Nickel (µg/m ³)
14-Jul-2008	85	63	0.74	<0.05
21-Jul-2008	101	53	0.52	<0.05
29-Jul-2008	NA	83	NA	NA
5-Aug-2008	376	NA	NA	<0.05
12-Aug-2008	147	95	0.65	7
21-Aug-2008	236	85	0.36	<0.05
5-Sep-2008	NA	167	NA	NA
13-Sep-2008	227	96	0.42	<0.05
25-Sep-2008	84	NA	NA	<0.05
4-Oct-2008	191	NA	NA	<0.05
14-Oct-2008	115	80	0.70	1
29-Oct-2008	NA	42	NA	<0.05

Notes: NA: Data not available (Not Sampled)

**See case study Section 5.3.

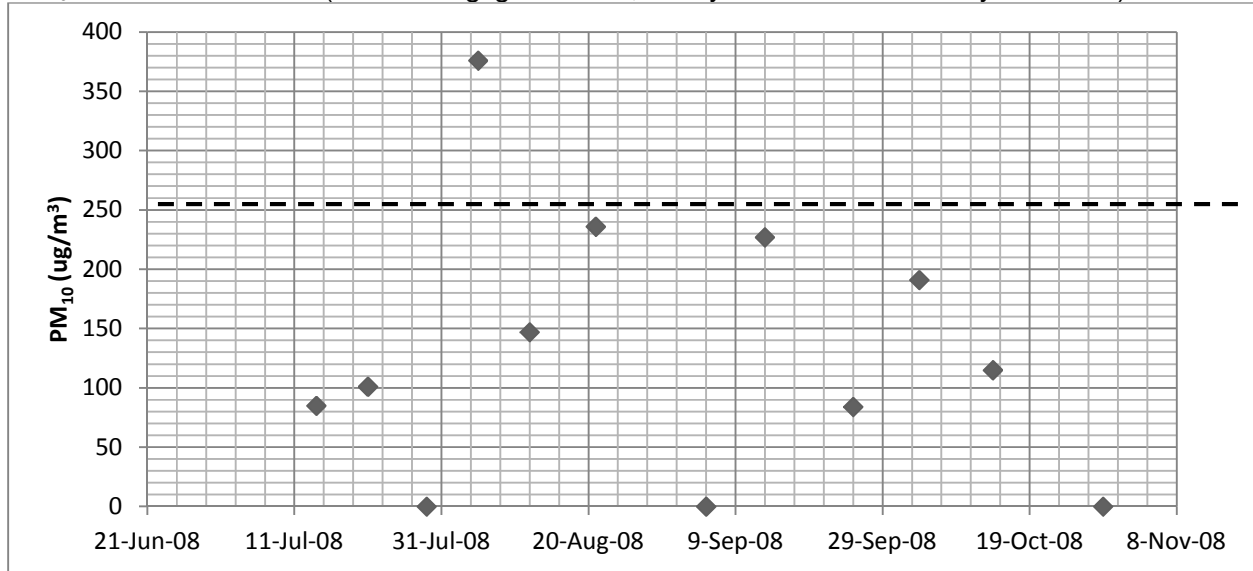
SAMPLE DATA SUMMARY	PM ₁₀	PM _{2.5}	Nickel
Detected/Sampled	9/9	9/9	2/9
Detection Frequency	100%	100%	22%
Average (µg/m ³)	174	85	0.82
Peak (µg/m ³)	376	167	7
Sample Time per Sample (hrs)	24	24	24

*NA treated as missing data for calculating this average. That is, the sample was not treated as zero nor as ½ the limit of quantitation (LOQ).

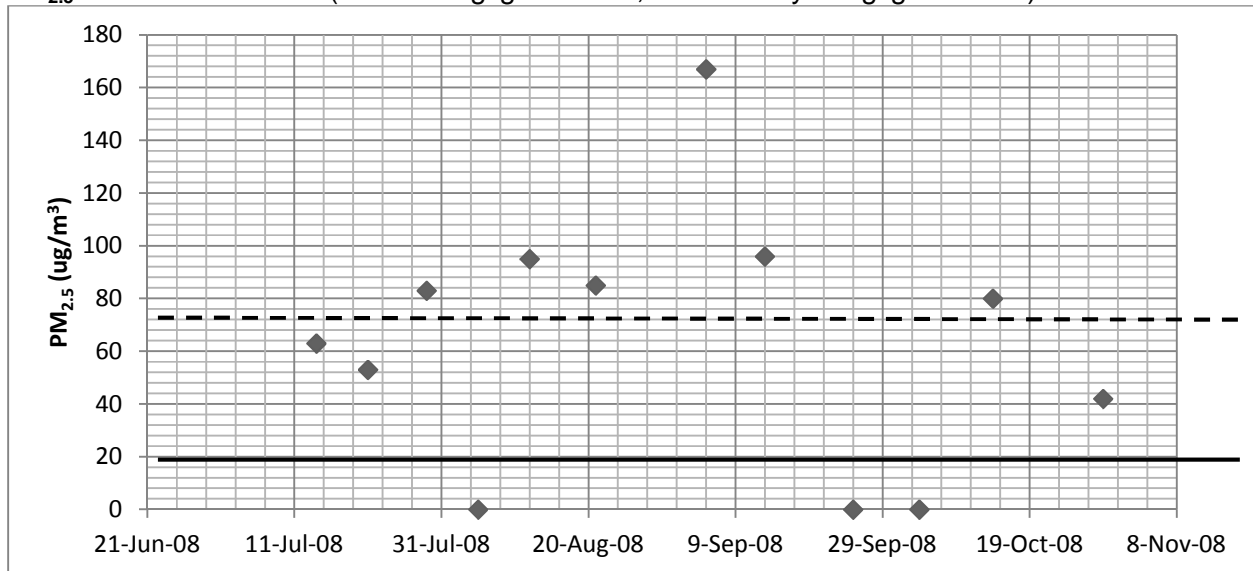
CASE STUDY 2

Airborne Particulate Matter and Nickel at a Base Camp

PM₁₀ Levels over Time (--- 24h Negligible MEG, No 1yr MEGs are currently available)



PM_{2.5} Levels over Time (--- 24h Negligible MEG, solid line 1yr Negligible MEG)



CASE STUDY 2

Airborne Particulate Matter and Nickel at a Base Camp

3.3. MEG Tables

Short-Term (24-hour) Particulate Matter Air MEGs*

Hazard Severity	PM _{2.5}	PM ₁₀	Description of Military Health and Operational Effects
Critical	500 µg/m ³	600 µg/m ³	Above these, most if not all personnel will experience very notable eye, nose, and throat irritation and respiratory effects. Visual acuity is impaired, as is overall aerobic capacity. Some personnel will not be able to perform assigned duties. Some lost duty days are expected. Those with a history of asthma or cardiopulmonary disease will experience more severe symptoms.** Conditions may also result in adverse, non-health related materiel/logistical impacts.
Marginal	250 µg/m ³	420 µg/m ³	Above these, a majority of personnel will experience notable eye, nose, and throat irritation and some respiratory effects. Some lost duty days are expected. Significant aerobic activity will increase risk. Those with a history of asthma or cardiopulmonary disease are expected to experience increased symptoms.**
Negligible	65 µg/m ³	250 µg/m ³	Above these, a few personnel may experience notable mild eye, nose, or throat irritation; most personnel will experience only mild effects. Pre-existing health conditions (e.g., asthma, or cardiopulmonary diseases) may be exacerbated.**

* The MEGs and descriptors are based on professional judgment reflecting a consensus opinion of USAPHC subject matter experts. ** Diagnosis of pulmonary or cardiopulmonary diseases would prevent deployment, though some conditions may go undetected. A small percentage of deployed personnel fall into this sensitive group.

Long-Term (1-year) Particulate Matter Air MEGs*

Hazard Severity	PM _{2.5}	PM ₁₀	Description of Military Health and Operational Effects
Marginal	65 µg/m ³	Not defined	With repeated exposures above this, it is plausible that development of chronic health conditions such as reduced lung function or exacerbated chronic bronchitis, COPD, asthma, atherosclerosis, or other cardiopulmonary diseases could occur in generally healthy troops. Those with a history of asthma or cardiopulmonary disease are considered to be at particular risk. This guideline is an uncertain screening value—it is not a known health effects concentration.
Negligible	15 µg/m ³	Not defined	With repeated exposures above this, it is considered possible that a small percentage of personnel <u>may</u> have increased risk for developing chronic conditions such as reduced lung function or exacerbated chronic bronchitis, COPD, asthma, atherosclerosis, or other cardiopulmonary diseases. Personnel with history of asthma or cardiopulmonary disease are considered to be at particular risk. Exposures below this are not expected to result in development of chronic health conditions in generally healthy troops.

* The MEGs and descriptors are based on professional judgment reflecting a consensus opinion of USAPHC subject matter experts. USAPHC no longer recommends long-term MEGs for PM₁₀. The Negligible MEG is the EPA NAAQS standard reflecting a threshold level for the general population based on studies evaluating primarily children or individuals with cardiovascular and other diseases. Alternative standards for health adults do not yet exist. This MEG is considered a point of departure for further consideration and is not an action level.

CASE STUDY 2**Airborne Particulate Matter and Nickel at a Base Camp****Nickel Exposure Guidelines**

(Selected MEGs shaded)

Forms of Nickel with Air MEGs	CASRN	Selected Form of Nickel for this Case Study is Nickel Soluble Salts (Ni ²⁺)	
		Exposure Guideline	Value (µg/m ³)
Nickel (elemental)	7440-02-0	1 Hour Negligible	NA
Nickel (II) bromide	13462-88-9	1 Hour Marginal	NA
Nickel (II) chloride hexahydrate	7791-20-0	1 Hour Critical	NA
Nickel (II) formate	3349-06-2	1 Hour Catastrophic	NA
Nickel (II) hydroxide	12054-48-7	8 Hour Negligible	100
Nickel (II) hydroxide carbonate hydrate	39430-27-8	24 Hour Negligible	NA
Nickel (II) nitrate hexahydrate	13478-00-7	14 Day Negligible	100
Nickel (II) nitrite	17861-62-0	1 Year Negligible	34
Nickel (II) hydroxide	12125-56-3		
Nickel ammonium sulfate	15699-18-0		
Nickel carbonyl	13463-39-3		
Nickel chloride	7718-54-9		
Nickel cyanide	557-19-7		
Nickel insoluble inorganic compounds	NA		
Nickel oxalate dihydrate	6018-94-6		
Nickel oxide	1313-99-1		
Nickel refinery dust	NA		
Nickel subsulfide	12035-72-2		
Nickel sulfamate	13770-89-3		
Nickel sulfate	7786-81-4		
Nickel sulfate hexahydrate	10101-97-0		
Nickel, (carbonato(2-))tet	12607-70-4		
Nickel, soluble salts	NA		
Nickelous nitrate	13138-45-9		

CASRN = Chemical Abstract Service Registry Number

NA = Not available.

Nickel has MEGs available for both soluble and insoluble forms. Because there is no available site-specific information indicating if the nickel is in a soluble or insoluble form, the recommended default MEGs were chosen (see TG 230 Section 3.5.5). In this case the comparison will be made with Nickel Soluble Salts. Additional information supporting this decision is provided in the next section.

CASE STUDY 2**Airborne Particulate Matter and Nickel at a Base Camp****3.4. Chemical information**

Provide general information about the chemical(s) and the general source(s) in the environment.

Particulate matter: The RD 230 provides an entire chapter discussing particulate matter sources and health effects. The following is extracted from RD 230.

Particulate matter air pollution is a complex mixture of extremely small particles and liquid droplets in the air. When breathed in, some of these particles can reach the deepest regions of the lungs. Exposure to particle pollution is linked to a variety of significant health problems. Particulate matter pollution can be a major health and operational risk concern in some deployment environments. An accurate assessment of the health and operational risks of high concentrations of airborne particulate matter in the deployment environment is challenging (see RD 230). Although particulate matter may emanate from many sources, fossil-fuel combustion is the predominant source of particulate in areas with high population density, such as in the US and the European Union. However, in some deployed settings, blowing sand can be a major contributor to the total particulate matter concentration. The size and composition of measured particulate matter in deployment settings is directly relevant to the accurate assessment of particulate matter health risks for deployed personnel. For this reason, the accurate health assessment of particulate matter measurements must be accompanied by evaluations of the likely sources and composition of the measured particles.

Nickel: The Agency for Toxic Substances and Disease Registry (ATSDR) has a publically available ToxFAQ™ and Toxicological Profile for Nickel. The following is general information obtained from these sources.

Nickel is a naturally occurring element. Pure nickel is a hard, silvery-white metal used to make stainless steel and other metal alloys. Skin effects are the most common effects in people who are sensitive to nickel. Workers who breathed very large amounts of nickel compounds developed chronic bronchitis and lung and nasal sinus cancers. Nickel is released into the atmosphere by industries that make or use nickel, nickel alloys, or nickel compounds. It is also released into the atmosphere by oil-burning power plants, coal-burning power plants, and trash incinerators. In the air, it attaches to small particles of dust that settle to the ground or are taken out of the air in rain or snow; this usually takes many days.

While nickel can exist in oxidation states -1, 0, +2, +3, and +4, its only important oxidation state is nickel(+2) under normal environmental conditions. Environmental nickel is generally from two sources—(1) naturally occurring and (2) as a byproduct of human activities. In both cases, nickel is usually believed to exist in the atmosphere as the oxidized nickel state (Ni^{2+}). Metallic nickel is usually only associated with occupational settings. The oxidized state (Ni^{2+}) exists in either soluble or insoluble forms, depending on the matrix (or anion).

CASE STUDY 2**Airborne Particulate Matter and Nickel at a Base Camp****3.5. Describe the Exposure Setting**

Refer to TG 230 Section 3.4.2 for guidance. The description should answer as many of the pre-assessment key questions from Worksheet G.2 as possible. If an answer is unavailable, then indicate that information is missing.

The population at risk is the entire population at the base camp from January 2008 – April 2009, a 15 month period. Site-wide exposure to ambient air pollution is being assessed. The potential hazards are airborne, so inhalation is the primary exposure route of concern.

The base camp is located in Southwest Asia and is home to the 3rd Brigade Combat Team 1st Armored Division and support staff of 6000 personnel. They will be deployed to this location for 15 continuous months.

There are numerous activities that occur at the base camp. These activities include desk work, training exercises, typical daily routines (sleeping, eating, vehicle driving, etc.), equipment maintenance and heavy labor. About 30% of the unit will remain on the base camp at all times performing administrative and logistics operations. The remaining 70% will spend two 30-day deployments at smaller outposts off the base camp, and perform 12-hour combat patrols most other days beginning and ending at the base camp.

There is no particular exposure event. Specific sources of the airborne particulate matter and nickel are not known. No other types of airborne pollutant hazards have been identified and no soil sampling has occurred. Trash and waste is hauled and burned offsite (>20 km). No major industry is within 20 km.

- What is the population at risk?
- What is the timeframe under consideration?
- What is the exposure event or ambient environmental condition under consideration?
- What is known about the source of the chemicals?
- What are the exposure pathways?
- What else is known about the exposure setting?
- What are the activity patterns of the population at risk?
- Where are the sampling locations relative to where exposure occurs?
- Is there adequate data quality to conduct a chronic assessment?

PVNTMED personnel sampled ambient air at a central camp location that is believed to generally represent the typical population exposure. There is adequate data quality to conduct a chronic assessment—there are multiple samples throughout a year and no data have been invalidated.

CASE STUDY 2**Airborne Particulate Matter and Nickel at a Base Camp****4. PRESCREEN**

Refer to TG 230 Section 3.4.3 and Worksheet G.3 for guidance. Enter the results into the table below.

Chemical Name	Maximum Sample Concentration	1 Year Negligible MEG	Result
PM ₁₀	376 ug/m ³	NA	Retain as a hazard
PM _{2.5}	167 ug/m ³	15 ug/m ³	Retain as a hazard
Nickel, soluble salts	7 ug/m ³	34 ug/m ³	Exclude as a hazard

There is no 1 year Negligible MEG for PM₁₀, therefore it cannot be eliminated at this stage.

5. GENERATE THE RISK ASSESSMENT DATA SET

Refer to TG 230 Section 3.4.4 and Worksheet G.4 for guidance. Enter the results into the table below.

Chemical Name	Acute Exposure		Chronic Exposure
	Peak PEPC	Average PEPC	Average PEPC
PM ₁₀	376 ug/m ³	174 ug/m ³	174 ug/m ³
PM _{2.5}	167 ug/m ³	85 ug/m ³	85 ug/m ³

* All PEPCs in this assessment are based on 24-hour sampling times. The acute average PEPCs represent the expected concentrations on any given day. The chronic average PEPCs represent the expected average concentration over a 15-month period (see text).

5.1. Acute PEPCs

There is only one sampling averaging time for each pollutant (PM₁₀ and PM_{2.5}), which is 24 hours; so only 24hr PEPCs are needed. Therefore, the acute peak PEPCs are the highest sample concentrations. Since there is no known “exposure event”, the acute average PEPCs are equal to the average 24hr concentrations across the entire sampling period (Jul–Oct 2008).

5.2. Chronic PEPCs

The chronic average PEPCs should represent the average concentrations across the time period of interest, which is 15 months (Jan 2008 – Apr 2009) as defined in the risk assessment purpose. Unfortunately, the available data does not cover this entire period. Therefore, use of the average concentration from the collected data to represent the expected average concentration across the 15-month deployment period contains an embedded assumption. It is assumed that the particulate matter concentrations during January – June 2008 and November 2008 – April 2009 are reasonably represented by the data collected during July – October 2008.

Note: If there was information that indicated that much higher or lower concentrations would be expected

CASE STUDY 2**Airborne Particulate Matter and Nickel at a Base Camp**

during these “missing data months,” then the risk assessor may choose to handle this knowledge in one of two ways.

Option A—he/she could calculate a weighted average using an assumed concentration for the missing data months. For this case, this option would not be recommended because there is insufficient data by which to estimate reasonable surrogate concentrations for the missing time periods.

Option B—he/she could stick with the calculated average PEPC from the available data, but then rank hazard probability factor 2 (Representativeness of field data) at a score of 1 or 3. For this case, this option is recommended. The chronic PEPCs are considered to represent conservative estimates because that data was collected during the time of the year that is associated with higher winds and more airborne particulate matter. This information is incorporated into the assessment at a later point in the process.

5.3. Ratios of Particulate Matter Mass Fractions

Note: USAPHC subject matter experts, or other qualified environmental professionals, should be consulted prior to the use particulate matter mass ratios to support an exposure assessment. At this time, use of particulate matter mass fractions to inform the risk assessment is not a recommended action for routine risk assessments.

USAPHC Opinion for this Hypothetical Case Study:

When data for both PM_{10} and $PM_{2.5}$ is available, it is useful to calculate the $PM_{2.5}/PM_{10}$ mass fraction ratio. This ratio provides an indication of the likely differential chemical composition within each mass fraction. It is reasonable to generally assume that, based on data and information presented in the DoD Enhanced Particulate Matter Surveillance Program¹, ratios that are low (e.g., 0.36) are typical of regions dominated by geological dust (i.e., combustion sources are few), whereas ratios that are high (e.g., as high as 0.85) are typical of regions where combustion processes are common.

At this site the average mass ratio across the data collection period is 0.57 (the data table at the beginning shows the ratios for each sampling day), indicating that there are likely to be some combustion sources upwind of the site, but that the combustion sources do not represent consistent contributions to the overall particulate mass.

¹ Department of Defense Enhanced Particulate Matter Surveillance Program Final Report. Prepared for the Assistant Secretary of Defense for Health Affairs and the US Army Developmental Test Command. Desert Research Institute, Reno, Nevada; 2008.

CASE STUDY 2**Airborne Particulate Matter and Nickel at a Base Camp****6. ACUTE RISK ASSESSMENT**

Refer to TG 230 Section 3.4.5 for guidance.

6.1. Screen for Acute Hazards

Refer to TG 230 Section 3.4.5.1 and Worksheet G.3 for guidance to perform screen for acute hazards. Enter the results into the table below.

Chemical Name	Peak PEPC*	Screening MEG		Result
PM ₁₀	376 ug/m ³	250 ug/m ³	24hr NEG	Retain as an acute hazard
PM _{2.5}	167 ug/m ³	65 ug/m ³	24hr NEG	Retain as an acute hazard

* All PEPCs are 24 hour averages.

6.2. Rank Acute Hazard Severity

Refer to TG 230 Section 3.4.5.2 for guidance. The peak and average PEPC across the selected exposure duration are used to select a hazard severity for each PEPC using Worksheet G.5 (airborne exposures) or Worksheet G.6 (water exposures).

Chemical Name	PEPC*		Comparison MEG		Hazard Severity
PM ₁₀	Peak	376 ug/m ³	250 ug/m ³	24 hr NEG	Negligible
	Average	174 ug/m ³	is less than	24 hr NEG	Negligible
PM _{2.5}	Peak	167 ug/m ³	65 ug/m ³	24 hr NEG	Negligible
	Average	85 ug/m ³	65 ug/m ³	24 hr NEG	Negligible

* All PEPCs represent 24 hour averages.

Based on the decision logic in Worksheet G.5, all PM₁₀ and PM_{2.5} PEPCs are ranked as Negligible because they are either less than the 24hr Negligible MEG or less than the 24hr Marginal MEG.

CASE STUDY 2**Airborne Particulate Matter and Nickel at a Base Camp****6.3. Rank Acute Hazard Probability**

Refer to TG 230 Section 3.4.5.3 for guidance. Assess the hazard probability for each PEPC using Worksheet G.5 (airborne exposures) or Worksheet G.6 (water exposures).

Acute Peak PEPC scoring for PM₁₀

Acute PEPC		Hazard Probability Scoring					Hazard Probability
		Degree of exposure	Representativeness of field data	Duration of exposure	Rate of exposure	Total Score	
Peak	376 ug/m ³	2	2	2	2	8	Occasional

The following text explains the rationale underlying the scoring.

- **Factor 1 (Degree of exposure).** The peak PEPC is in the middle of the MEG range. This scores as a 2.

$$25^{\text{th}} \text{ percentile} = MEG_{lo} + \left(\frac{MEG_{hi} - MEG_{lo}}{4} \right) = 250 + \left(\frac{420 - 250}{4} \right) = 293 \text{ ug/m}^3$$

$$75^{\text{th}} \text{ percentile} = MEG_{hi} - \left(\frac{MEG_{hi} - MEG_{lo}}{4} \right) = 420 - \left(\frac{420 - 250}{4} \right) = 377 \text{ ug/m}^3$$

- **Factor 2 (Representativeness of field data).** For this case study, this factor should be scored in terms of answering this question: how likely is it that this data set contains the true peak acute PEPC? While field data (based on 4 months) is not necessarily representative across the 15-month duration, the estimates of the peak field exposure are considered to be slightly conservative because data was collected during the summer months, which are associated with higher winds and more airborne particulate matter. This scores as a 2.
- **Factor 3 (Duration of exposure).** The exposure duration (24 hrs) in the field matches the exposure duration (24 hrs) of the MEG, a ratio of 1. This scores as a 2.
- **Factor 4 (Rate of exposure).** Typical exertion. Site-wide annual assessments of air quality. This scores as a 2.

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Airborne Particulate Matter and Nickel at a Base Camp

Acute Average PEPC scoring for PM₁₀

Acute PEPC		Hazard Probability Scoring					Hazard Probability
		Degree of exposure	Representativeness of field data	Duration of exposure	Rate of exposure	Total Score	
Average	174 ug/m ³	1	2	2	2	7	Seldom

The following text explains the rationale underlying the scoring.

- Factor 1 (Degree of exposure). The average PM₁₀ PEPC is below the Negligible MEG. This scores as a 1.
- Factor 2 (Representativeness of field data). For this case study, this factor should be scored in terms of answering this question: how likely is it that this data set can be used to estimate the true typical PM₁₀ concentration on any given day of the 15-month period? While field data (based on 4 months) is not necessarily representative across the 15-month duration, the estimates of field exposure are considered to be slightly conservative because data was collected during the summer months, which are associated with higher winds and more airborne particulate matter. This scores as a 2.
- Factor 3 (Duration of exposure). The exposure duration (24 hrs) in the field matches the exposure duration (24 hrs) of the MEG, a ratio of 1. This scores as a 2.
- Factor 4 (Rate of exposure). Typical exertion. Site-wide annual assessments of air quality. This scores as a 2.

Acute Peak PEPC scoring for PM_{2.5}

Acute PEPC		Hazard Probability Scoring					Hazard Probability
		Degree of exposure	Representativeness of field data	Duration of exposure	Rate of exposure	Total Score	
Peak	167 ug/m ³	2	2	2	2	8	Occasional

The following text explains the rationale underlying the scoring.

- Factor 1 (Degree of exposure). The average PEPC is in the middle of the MEG range. This scores as a 2.

$$25^{\text{th}} \text{ percentile} = MEG_{lo} + \left(\frac{MEG_{hi} - MEG_{lo}}{4} \right) = 65 + \left(\frac{250 - 65}{4} \right) = 112 \text{ ug/m}^3$$

$$75^{\text{th}} \text{ percentile} = MEG_{hi} - \left(\frac{MEG_{hi} - MEG_{lo}}{4} \right) = 250 - \left(\frac{250 - 65}{4} \right) = 204 \text{ ug/m}^3$$

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Airborne Particulate Matter and Nickel at a Base Camp

- Factor 2 (Representativeness of field data). For this case study, this factor should be scored in terms of answering this question: how likely is it that this data set contains the true peak acute PEPC? While field data (based on 4 months) is not necessarily representative across the 15 month duration, the estimates of field exposure are considered to be slightly conservative because data was collected during the summer months, which are associated with higher winds and more airborne particulate matter. This scores as a 2.
- Factor 3 (Duration of exposure). The exposure duration (24 hrs) in the field matches the exposure duration (24 hrs) of the MEG, a ratio of 1. This scores as a 2.
- Factor 4 (Rate of exposure). Typical exertion. Site-wide annual assessments of air quality. This scores as a 2.

Acute Average PEPC scoring for PM_{2.5}

Acute PEPC		Hazard Probability Scoring					Hazard Probability
		Degree of exposure	Representativeness of field data	Duration of exposure	Rate of exposure	Total Score	
Average	85 ug/m ³	1	2	2	2	7	Seldom

The following text explains the rationale underlying the scoring.

- Factor 1 (Degree of exposure). The average PM_{2.5} PEPC is in the lower 25 % of the MEG range. This scores as a 1.

$$25^{\text{th}} \text{ percentile} = MEG_{lo} + \left(\frac{MEG_{hi} - MEG_{lo}}{4} \right) = 65 + \left(\frac{250 - 65}{4} \right) = 112 \text{ ug/m}^3$$

$$75^{\text{th}} \text{ percentile} = MEG_{hi} - \left(\frac{MEG_{hi} - MEG_{lo}}{4} \right) = 250 - \left(\frac{250 - 65}{4} \right) = 204 \text{ ug/m}^3$$

- Factor 2 (Representativeness of field data). For this case study, this factor should be scored in terms of answering this question: how likely is it that this data set can be used to estimate the true typical PM_{2.5} concentration on any given day of the 15-month period? While field data (based on 4 months) is not necessarily representative across the 15 month duration, the estimates of field exposure are considered to be slightly conservative because data was collected during the summer months, which are associated with higher winds and more airborne particulate matter. This scores as a 2.
- Factor 3 (Duration of exposure). The exposure duration (24 hrs) in the field matches the exposure duration (24 hrs) of the MEG, a ratio of 1. This scores as a 2.
- Factor 4 (Rate of exposure). Typical exertion. Site-wide annual assessments of air quality. This scores as a 2.

CASE STUDY 2**Airborne Particulate Matter and Nickel at a Base Camp****Summary of Acute Hazard Probability Ranks**

Hazard probability →		Unlikely	Seldom	Occasional	Likely	Frequent
Total factor score →		4–6	7	8	9	10–12
PM ₁₀	Peak			Occasional		
	Average		Seldom			
PM _{2.5}	Peak			Occasional		
	Average		Seldom			

6.4. Estimate of Tactical Risk and Level of Confidence

Refer to TG 230 Section 3.4.5.4 for guidance. Use the risk assessment matrix in Table G-2 to combine the hazard severity and hazard probability selections to derive a Risk Level. Use the guidance in Worksheet G.8 to set levels of confidence.

Acute Hazard		Severity	Probability	Risk Level	Confidence
PM ₁₀	Peak	Negligible	Occasional	LOW	Medium
	Average	Negligible	Seldom	LOW	
PM _{2.5}	Peak	Negligible	Occasional	LOW	
	Average	Negligible	Seldom	LOW	

Conclusion statement

Additional detail is provided in the overall Risk Characterization section at the end.

In summary, the airborne particulate matter hazard poses a Low tactical risk. A few personnel may experience notable mild eye, nose, or throat irritation; most personnel will experience only mild effects, even on peak exposure days. Pre-existing health conditions (e.g., asthma or cardiopulmonary diseases) may be exacerbated” (see the case study’s short-term MEG table in Section 3.3).

Rationale for confidence level

Consider all of the information at hand and communicate to the decision maker the level of confidence they have in the risk level being presented. Use the guidance in Worksheet G.8 to set levels of confidence.

The level of confidence in the acute assessment is Medium. There is significant activity pattern information. The potential health outcomes are plausible. While field data is not necessarily representative across the 15 month duration, the estimates of field exposure are considered to be slightly conservative because data was collected during the summer months, which are

CASE STUDY 2**Airborne Particulate Matter and Nickel at a Base Camp**

associated with higher winds and more airborne particulate matter. At this site the average particulate mass ratio across the data collection period is 0.57, indicating that there are likely to be some combustion sources upwind of the site, but that the combustion sources do not represent consistent contributions to the overall particulate mass.

7. CHRONIC RISK ASSESSMENT

Refer to TG 230 Section 3.4.6 for guidance.

7.1. Screen for Chronic Hazards

Refer to TG 230 Section 3.4.6.1. Screen for hazardous exposures that may lead to long term health effects. Use the chronic screening criteria described in Worksheet G.3 and enter the results in the table below.

Chemical Name	Chronic PEPC	1 Year Negligible MEG	Frequency of Detection	Result
PM ₁₀	174 ug/m ³	Not defined	100 %	Exclude as a hazard
PM _{2.5}	85 ug/m ³	15 ug/m ³	100 %	Retain as a hazard

For both mass fractions, the frequency of detection is greater than 5 percent. The PM_{2.5} exposure is retained as a chronic hazard because it is higher than the 1yr Negligible MEG.

The PM₁₀ exposure is excluded as a chronic hazard because USAPHC no longer recommends any long-term MEGs for PM₁₀ since the U.S. Environmental Protection Agency revoked the annual National Ambient Air Quality Standard for PM₁₀ citing a lack of evidence to linking health problems to long-term exposure to coarse particle pollution. The health risks of long-term exposures to particulate matter are primarily associated with the PM_{2.5} fraction. Refer to TG 230 Section 3.5.3 for more information.

7.2. Rank Chronic Hazard Severity

Refer to TG 230 Section 3.4.6.2 for guidance. The average PEPCs across the selected exposure duration are used to select a hazard severity for each PEPC using Worksheet G.7.

Chemical Name	Chronic PEPC	Comparison MEG		Hazard Severity
PM _{2.5}	85 ug/m ³	65 ug/m ³	1yr MARG	Marginal*

* In this case the hazard severity is at least Marginal. However, because there is no 1yr Critical MEG (see TG 230 Figure 3-6) it is recommended that USAPHC be contacted in order to validate, or determine, the final severity ranking.

Note: These exposure estimates require that USAPHC subject matter experts, or other qualified medical/health professionals, be consulted in order to rank hazard severity.

USAPHC Opinion for this Hypothetical Case Study:

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The severity ranks will depend on the weight of evidence and the dose-response information associated with the MEGs. In these situations, subject matter experts (SMEs) with an appropriate understanding of the underlying chemical- and endpoint-specific toxicity data should be consulted to determine most appropriate severity rank. Considerations include the basis and confidence in the MEG value, knowledge about the dose-response function, toxicological weight-of-evidence, other alternative health criteria and their basis, the short-term MEGs, and especially any unique applicable action levels.

PM_{2.5}: The 1yr Marginal MEG was developed in part by consideration of the U.S. EPA Air Quality Index (AQI). However, the AQI is primarily developed to address effects from short-term exposures and the associated short-term health effects. While a review of available literature shows relatively strong evidence that links chronic exposure to high PM_{2.5} to long-term health effects such as chronically reduced lung function or exacerbated bronchitis, chronic obstructive pulmonary disease (COPD), asthma, atherosclerosis, and other cardiopulmonary diseases, there is no analogous source of published health criteria for PM_{2.5} that provides guidelines for quantitatively predicting increasing levels of risk for these long-term health effects. Scientific research is especially inadequate for directly developing such guidelines for the deployed military population, composed mostly of healthy adults. Therefore, the selected long-term MEGs for PM_{2.5} are based on professional judgment reflecting a consensus opinion of USAPHC subject matter experts.

The 1yr Marginal MEG for PM_{2.5} represents an estimated point of demarcation for a higher degree of plausible risk for long-term health effects amongst troops continuously exposed to such PM_{2.5} levels. The military health and operational effects associated with exposures above the Marginal MEG are provided in the MEG tables in Section 3.3 of this case study.

There is a clear lack of data for setting or predicting where the exposure threshold would be for a 1yr Critical MEG for PM_{2.5}. Based on the professional opinion of USAPHC subject matter experts, a 15-month average population exposure of 85 ug/m³ would not produce a high enough incidence of chronic health conditions to warrant a severity designation of Critical, whereby most exposure personnel would be at risk for developing such long-term health problems. Therefore, the severity rank for this exposure is set to Marginal. This is considered a conservative (health-protective) ranking for this exposure level.

7.3. Rank Chronic Hazard Probability

Refer to TG 230 Section 3.4.6.3 for guidance. Assess the hazard probability for each PEPC using Worksheet G.7

Chronic Average PEPC scoring for PM_{2.5}

Chronic PEPC		Hazard Probability Scoring					Hazard Probability
		Degree of exposure	Representativeness of field data	Duration of exposure	Rate of exposure	Total Score	
PM _{2.5}	85 ug/m ³	2	1	2	2	7	Seldom

The following text explains the rationale underlying the scoring.

- **Factor 1 (Degree of exposure).** Scoring method B is used since the PEPC is higher than the 1yr Marginal MEG and a 1yr Critical MEG is unavailable. This scores as a 2.

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- **Factor 2 (Representativeness of field data).** As discussed in the risk assessment data set section, the chronic average PEPC represents an estimate of the average concentration for 15 months (Jan 2008 – Apr 2009). Unfortunately, the available data does not cover this entire period; the estimates of field exposure are considered to be conservative for a chronic assessment because data was collected only during the late summer months that are associated with higher winds and more airborne particulate matter. This scores as a 1.
- **Factor 3 (Duration of exposure).** The duration of exposure is 15 months and the MEG duration is 12 months, a ratio of 1.25. This scores as a 2.
- **Factor 4 (Rate of exposure).** Since this is a site-wide, annual assessment of air quality, we choose the typical exertion category. This scores as a 2.

7.4. Estimate of Lifecycle Risk and Level of Confidence

Refer to TG 230 Section 3.4.6.4. Use the risk assessment matrix in Table G-2 to combine the hazard severity and hazard probability selections to derive a Risk Level. Use the guidance in Worksheet G.8 to set levels of confidence.

HAZARD	Severity	Probability	Risk Level	Confidence
PM _{2.5}	Marginal	Seldom	LOW	Low

Conclusion statement

Additional detail is provided in the overall Risk Characterization section at the end.

The lifecycle risk level associated with chronic exposure to airborne PM_{2.5} is Low. The major health concern associated with exposure to PM_{2.5} is from combustion sources. Based on this analysis personnel will seldom experience chronic exposures that would result in the plausibility that development of chronic health conditions such as reduced lung function or exacerbated lung conditions or other cardiopulmonary diseases in generally healthy troops. Those with a history of asthma or cardiopulmonary disease are more likely to develop these conditions.

Note: Under typical circumstances, a Low risk does not carry a recommendation to consult with USAPHC subject matter experts, or other qualified medical/health professionals. However, in this case, these consultants should have already been contacted in order to rank the chronic hazard severity level. When this happens, these consultants would also likely assist in preparing the final conclusion statements and recommendations.

CASE STUDY 2**Airborne Particulate Matter and Nickel at a Base Camp****Rationale for confidence level**

Consider all of the information at hand and communicate to the decision maker the level of confidence they have in the risk level being presented. Use the guidance in Worksheet G.8 to set levels of confidence.

The level of confidence in the chronic assessment is Low.

There is significant activity pattern information. Predicted health outcomes are plausible. The estimated chronic average exposure level is supposed to represent the average concentration for 15 months (Jan 2008 – Apr 2009). Unfortunately, the available data does not cover this entire period. Therefore, it was assumed that this calculated average (from the 4 month data collection period) is a reasonable estimate. It is assumed that the particulate matter concentrations during January – June 2008 and November 2008 – April 2009 are reasonably represented by the data collected during July – October 2008.

Additionally, the 1y Marginal MEG for $PM_{2.5}$ is considered highly uncertain and its use should be associated with a low confidence ranking. Both the 1yr Negligible and Marginal MEGs for $PM_{2.5}$ is are likely to be revised pending continued USAPHC experience, new data and/or scientific analyses, and future recommendations of national scientific panels. (See TG 230 Section 3.5.3.)

At this site the average particulate mass ratio across the data collection period is 0.57, indicating that there are likely to be some combustion sources upwind of the site, but that the combustion sources do not represent consistent contributions to the overall particulate mass. Since the long-term MEGs are based in large part on data where combustion sources of pollution were predominant, the risk level at this site may be overestimated.

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Airborne Particulate Matter and Nickel at a Base Camp

8. RISK CHARACTERIZATION SUMMARY

Refer to TG 230 Section 3.4.7 and tables G-2 through G-6 for guidance.

8.1. Summary Table

The summary should present the risk level(s), associated anticipated impacts to the tactical and lifecycle missions, and the level of confidence associated with the assessments. Recommended actions should be presented.

OEH Hazard		Tactical Risk Estimate	Lifecycle Risk Estimate	Current Recommended Actions
Media/Source	Chemical	(acute effects)	(chronic effects)	
Ambient air	PM ₁₀	<p>Low</p> <p>Expected losses have little or no impact on accomplishing the mission. <i>Little to no in-theater medical resources anticipated for protection and treatment. However, a summary of any negative or low level sampling results should be documented and archived particularly if some personnel express concerns.</i></p> <p>Confidence in the assessment is medium on a low-medium-high scale.</p>	No lifecycle risk	<p>Continue monitoring.</p> <p>Document data in designated DoD archive.</p> <p>Consider lowering physical activity when high PM is experienced.</p>
	PM _{2.5}	<p>Low</p> <p>Expected losses have little or no impact on accomplishing the mission. <i>Little to no in-theater medical resources anticipated for protection and treatment. However, a summary of any negative or low level sampling results should be documented and archived particularly if some personnel express concerns.</i></p> <p>Confidence in the assessment is low on a low-medium-high scale.</p>	<p>Low *</p> <p>No specific medical action required. <i>Documentation of environmental data in designated DoD archive.</i></p> <p>Confidence in the assessment is low on a low-medium-high scale.</p>	<p>Continue monitoring.</p> <p>Document data in designated DoD archive.</p> <p>Consider lowering physical activity when high PM is experienced.</p>

* This summary prepared in consultation with USAPHC subject matter experts.

CASE STUDY 2**Airborne Particulate Matter and Nickel at a Base Camp****8.2. Potential Health Effects**

Refer to the tables in TG 230 Appendices B, C, D, and E. Additional information is also available in RD 230. This section should present the potential health effects that are relevant in the final assessments. When risk levels are Moderate or higher, the identification of potential health effects should be based on consultations with appropriately trained subject matter experts at USAPHC or other such service organization.

Note that health effects information for particulate matter is found in a specific section of TG 230, see Section 3.5.3.

PM_{2.5}

- **Acute exposure:** During the operation, a few personnel may experience notable mild eye, nose, or throat irritation; most personnel will experience only mild effects. Pre-existing health conditions (e.g., asthma, or cardiopulmonary diseases) may be exacerbated.
- **Chronic exposure:** Personnel will rarely experience chronic exposures that would result in a plausible chance for developing chronic health conditions such as reduced lung function or exacerbated lung conditions or other cardiopulmonary diseases in generally healthy troops. Those with a history of asthma or cardiopulmonary disease are considered to be at particular risk.

PM₁₀

- **Acute exposure:** During the operation, a few personnel may experience notable mild eye, nose, or throat irritation; most personnel will experience only mild effects. Pre-existing health conditions (e.g., asthma, or cardiopulmonary diseases) may be exacerbated.

8.3. Answers to Key Post-Risk Assessment Questions

Refer to Worksheet G.2. These questions should be considered when preparing a risk assessment. The case study answers provide teaching points.

- Has the risk assessment incorporated any of the unique considerations identified in TG 230 Section 3.5? The TG 230 Section 3.5 identifies one consideration that is relevant to this case study. This assessment addresses particulate matter MEGs.
- Is data quality adequate to base risk management decisions on the risk assessment? This level of detail is not atypical for a mature theater. While sparse it can result in a representative assessment of risk.
- Is it worth collecting additional data to increase the confidence in the risk assessment conclusion? Yes, more data collection is recommended. These data are representative of *the time period that samples were collected*. Solid estimates about the seasonality or

CASE STUDY 2**Airborne Particulate Matter and Nickel at a Base Camp**

temporal stability of these exposures are premature without more information about the wind and activity pattern of the local population and environment. The data used in the assessment (collection from July – October 2008) is supposed to represent concentrations for 15 months (Jan 2008 – Apr 2009). Unfortunately, the available data does not cover this entire period.

- Are there readily available exposure control measures that can be implemented? Usually, particulate matter is a ubiquitous exposure that is difficult to control. Generally, control measures are limited to use of personal protective equipment (PPE) such as cravats and Command “Seek Cover Orders” and other activity restrictions.

8.4. Bottom-line-up-front briefing statements (BLUF Statements)

Refer to TG 230 Section 4 for over-arching risk communication guidance. The following bullets should represent succinct case-study specific points that should be emphasized when communicating to stakeholders.

- These risks are fairly typical of a desert exposure and there would be no need to explicitly identify exposed groups for medical intervention or monitoring.
- These risk levels are consistent with those seen in Iraq, Afghanistan, and other desert environments.
- The major health concern associated with exposure to particulate matter is the chemical composition of ultrafine particles ($PM_{2.5}$) from combustion sources.
- During the operation, most personnel will experience only mild effects; a few personnel may experience notable mild eye, nose, or throat irritation.. Personnel will rarely be exposed to PM levels that would increase their chance for developing chronic health conditions, such as reduced lung function or exacerbated lung conditions or other cardiopulmonary diseases in generally healthy troops. Those with a history of asthma or cardiopulmonary disease are considered to be at particular risk.
- Reducing uncertainty in this case will generally mean collecting seasonal exposure measures, identifying combustion sources of $PM_{2.5}$, and managing activities associated with risks for acute health effects—such as lowering physical activity during the worst part of the day (PT restrictions) and enforcing hygiene measures.

CASE STUDY 2

**Airborne Particulate Matter and
Nickel at a Base Camp**

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CASE STUDY 3**Acrolein, Dioxins, and Mercury Contamination in Air****Teaching Points**

- Deals with chemicals with multiple non-detects in samples.
- Demonstrates an assessment of dioxin-like compounds.
- Illustrates how to handle chemicals whose MEG is lower than the limit of quantitation.
- Demonstrates USAPHC SME input into the process.

1. BACKGROUND

This is a hypothetical case study designed to illustrate the TG 230 risk assessment process. Personnel at a base camp have been complaining about the smoke emitted from waste burning activities occurring off post. Twenty-five 24 hour samples have been taken throughout the year and will be used to assess the operational risk to personnel stationed at the base camp for one year.

2. DEFINE THE PURPOSE OF THE RISK ASSESSMENT

Refer to TG 230 Section 3.4.1 for guidance. Appendix G provides a process flow-chart.

The purpose of the risk assessment is to characterize acute and chronic health risks associated with exposure to the burning waste emissions to personnel stationed at the base camp for one year.

3. COLLECT DATA AND DESCRIBE EXPOSURE SETTING

Refer to TG 230 Section 3.4.2 for guidance.

3.1. Data Sampling Summary

Include a description of who collected the data and how data were collected (i.e. sampling method).

Sample data were collected by preventive medicine personnel stationed at the base camp. Air samples were collected over 24 hours using several methods: Summa canisters and a high volume sampler for organics, and a low-volume sampling pump for particulate matter (i.e., PM₁₀). Samples were analyzed for organics using the Environmental Protection Agency methods TO-9A and TO-14A. Mercury was analyzed from the PM₁₀ filters.

3.2. Available sampling data and statistics

See next page

CASE STUDY 3**Acrolein, Dioxins, and Mercury Contamination in Air**

Date	Acrolein	Mercury	Summed Dioxin-like Compounds **	2,3,7,8-TCDD TEQ **
Jan 2	ND	0.2	2.15E-04	2.53E-05
Jan 18	ND	0.2	1.44E-05	1.09E-06
Jan 28	ND	0.7	7.42E-06	1.00E-06
Feb 8	ND	ND	1.07E-05	1.67E-06
Feb 9	ND	0.7	8.10E-06	1.04E-06
Feb 28	ND	0.7	5.12E-05	5.80E-06
Mar 2	ND	0.4	1.71E-05	2.12E-06
Mar 20	2.6	ND	1.24E-05	1.31E-06
Apr 1	ND	ND	3.53E-05	3.77E-06
Apr 19	ND	ND	1.40E-04	1.70E-05
May 2	ND	0.5	3.18E-05	3.51E-06
May 13	ND	ND	1.20E-05	9.98E-07
Jun 1	ND	0.2	2.61E-05	2.90E-06
Jun16	ND	ND	1.28E-05	1.43E-06
Jun 30	ND	8.3	1.30E-05	1.33E-06
Jul 7	ND	19.5	1.33E-06	9.87E-08
Jul 23	ND	24	1.54E-05	2.45E-06
Aug 8	ND	10.9	4.33E-05	1.21E-05
Aug 23	ND	19.4	6.77E-05	1.61E-05
Oct 3	ND	29.3	5.85E-06	9.32E-07
Nov 16	ND	0.9	1.72E-05	2.69E-06
Nov 24	ND	0.1	1.51E-05	2.13E-06
Dec 6	ND	ND	6.51E-06	6.62E-07
Dec 13	ND	8.4	1.89E-04	3.15E-05
Dec 25	ND	ND	1.81E-06	1.83E-07
Minimum	ND	ND	6.51E-06	9.87E-08
Maximum	2.6	29.3	2.15E-04	3.15E-05
Average*	***	5.0	3.88E-05	5.56E-06
Count	25	25	25	25
Units	µg/m ³	µg/m ³	µg/m ³	µg/m ³
Detection Limit	2.0	Unknown	Not applicable	Not applicable
Limit of Quantitation	4.0	0.15	2.00E-07	2.00E-07
Detection Frequency	4%	68%	100%	100%
Sample Time	24h	24h	24h	24h

* This average was calculated using ½ the Limit of Quantitation (LOQ) for the non-detect (ND) results.

** See data tables at the back of the case study for the original dioxin-like compound data. TEQ stands for toxic equivalency concentration (refer to TG 230 Section 3.5.5 for more information).

*** An average for acrolein is not required. See case study Sections 4 and 5.

CASE STUDY 3**Acrolein, Dioxins, and Mercury Contamination in Air****3.3. MEG tables**

Acrolein 107-02-8		Air ($\mu\text{g}/\text{m}^3$)					
CAT							
CRIT		1.42E+04	3.21E+03	6.19E+02			
MARG		1.01E+03	2.29E+02	2.29E+02			
NEG		6.88E+01	6.88E+01	6.88E+01		4.59E+01	1.37E-01
		10 min	1 hr	8 hr	24 hr	14 day	1 year

2,3,7,8-TCDD 1746-01-6		Air ($\mu\text{g}/\text{m}^3$)					
CAT							
CRIT			7.50E+00				
MARG			7.50E+00				
NEG			1.50E+00				1.12E-04
		10 min	1 hr	8 hr	24 hr	14 day	1 year

Elemental Mercury 7439-97-6		Air ($\mu\text{g}/\text{m}^3$)					
CAT							
CRIT			8.90E+03				
MARG			1.70E+03				
NEG			1.00E+02	2.50E+01		1.00E+01	2.05E-01
		10 min	1 hr	8 hr	24 hr	14 day	1 year

3.4. Chemical information

Provide general information about the chemical(s) and the general source(s) in the environment.

Acrolein: The Agency for Toxic Substances and Disease Registry (ATSDR) has a publically available ToxFAQ™ and Toxicological Profile for this chemical. The following is general information obtained from these sources.

Acrolein is a colorless or yellow liquid with a disagreeable odor. It dissolves in water very easily and quickly changes to a vapor when heated. It also burns easily. Small amounts of acrolein can be formed and can enter the air when trees, tobacco, other plants, gasoline, and oil are burned. Acrolein is used as a pesticide to control algae, weeds, bacteria, and mollusks. It is also used to make other chemicals. Cigarette smoke and automobile exhaust contain acrolein. It breaks down fairly rapidly in the air (about half will disappear within 1 day) by reacting with other chemicals and sunlight. There is very little information about how exposure to acrolein affects people's health. The information we have indicates that breathing large amounts damages the lungs and could cause death. Breathing lower amounts may cause eye watering and burning of the nose and

CASE STUDY 3**Acrolein, Dioxins, and Mercury Contamination in Air**

throat and a decreased breathing rate; these effects usually disappear after exposure stops. Animal studies show that breathing acrolein causes irritation to the nasal cavity, lowered breathing rate, and damage to the lining of the lungs. Several agencies have stated that the potential carcinogenicity of acrolein cannot be determined based on an inadequate database.

Elemental (Metallic) Mercury: The Agency for Toxic Substances and Disease Registry (ATSDR) has a publically available ToxFAQ™ and Toxicological Profile for this chemical. The following is general information obtained from these sources.

Mercury is a naturally occurring metal which has several forms. The metallic mercury is a shiny, silver-white, odorless liquid. If heated, it is a colorless, odorless gas. Metallic mercury is used to produce chlorine gas and caustic soda, and is also used in thermometers, dental fillings, and batteries. Mercury salts are sometimes used in skin lightening creams and as antiseptic creams and ointments. Inorganic mercury (metallic mercury and inorganic mercury compounds) enters the air from mining ore deposits, burning coal and waste, and from manufacturing plants. Inhalation exposure can occur by breathing vapors in air from spills, incinerators, and industries that burn mercury-containing fuels. The nervous system is very sensitive to all forms of mercury. Methylmercury and metallic mercury vapors are more harmful than other forms, because more mercury in these forms reaches the brain. Exposure to high levels of metallic, inorganic, or organic mercury can permanently damage the brain, kidneys, and developing fetus. Effects on brain functioning may result in irritability, shyness, tremors, changes in vision or hearing, and memory problems. Short-term exposure to high levels of metallic mercury vapors may cause effects including lung damage, nausea, vomiting, diarrhea, increases in blood pressure or heart rate, skin rashes, and eye irritation. The EPA has determined that mercuric chloride and methylmercury are possible human carcinogens; however, elemental mercury has not been classified for its carcinogenicity potential.

Dioxin-like compounds: The Agency for Toxic Substances and Disease Registry (ATSDR) has a publically available ToxFAQ™ and Toxicological Profile for Dioxins. There are other numerous publically available resources to understand dioxins and dioxin-like compounds. The following is general information obtained from these sources.

Dioxins, or chlorinated dibenzo-*p*-dioxins (CDDs), are a class of structurally similar chlorinated hydrocarbons. Dioxin is a term used interchangeably with 2,3,7,8-tetrachlorodibenzo-*p*-dioxin (2,3,7,8-TCDD or TCDD). This is the most toxic form of dioxins. Dioxin-like compounds are compounds from a group of halogenated aromatic hydrocarbons that have molecules shaped like TCDD. They produce similar toxic effects as dioxin. They include certain chlorinated dibenzofurans (CDFs), polychlorinated biphenyls (PCBs), polybrominated biphenyls (PBBs), brominated dibenzo-*p*-dioxins (BDDs), and brominated dibenzofurans (BDFs). The dioxin-like compounds exist in the environment as mixtures (i.e.,

CASE STUDY 3**Acrolein, Dioxins, and Mercury Contamination in Air**

a single compound is not found in isolation). Dioxin-like compounds are defined as those substances that induce a common battery of dioxin-like toxic responses through similar biological modes of action. Not all dioxins have the same toxicity or ability to cause illness and adverse health effects.

Dioxins are produced as by-products of incomplete combustion and some chemical processes, including natural ones. Dioxins are not intentionally produced and have no known use; however, some dioxin-like compounds, like the coplanar PCBs have been intentionally produced for industrial purposes. Dioxin-like compounds are mainly the by-products of various industrial processes (i.e., bleaching paper pulp, and chemical and pesticide manufacture) and combustion activities (i.e., burning household trash, forest fires, and waste incineration). The highest levels of dioxins are usually found in soil, sediment, and in the fatty tissues of animals. Much lower levels are found in air and water.

The most noted health effect in people exposed to large amounts of 2,3,7,8-TCDD is chloracne. Chloracne is a severe skin disease with acne-like lesions that occur mainly on the face and upper body. Other skin effects noted in people exposed to high doses of include skin rashes, discoloration, and excessive body hair. Changes in blood and urine that may indicate liver damage also are seen in people. Exposure to high concentrations of CDDs may induce long-term alterations in glucose metabolism and subtle changes in hormonal levels. Several studies suggest that exposure to 2,3,7,8-TCDD increases the risk of several types of cancer in people. Animal studies have also shown an increased risk of cancer from exposure to 2,3,7,8-TCDD.

3.5. Describe the Exposure Setting

Refer to TG 230 Section 3.4.2 for guidance. The description should answer as many of the pre-assessment key questions from Worksheet G.2 as possible. If an answer is unavailable, then indicate that information is missing.

The population at risk contains all personnel stationed at the base camp for one year, regardless of their duty or location. The ambient environmental condition under consideration is the ambient air as affected by emissions from waste burning activities of the local population just off post. The pathway examined in this assessment is inhalation of the emissions.

- What is the population at risk?
- What is the timeframe under consideration?
- What is the exposure event or ambient environmental condition under consideration?
- What is known about the source of the chemicals?
- What are the exposure pathways?
- What else is known about the exposure setting?
- What are the activity patterns of the population at risk?
- Where are the sampling locations relative to where exposure occurs?
- Is there adequate data quality to conduct a chronic assessment?

The waste burning activities are open to the air and apparently burns continuously each day. The substances contained in the waste are not specifically known but it is generally filled by garbage that the local population creates including plastics, metal cans, rubber, petroleum, solvents, metal and wood scraps.

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The site is in an arid climate comprised of hot, dry summers, cold winters and comfortable springs and falls. The base camp has no vegetation and the site has frequent dust storms. Irrigation canals are the only surface water found at the site.

There are numerous activities that occur at the base camp. These activities vary between desk work, training exercises, typical daily routines (sleeping, eating, vehicle driving, etc.), equipment maintenance and heavy labor. Site-wide exposure is being assessed for all personnel at the base camp, regardless of proximity to the burn pit. No specific activities will be addressed in the assessment; populations will be assessed regardless of their activity patterns.

The samples were collected along the post fence line, nearest to the waste burning site. The base camp population generally tends to live and work further downwind from this point along the fence line. The number of valid samples taken throughout a one year period is robust enough to facilitate a chronic assessment.

4. PRESCREEN

Refer to TG 230 Section 3.4.3 and Worksheet G.3 for guidance. Enter the results into the table below.

Chemical Name	Maximum Sample Concentration	1 Year Negligible MEG	Result
Acrolein	2.6 $\mu\text{g}/\text{m}^3$	0.137 $\mu\text{g}/\text{m}^3$	Retain as a hazard
Elemental mercury	29.3 $\mu\text{g}/\text{m}^3$	0.205 $\mu\text{g}/\text{m}^3$	Retain as a hazard
Dioxin-like compounds*	0.000215 $\mu\text{g}/\text{m}^3$	0.000112 $\mu\text{g}/\text{m}^3$	Retain as a hazard

* Sum of the peak concentrations without incorporation of the TEF (see text).

Acrolein: Note that the LOQ for Acrolein is higher than the 1yr Negligible MEG. In order to account for possible false negatives (which would increase the chance that a potential hazard is not evaluated), chemicals with screening MEGs lower than the LOQ are screened differently than other chemicals. This is the case for Acrolein. See TG 230 Section 3.4.4.4 for more discussion.

Elemental mercury: No special considerations are necessary. A straight comparison of the maximum sample concentration to the 1yr Negligible MEG is made.

Dioxin-like compounds: Unique methods for dioxin-like compounds are provided in TG 230 Section 3.5.5. The sum of the maximum concentrations of the detected dioxin-like compounds (summed without regard to toxicity equivalency factors [TEFs]) was greater than the 1yr Negligible MEG. Therefore, it is retained as a hazard.

CASE STUDY 3**Acrolein, Dioxins, and Mercury Contamination in Air****5. GENERATE THE RISK ASSESSMENT DATA SET**

Refer to TG 230 Section 3.4.4 and Worksheet G.4 for guidance. Enter the results into the table below.

Chemical Name	Acute Exposure		Chronic Exposure
	Peak PEPC	Average PEPC	Average PEPC
Acrolein	2.6 µg/m ³	Not applicable	Not applicable
Elemental mercury	29.3 µg/m ³	5.0 µg/m ³	5.0 µg/m ³
Dioxin-like compounds (total)*	0.000215 µg/m ³	0.0000388 µg/m ³	Not applicable
Dioxin-like compounds (TEQ)*	Not applicable	Not applicable	0.00000556 µg/m ³

* The total is the summation without regard to TEFs; while the TEQ is the summation incorporating the TEFs.

5.1. Acute PEPCs

The acute peak PEPCs are the highest sample concentrations. Since the exposure event (local burning waste emissions) is associated with a more or less continuous source, the acute average PEPCs are estimates of the average concentrations across the entire sampling period (Jan–Dec). The calculation of the acute average PEPCs involves handling results less than the detection limit. For purposes of calculating the average, the ND values were assigned surrogate values equal to ½ the LOQ (see TG 230 Section 3.4.4.3 for guidance).

An average PEPC for Acrolein is not needed. Even though the Acrolein Detection Limit (2 µg/m³) and LOQ (4 µg/m³) are higher than the 1y Negligible MEG (0.14 µg/m³), it was actually detected in only one of 25 samples (4 percent) at an estimated concentration of 2.6 µg/m³. (It is an 'estimated' concentration because it was detected between the DL and LOQ; such samples are often 'J-flagged.') Per guidance found in TG 230 Section 3.4.4.4, such a rare, sporadic detection without any additional information to suggest that it occurs more often, should be assessed as a unique acute exposure event and not averaged out as part of a longer exposure period. Therefore, neither an acute nor chronic average PEPC for Acrolein is required by the TG 230 method.

For the dioxin-like compounds, unique methods are needed (see TG 230 Section 3.5.5). The acute assessment is based on the sum of the maximum concentrations of the detected dioxin-like compounds, summed without regard to toxicity equivalency factors (TEFs). The acute assessment does not use a 2,3,7,8-TCDD Toxic Equivalency (TEQ) concentration; this is used in the chronic assessment only.

5.2. Chronic PEPCs

The chronic average PEPCs should represent the average concentrations across the time period of interest, which in this case is the one year period covered by the data collection (Jan–Dec). As described above, the averages for acrolein and elemental mercury incorporate

CASE STUDY 3**Acrolein, Dioxins, and Mercury Contamination in Air**

surrogate values for non-detect samples. The chronic average PEPC is equal to the acute average PEPC because the exposure is continuous and is not a time-limited exposure event.

6. ACUTE RISK ASSESSMENT

Refer to TG 230 Section 3.4.5 for guidance.

6.1. Screen for Acute Hazards

Refer to TG 230 Section 3.4.5.1 and Worksheet G.3 for guidance to perform screen for acute hazards. Enter the results into the table below.

Chemical Name	Peak PEPC	Screening MEG		Result
Acrolein	2.6 $\mu\text{g}/\text{m}^3$	46 $\mu\text{g}/\text{m}^3$	14d NEG	Exclude
Elemental mercury	29.3 $\mu\text{g}/\text{m}^3$	10 $\mu\text{g}/\text{m}^3$	14d NEG	Retain
Dioxin-like compounds (total)*	0.000215 $\mu\text{g}/\text{m}^3$	1.5 $\mu\text{g}/\text{m}^3$	1h NEG	Exclude

* The total is the summation without regard to TEFs.

The peak PEPC for dioxin-like compounds (summed without regard to TEFs) was compared to the 1h Negligible MEG because 14d and 8h Negligible MEGs were not available.

6.2. Rank Acute Hazard Severity

Refer to TG 230 Section 3.4.5.2 for guidance. The peak and average PEPC across the selected exposure duration are used to select a hazard severity for each PEPC using Worksheet G.5 (airborne exposures) or Worksheet G.6 (water exposures).

Chemical Name	PEPC		Comparison MEG		Hazard Severity
Elemental mercury	Peak	29.3 $\mu\text{g}/\text{m}^3$	25 $\mu\text{g}/\text{m}^3$	8h NEG	Negligible
	Average	5.0 $\mu\text{g}/\text{m}^3$	10 $\mu\text{g}/\text{m}^3$	14d NEG	Negligible

Peak PEPC: The peak PEPC is greater than the 14d and 8h Negligible MEGs, but is less than the 1h Negligible MEG. Therefore, it is ranked at a Negligible severity level.

Average PEPC: The acute average PEPC is less than the 14d Negligible MEG, so it is ranked at a Negligible severity level.

CASE STUDY 3**Acrolein, Dioxins, and Mercury Contamination in Air****6.3. Rank Acute Hazard Probability**

Refer to TG 230 Section 3.4.5.3 for guidance. Assess the hazard probability for each PEPC using Worksheet G.5 (airborne exposures) or Worksheet G.6 (water exposures).

Acute Peak PEPC scoring for Elemental Mercury

Acute Peak PEPC		Hazard Probability Scoring					Hazard Probability
		Degree of exposure	Representativeness of field data	Duration of exposure	Rate of exposure	Total Score	
Elemental mercury	29.3 µg/m ³	2	1	2	3	8	Occasional

The following text explains the rationale underlying the scoring.

- **Factor 1 (Degree of exposure).** The peak PEPC is above the 8h Negligible MEG and a 8h Marginal MEG is unavailable. Therefore, Method B is used to score this factor. This scores as a 2.
- **Factor 2 (Representativeness of field data).** We know from the exposure setting that the samples were collected close to the source of the emissions. Therefore, the exposure estimates are likely to be overestimates of true population exposures, which occur further downwind. This scores as a 1.
- **Factor 3 (Duration of exposure).** The field exposure duration for the peak PEPC is 24 hours and the MEG used to rank severity was an 8 hour MEG. This ratio 24:8 equals 3. This scores as a 2.
- **Factor 4 (Rate of exposure).** Since some heavy labor occurs at the base and this is the evaluation of the peak PEPC, a health-protective approach would be to rank this factor with a higher exposure rate (i.e., higher inhalation rate). This approach is reasonable to rank probability for peak exposures in order to capture high-end exposures. This scores as a 3.

Acute Average PEPC scoring for Elemental Mercury

Acute Average PEPC		Hazard Probability Scoring					Hazard Probability
		Degree of exposure	Representativeness of field data	Duration of exposure	Rate of exposure	Total Score	
Elemental mercury	5.0 µg/m ³	1	1	1	2	5	Unlikely

The following text explains the rationale underlying the scoring.

CASE STUDY 3

Acrolein, Dioxins, and Mercury Contamination in Air

- Factor 1 (Degree of exposure). The average PEPC is less than the 14d Negligible MEG. Therefore, Method B is used to score this factor. This scores as a 1.
- Factor 2 (Representativeness of field data). We know from the exposure setting that the samples were collected close to the source of the emissions. Therefore, the exposure estimates are likely to be overestimates of true population exposures, which occur further downwind. This scores as a 1.
- Factor 3 (Duration of exposure). The field exposure duration for the average PEPC is 24 hours and the MEG used to rank severity was a 14 day MEG. This ratio 1:14 equals 0.07. This scores as a 1.
- Factor 4 (Rate of exposure). Since this is an acute assessment of a “typical” exposure day, a moderate exposure rate is assumed. This scores as a 2.

6.4. Estimate of Tactical Risk and Level of Confidence

Refer to TG 230 Section 3.4.5.4 for guidance. Use the risk assessment matrix in Table G-2 to combine the hazard severity and hazard probability selections to derive a Risk Level. Use the guidance in Worksheet G.8 to set levels of confidence.

Acute Hazard		Severity	Probability	Risk Level	Confidence
Elemental mercury	Peak	Negligible	Occasional	LOW	Medium
	Average	Negligible	Unlikely	LOW	Medium

Conclusion statement

Additional detail is provided in the overall Risk Characterization section at the end.

The acute mercury hazard poses a Low tactical risk.

Rationale for confidence levels

Consider all of the information at hand and communicate to the decision maker the level of confidence they have in the risk level being presented. Use the guidance in Worksheet G.8 to set levels of confidence.

Confidence in the risk level is medium because field data quality is representative through-out the year and likely overestimates exposures, estimates of field exposure are conservative, some activity pattern information is available, and the measured exposure levels are not expected to induce significant health outcomes.

CASE STUDY 3**Acrolein, Dioxins, and Mercury Contamination in Air****7. CHRONIC RISK ASSESSMENT**

Refer to TG 230 Section 3.4.6 for guidance.

7.1. Screen for Chronic Hazards

Refer to TG 230 Section 3.4.6.1. Screen for hazardous exposures that may lead to long term health effects. Use the chronic screening criteria described in Worksheet G.3 and enter the results in the table below.

Chemical Name	Chronic PEPC	1 Year Negligible MEG	Frequency of Detection	Result
Acrolein	Not applicable	0.14 µg/m ³	4 %	Exclude
Elemental mercury	5.0 µg/m ³	0.2 µg/m ³	68 %	Retain
Dioxin-like compounds (TEQ)*	0.00000556 µg/m ³	0.000112 µg/m ³	100 %	Exclude

* The TEQ is the summation incorporating the TEFs.

A chronic average PEPC is not calculated for Acrolein because it is detected too infrequently (see TG 230 Section 3.4.4.4). Even if there was a chronic PEPC, it would be screened out of the process because its frequency of detection is less than 5 percent.

7.2. Rank Chronic Hazard Severity

Refer to TG 230 Section 3.4.6.2 for guidance. The average PEPCs across the selected exposure duration are used to select a hazard severity for each PEPC using Worksheet G.7.

Chemical Name	Chronic PEPC	Comparison MEG		Hazard Severity
Elemental mercury	5.0 µg/m ³	0.2 µg/m ³	1yr NEG	Negligible*

* Note that a standard protocol for setting this severity levels is unavailable because there is no 1yr [Marginal] MEG (see TG 230 Figure 3-6). In these situations, it is recommended that USAPHC be contacted in order to validate, or determine, the severity ranking.

The chronic average PEPC is greater than the 1yr Negligible MEG and there is no 1yr Marginal MEG available for mercury. The hazard severity determination for an exposure greater than the Negligible MEG (where a Marginal MEG is unavailable) needs to be site-specific and determined by a qualified subject matter expert.

Note: These exposure estimates require that USAPHC subject matter experts, or other qualified medical/health professionals, be consulted in order to rank hazard severity.

USAPHC Opinion for this Hypothetical Case Study:

The 1y Negligible MEG for elemental mercury is based on protection against systemic, non-cancer health effects. The underlying health criterion for the MEG is a subchronic reference concentration from the USEPA Health Effects Assessment Summary Tables. This can be determined by reviewing the record in RD 230 Table D-5. From this same table the adjusted ACGIH TLV is reported as 6.1 µg/m³, which is

CASE STUDY 3**Acrolein, Dioxins, and Mercury Contamination in Air**

adjusted to a continuous exposure period and a higher inhalation rate for the military (see RD 230 Section 4.3.2). This adjusted TLV is higher than the chronic PEPC, indicating that the hazard severity rank for this exposure should be no higher than Negligible.

7.3. Rank Chronic Hazard Probability

Refer to TG 230 Section 3.4.6.3 for guidance. Assess the hazard probability for each PEPC using Worksheet G.7

Chronic Average PEPC scoring for Elemental Mercury

Chronic Average PEPC		Hazard Probability Scoring					Hazard Probability
		Degree of exposure	Representativeness of field data	Duration of exposure	Rate of exposure	Total Score	
Elemental mercury	5.0 µg/m ³	2	1	2	2	7	Seldom

The following text explains the rationale underlying the scoring.

- **Factor 1 (Degree of exposure).** Because the PEPC is higher than the highest 1y MEG, Method B is used to score this factor. This is scored as a 2.
- **Factor 2 (Representativeness of field data).** We know from the exposure setting that the samples were collected close to the source of the emissions. Therefore, the exposure estimates are likely to be overestimates of true population exposures, which occur further downwind. This is scored as a 1.
- **Factor 3 (Duration of exposure).** The field exposure duration for the chronic average PEPC is 1 year and the 1 year MEG is used to rank severity. This ratio equals 1. This is scored as a 2.
- **Factor 4 (Rate of exposure).** Since this is a chronic assessment of a “typical” exposure day, a moderate exposure rate is assumed. This scores as a 2.

7.4. Estimate of Lifecycle Risk and Level of Confidence

Refer to TG 230 Section 3.4.6.4. Use the risk assessment matrix in Table G-2 to combine the hazard severity and hazard probability selections to derive a Risk Level. Use the guidance in Worksheet G.8 to set levels of confidence.

HAZARD	Severity	Probability	Risk Level	Confidence
Elemental mercury	Negligible	Seldom	LOW	Medium

CASE STUDY 3

Acrolein, Dioxins, and Mercury Contamination in Air

Conclusion statement

Additional detail is provided in the overall Risk Characterization section at the end.

The chronic mercury hazard poses a Low strategic risk.

Rationale for confidence levels

Consider all of the information at hand and communicate to the decision maker the level of confidence they have in the risk level being presented. Use the guidance in Worksheet G.8 to set levels of confidence.

Confidence in the risk level is medium because field data quality is representative through-out the year and likely overestimates exposures, estimates of field exposure are conservative, some activity pattern information is available, and the measured exposure levels are not expected to induce significant health outcomes.

8. RISK CHARACTERIZATION SUMMARY

Refer to TG 230 Section 3.4.7 and tables G-2 through G-6 for guidance.

8.1. Summary Table

The summary should present the risk level(s), associated anticipated impacts to the tactical and lifecycle missions, and the level of confidence associated with the assessments. Recommended actions should be presented.

OEH Hazard		Tactical Risk Estimate	Lifecycle Risk Estimate	Current Recommended Actions [*]
Media/Source	Chemical	(acute effects)	(chronic effects)	
Ambient air impacted by local waste burning	Elemental mercury	<p>Low</p> <p>Expected losses have little or no impact on accomplishing the mission. <i>Little to no in-theater medical resources anticipated for protection and treatment. However, a summary of any negative or low level sampling results should be documented and archived particularly if some personnel express concerns.</i></p> <p>Confidence in the assessment is medium on a low-medium-high scale.</p>	<p>Low *</p> <p>No specific medical action required. <i>Documentation of environmental data in designated DoD archive.</i></p> <p>Confidence in the assessment is medium on a low-medium-high scale.</p>	<p>Continue monitoring ambient air.</p> <p>Document data in designated DoD archive.</p>

*These risk levels were estimated in consultation with USAPHC subject matter experts.

CASE STUDY 3**Acrolein, Dioxins, and Mercury
Contamination in Air****8.2. Potential Health Effects**

Refer to the tables in TG 230 Appendices B, C, D, and E. Additional information is also available in RD 230. This section should present the potential health effects that are relevant in the final assessments. When risk levels are Moderate or higher, the identification of potential health effects should be based on consultations with appropriately trained subject matter experts at USAPHC or other such service organization.

Elemental mercury

- **Acute exposure:** Potential acute health effects are not expected.
- **Chronic exposure:** Potential chronic health effects are not expected.

8.3. Answers to Key Post-Risk Assessment Questions

Refer to Worksheet G.2. These questions should be considered when preparing a risk assessment. The case study answers provide teaching points.

- Has the risk assessment incorporated any of the unique considerations identified in TG 230 Section 3.5? The TG 230 Section 3.5 identifies one consideration that is relevant to this case study and it was addressed — the assessment of dioxin-like compounds.
- Is data quality adequate to base risk management decisions on the risk assessment? Yes, field data quality is somewhat representative through-out the year. The data quality is not ideal for assessing chronic hazard from potential long-term acrolein exposure because the detection limit for acrolein is higher than the MEG for acrolein. However, the data overall are adequate for making risk management decisions.
- Is it worth collecting additional data to increase the confidence in the risk assessment conclusion? Unless a laboratory methodology that would lower the detection limit for acrolein below the MEG can be used, additional types of data will not increase confidence in the risk assessment conclusion. Nonetheless, continued monitoring over time is recommended.
- Are there readily available exposure control measures that can be implemented? Administrative controls should be considered to reduce the exposure of personnel to ambient air when air quality is poorest (e.g., avoid physical training exercises when inversions develop.)

CASE STUDY 3**Acrolein, Dioxins, and Mercury
Contamination in Air****8.4. Bottom-line-up-front briefing statements (BLUF Statements)**

Refer to TG 230 Section 4 for over-arching risk communication guidance. The following bullets should represent succinct case-study specific points that should be emphasized when communicating to stakeholders.

- This risk assessment evaluated the health risk associated with exposure to ambient air impacted by emissions from the local waste burning activities occurring just off-post.
- Acrolein, mercury, and dioxin-like compounds were detected in the air. However, only the levels of elemental mercury could pose a health hazard to the base camp population.
- The predicted population exposures at this base camp are unlikely to lead to health effects in the population at risk.
- The airborne elemental mercury poses a LOW RISK. The confidence in the assessment is medium, but additional analysis is unlikely to increase confidence. Due to analytical limitations, there is some uncertainty whether acrolein exposure is continuous or rare and sporadic.

CASE STUDY 3

**Acrolein, Dioxins, and Mercury
Contamination in Air**

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CASE STUDY 3

Acrolein, Dioxins, and Mercury Contamination in Air

ANNEX

Congener-Specific Data for Detected Dioxin-like Compounds (1 of 2)

Date	1,2,3,4,6,7,8-HeptaCDD	1,2,3,4,6,7,8-HeptaCDF	1,2,3,4,7,8,9-HeptaCDF	1,2,3,4,7,8-HexaCDD	1,2,3,4,7,8-HexaCDF	1,2,3,6,7,8-HexaCDD	1,2,3,6,7,8-HexaCDF	1,2,3,7,8,9-HexaCDD	1,2,3,7,8,9-HexaCDF
Jan 2	1.36E-06	1.87E-06	1.78E-06	1.10E-05	6.14E-05	2.41E-05	5.35E-06	3.23E-06	ND
Jan 18	2.85E-06	4.41E-06	8.81E-07	2.33E-07	3.89E-07	6.12E-07	1.57E-06	7.31E-07	ND
Jan 28	2.94E-07	4.05E-07	5.93E-07	2.58E-07	3.34E-07	6.07E-07	1.36E-06	7.10E-07	ND
Feb 8	4.36E-07	5.32E-07	5.53E-07	3.22E-07	4.53E-07	8.03E-07	1.52E-06	1.00E-06	ND
Feb 9	3.09E-07	4.54E-07	5.42E-07	2.60E-07	3.63E-07	4.75E-07	1.44E-06	7.09E-07	ND
Feb 28	5.26E-07	7.06E-07	8.05E-07	3.74E-05	6.08E-07	1.13E-06	2.33E-06	1.32E-06	ND
Mar 2	5.51E-07	1.05E-06	1.17E-06	4.89E-07	8.36E-07	1.22E-06	2.65E-06	1.18E-06	ND
Mar 20	2.35E-06	6.26E-07	5.17E-07	1.43E-06	4.54E-07	3.91E-07	1.82E-06	6.00E-07	ND
Apr 1	3.39E-07	7.72E-07	9.29E-07	3.35E-07	5.93E-07	5.63E-07	2.19E-06	8.73E-07	ND
Apr 19	2.34E-06	2.81E-06	4.46E-06	1.60E-06	2.56E-06	4.23E-06	1.02E-05	6.69E-06	ND
May 2	4.37E-07	4.88E-07	9.52E-07	3.23E-06	5.11E-07	9.35E-07	2.16E-06	1.25E-06	2.57E-08
May 13	1.35E-06	2.13E-07	4.52E-07	1.83E-07	1.80E-07	2.50E-07	9.78E-07	3.33E-07	ND
Jun 1	4.54E-07	5.27E-07	1.03E-06	3.55E-07	4.81E-07	1.25E-06	9.78E-07	1.15E-06	ND
Jun16	2.74E-07	2.78E-07	6.22E-07	1.63E-07	2.45E-07	6.49E-07	1.05E-06	7.03E-07	2.13E-08
Jun 30	2.62E-07	2.66E-07	5.43E-07	2.69E-07	2.53E-07	5.83E-07	1.18E-06	7.04E-07	1.71E-08
Jul 7	9.25E-08	1.11E-07	ND	ND	8.02E-08	ND	3.61E-07	ND	ND
Jul 23	4.98E-07	5.64E-07	ND	5.64E-07	6.67E-07	1.15E-06	2.95E-06	1.64E-06	ND
Aug 8	1.45E-06	1.64E-06	ND	1.76E-06	1.55E-06	3.86E-06	5.40E-06	5.60E-06	6.12E-08
Aug 23	2.66E-06	2.25E-06	2.68E-06	2.66E-06	2.08E-06	4.80E-06	9.77E-06	7.08E-06	1.37E-07
Oct 3	2.08E-07	1.48E-07	1.62E-06	2.71E-07	4.61E-08	3.14E-07	ND	4.61E-07	ND
Nov 16	2.02E-07	2.04E-07	3.14E-07	1.91E-07	2.16E-07	4.11E-07	1.04E-06	5.82E-07	1.13E-08
Nov 24	2.67E-07	2.20E-07	3.80E-07	2.52E-07	1.86E-07	5.11E-07	7.15E-07	6.97E-07	5.70E-09
Dec 6	4.24E-08	8.20E-08	2.34E-07	4.92E-06	6.18E-08	7.96E-08	2.62E-07	1.08E-07	6.01E-09
Dec 13	6.79E-06	8.26E-06	9.48E-06	7.42E-06	8.05E-06	1.55E-05	2.66E-05	2.61E-05	ND
Dec 25	6.10E-08	1.33E-07	1.93E-07	4.46E-08	8.79E-08	1.11E-07	3.66E-07	1.36E-07	ND
Minimum	4.24E-08	8.20E-08	ND	ND	4.61E-08	ND	ND	ND	ND
Maximum	6.79E-06	8.26E-06	9.48E-06	1.10E-05	6.14E-05	2.41E-05	2.66E-05	2.61E-05	1.37E-07
Average*	1.06E-06	1.16E-06	1.24E-06	3.03E-06	3.31E-06	2.59E-06	3.37E-06	2.55E-06	7.94E-08
Count	25	25	25	25	25	25	25	25	25
Units	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³
Detect. limit	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
Limit of Quant.	2.00E-07	2.00E-07	2.00E-07	2.00E-07	2.00E-07	2.00E-07	2.00E-07	2.00E-07	2.00E-07
Detect. Freq.	100%	100%	88%	96%	100%	96%	96%	96%	32%
Sample Time	24h	24h	24h	24h	24h	24h	24h	24h	24h

* This average was calculated using 1/2 LOQ for the non-detect (ND) results.

CASE STUDY 3

Acrolein, Dioxins, and Mercury Contamination in Air

Congener-Specific Data for Detected Dioxin-like Compounds (2 of 2)

Date	1,2,3,7,8-PentaCDD	1,2,3,7,8-PentaCDF	2,3,4,6,7,8-HexaCDF	2,3,4,7,8-PentaCDF	2,3,7,8-TetraCDD	2,3,7,8-TetraCDF	OctaCDD	OctaCDF
Jan 2	1.46E-06	1.31E-06	5.42E-06	5.24E-07	4.32E-06	8.18E-05	9.41E-06	4.70E-07
Jan 18	3.42E-07	1.02E-07	1.44E-06	1.83E-07	1.06E-07	ND	3.29E-07	2.31E-07
Jan 28	3.36E-07	9.12E-08	1.15E-06	1.43E-07	1.17E-07	4.76E-07	3.83E-07	1.64E-07
Feb 8	6.80E-07	1.13E-07	2.08E-06	2.03E-07	1.82E-07	1.11E-06	4.60E-07	2.18E-07
Feb 9	2.92E-07	1.14E-07	1.44E-06	1.66E-07	1.25E-07	8.41E-07	3.38E-07	2.35E-07
Feb 28	7.81E-07	1.15E-07	2.69E-06	2.87E-07	2.25E-07	1.42E-06	6.08E-07	2.83E-07
Mar 2	5.84E-07	2.74E-07	2.81E-06	3.38E-07	2.22E-07	2.53E-06	6.95E-07	5.02E-07
Mar 20	3.71E-07	1.26E-07	1.85E-06	2.23E-07	1.00E-07	7.42E-07	4.01E-07	3.78E-07
Apr 1	4.18E-07	1.55E-07	2.52E-05	2.66E-07	1.30E-07	1.39E-06	6.08E-07	4.78E-07
Apr 19	3.18E-06	1.07E-06	8.96E-05	1.25E-06	1.22E-06	5.79E-06	2.25E-06	9.19E-07
May 2	3.83E-07	9.42E-08	1.85E-05	3.00E-07	1.80E-07	1.70E-06	4.71E-07	1.74E-07
May 13	ND	5.42E-08	6.72E-06	1.28E-07	ND	7.38E-07	3.19E-07	1.11E-07
Jun 1	4.81E-07	1.21E-07	1.71E-05	2.61E-07	1.02E-07	8.91E-07	6.30E-07	3.09E-07
Jun16	3.36E-07	8.88E-08	7.09E-06	1.45E-07	ND	4.07E-07	4.71E-07	2.21E-07
Jun 30	1.79E-07	7.41E-08	7.21E-06	1.42E-07	ND	6.98E-07	3.69E-07	2.27E-07
Jul 7	ND	1.90E-08	4.30E-07	2.97E-08	ND	ND	1.28E-07	7.36E-08
Jul 23	8.85E-07	3.67E-07	2.75E-06	4.24E-07	2.23E-07	2.23E-06	5.09E-07	ND
Aug 8	2.45E-06	5.91E-07	5.74E-06	8.06E-07	6.53E-06	4.24E-06	1.21E-06	4.34E-07
Aug 23	2.61E-06	1.42E-06	6.63E-06	1.48E-06	8.63E-06	9.53E-06	2.72E-06	6.08E-07
Oct 3	ND	ND	4.97E-07	ND	7.53E-07	ND	8.01E-07	7.27E-07
Nov 16	3.49E-07	1.43E-07	8.06E-07	1.63E-07	1.10E-06	8.58E-06	2.78E-06	8.12E-08
Nov 24	2.87E-07	6.71E-08	7.79E-07	1.12E-07	9.50E-07	5.33E-06	4.21E-06	1.20E-07
Dec 6	ND	2.05E-08	2.35E-07	3.34E-08	6.01E-08	2.01E-07	9.57E-08	7.21E-08
Dec 13	1.02E-05	1.94E-06	3.31E-05	3.34E-06	6.65E-06	1.71E-05	5.77E-06	3.16E-06
Dec 25	ND	3.17E-08	3.45E-07	4.13E-08	5.70E-08	ND	1.19E-07	8.22E-08
Minimum	ND	ND	2.35E-07	ND	ND	ND	9.57E-08	ND
Maximum	1.02E-05	1.94E-06	3.31E-05	3.34E-06	6.65E-06	8.18E-05	9.41E-06	3.16E-06
Average*	1.08E-06	3.44E-07	9.66E-06	4.44E-07	1.30E-06	5.93E-06	1.44E-06	4.15E-07
Count	25	25	25	25	25	25	25	25
Units	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³
Detect. limit	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
Limit of Quant.	2.00E-07	2.00E-07	2.00E-07	2.00E-07	2.00E-07	2.00E-07	2.00E-07	2.00E-07
Detect. Freq.	80%	96%	100%	96%	84%	84%	100%	96%
Sample Time	24h	24h	24h	24h	24h	24h	24h	24h

* This average was calculated using ½ LOQ for the non-detect (ND) results.

CASE STUDY 4**Methylene Chloride and Ethylbenzene Contamination in Water****Teaching Points**

- Demonstrates the basic drinking water risk assessment process.
- Handles non-detect analytical results.
- Performs a forward-looking chronic assessment based on data collected to-date.
- Involves organic compounds and a potential contamination source concern.

1. BACKGROUND

This is a hypothetical case study designed to illustrate the TG 230 risk assessment process. The military population assigned to base camp Alpha in South America is drinking treated well water. The treated well water has been used at the camp since August 2007 and will likely continue for 15 months, until October 2008. A water source sanitation survey concluded that the ground water source was adequate and that potential sources of pollution and evidence of contamination was not found prior to use of the water. The water is treated by a reverse osmosis water purification unit (ROWPU) and PVNTMED personnel have certified that the ROWPU-generated water is potable in accordance with the Tri-Service Field Water Standards and other requirements found in TB MED 577 (December 2005). Follow-on water inspections have occurred monthly since August 2007.

2. DEFINE THE PURPOSE OF THE RISK ASSESSMENT

Refer to TG 230 Section 3.4.1 for guidance. Appendix G provides a process flow-chart.

The PVNTMED unit supporting base camp Alpha routinely collects samples of the treated well water and submits them to a CONUS laboratory for analysis. Methylene Chloride and Ethylbenzene were detected in the samples, so you have been asked to determine any health risks to personnel based on this sampling data. The purpose of this risk assessment is to provide information to the commander of the base camp on the risk to personnel assigned to base camp Alpha based on the collected samples. It is now January 2008 and the time period of interest is one deployment cycle, the 15 months from August 2007–October 2008.

3. COLLECT DATA AND DESCRIBE EXPOSURE SETTING

Refer to TG 230 Section 3.4.2 for guidance.

3.1. Data Sampling Summary

Include a description of who collected the data and how data were collected (i.e. sampling method).

The drinking water was sampled on six different occasions by local PVNTMED technicians using standard sampling procedures. Water samples were submitted to supporting Army Medical Laboratories for analysis. All collected water data meet the TB MED 577 water quality standards.

CASE STUDY 4**Methylene Chloride and Ethylbenzene Contamination in Water****3.2. Available sampling data and statistics**

Sample Date	Methylene Chloride mg/L	Ethylbenzene mg/L
08-10-2007	0.21	0.3
09-12-2007	0.12	ND
10-01-2007	0.72	0.5
11-03-2007	0.62	ND
12-03-2007	0.27	0.01
12-27-2007	0.31	2.0
Minimum	0.12	ND
Maximum	0.72	2.0
Count	6	4
Detection Limit	0.05	0.0001
Limit of Quantitation	0.1	0.0005
Detection Frequency	100%	66%
Sample Time	Grab	Grab

3.3. MEG Tables**Methylene Chloride (75-09-2) in Drinking Water (mg/L)**

	7 day	14 day	1 yr
NEG 15L/day	4.67	0.933	-
NEG 5 L/day	1.4	2.8	0.84

Ethylbenzene (100-41-4) in Drinking Water (mg/L)

	7 day	14 day	1 yr
NEG 15L/day	14	1.4	-
NEG 5 L/day	42	4.2	1.4

3.4. Chemical information

Provide general information about the chemical(s) and the general source(s) in the environment.

Methylene chloride: The Agency for Toxic Substances and Disease Registry (ATSDR) has a publically available ToxFAQ™ and Toxicological Profile for this chemical. What follows is general information obtained from these sources.

Methylene chloride is a colorless liquid with a mild, sweet odor. Another name for it is **dichloromethane**. Methylene chloride does not occur naturally in the environment. Methylene chloride is used as an industrial solvent and as a paint stripper. It may also be

CASE STUDY 4**Methylene Chloride and Ethylbenzene Contamination in Water**

found in some aerosol and pesticide products and is used in the manufacture of photographic film. Exposure to methylene chloride occurs mostly from breathing contaminated air, but may also occur through skin contact or by drinking contaminated water. Methylene chloride does not easily dissolve in water, but small amounts may be found in drinking water. If you breathe in large amounts of methylene chloride you may feel unsteady, dizzy, and have nausea and a tingling or numbness of your finger and toes. A person breathing smaller amounts of methylene chloride may become less attentive and less accurate in tasks requiring hand-eye coordination. Skin contact with methylene chloride causes burning and redness of the skin. The EPA has determined that methylene chloride is a probable cancer-causing agent in humans.

Ethylbenzene: The Agency for Toxic Substances and Disease Registry (ATSDR) has a publically available ToxFAQ™ and Toxicological Profile for this chemical. What follows is general information obtained from these sources.

Ethylbenzene is a colorless liquid found in a number of products including gasoline and paints. It is naturally found in coal tar and petroleum and is also found in manufactured products such as inks, pesticides, and paints. Ethylbenzene can move through soil into groundwater. Ethylbenzene is not often found in drinking water. Higher levels may be found in residential drinking water wells near landfills, waste sites, or leaking underground fuel storage tanks. Breathing very high levels can cause dizziness and throat and eye irritation. Breathing lower levels has resulted in hearing effects and kidney damage in animals. The International Agency for Research on Cancer (IARC) has determined that ethylbenzene is a possible human carcinogen.

3.5. Describe the Exposure Setting

Refer to TG 230 Section 3.4.2 for guidance. The description should answer as many of the pre-assessment key questions from Worksheet G.2 as possible. If an answer is unavailable, then indicate that information is missing.

The population at risk is the entire population of Base Camp Alpha during a 15-month deployment from August 2007 through October 2008. The potential hazards being assessed are from the chemicals found in the drinking water supply (treated well water), so ingestion is

- What is the population at risk?
- What is the timeframe under consideration?
- What is the exposure event or ambient environmental condition under consideration?
- What is known about the source of the chemicals?
- What are the exposure pathways?
- What else is known about the exposure setting?
- What are the activity patterns of the population at risk?
- Where are the sampling locations relative to where exposure occurs?
- Is there adequate data quality to conduct a chronic assessment?

the primary exposure route of concern. Personnel on base are involved in heavy physical labor, digging defensive positions, carrying and lifting of heavy loads, and foot patrols through marsh/swamp land. Drinking rates average around 8L/day per individual for the camp.

CASE STUDY 4**Methylene Chloride and Ethylbenzene Contamination in Water**

The camp is located near a river in South America downstream from a large agricultural area. On the other side of the riverbank is an oil refining/chemical complex owned and operated by the host country. It is assumed that the Ethylbenzene originated from activities at a recently discovered local garage and paint shop. The source of the Methylene chloride may be from the same shop or from activities related to the oil refining/chemical complex.

The six samples appear to provide enough data for a chronic risk assessment; the samples cover about five months and the water source is ground water, which is typically less variable than surface water sources. While there may be reason to believe that Ethylbenzene levels are not yet well characterized (see the high hit in December), this knowledge can be incorporated into the assessment.

4. PRESCREEN

Refer to TG 230 Section 3.4.3 and Worksheet G.3 for guidance. Enter the results into the table below.

Chemical Name	Maximum Sample Concentration	PreScreening MEG MEG	Result
Methylene chloride	0.72 mg/L	0.84 mg/L	No Hazard Identified
Ethylbenzene	2.0 mg/L	1.4 mg/L	Retain as a hazard

5. GENERATE THE RISK ASSESSMENT DATA SET

Refer to TG 230 Section 3.4.4 and Worksheet G.4 for guidance. Enter the results into the table below.

Chemical Name	Acute Exposure		Chronic Exposure
	Peak PEPC	Average PEPC	Average PEPC
Ethylbenzene	2.0 mg/L	0.47 mg/L	0.47 mg/L

5.1. Acute PEPCs

The acute peak PEPC is the highest sample concentration, however, the average PEPC for Ethylbenzene incorporates samples with non-detects. To calculate this average, the samples with non-detects were set equal to ½ the Limit of Quantitation (LOQ) for the purposes of calculating the average.

5.2. Chronic PEPCs

The chronic average PEPC is an estimate of the average concentration across the duration of use of the water source, which for this scenerio is 15 months. However, the calculated averages from the data set are based on data collected over approximately 6 months and there are 10 future months that have yet to pass. For the purposes of conducting a chronic assessment right now, it must be assumed that the calculated averages are reasonable

CASE STUDY 4**Methylene Chloride and Ethylbenzene Contamination in Water**

estimates of what the 15-month average will be. While a water source sanitation survey concluded that the ground water source was adequate and free of significant pollution, there was a high hit of Ethylbenzene at the last sampling event at the end of December 2007. There may or may not be a new source contributing to the mass of Ethylbenzene in the water. In order to move forward, it was assumed that the calculated averages are fairly good approximations of expected chronic exposure. The variability in the Ethylbenzene concentrations can be incorporated into the assessment later, when hazard probability is ranked. Note that the calculated chronic average PEPC for Ethylbenzene incorporated results less than the LOQ, just as in the calculation of the acute average PEPC.

6. ACUTE RISK ASSESSMENT

Refer to TG 230 Section 3.4.5 for guidance.

6.1. Screen for Acute Hazards

Refer to TG 230 Section 3.4.5.1 and Worksheet G.3 for guidance to perform screen for acute hazards. Enter the results into the table below.

Chemical Name	Peak PEPC	Screening MEG		Result
Ethylbenzene	2.0 mg/L	1.4 mg/L	14d 15L/d NEG	Retain as an acute hazard

6.2. Rank Acute Hazard Severity

Refer to TG 230 Section 3.4.5.2 for guidance. The peak and average PEPC across the selected exposure duration are used to select a hazard severity for each PEPC using Worksheet G.5 (airborne exposures) or Worksheet G.6 (water exposures).

Chemical Name	PEPC		Comparison MEG		Hazard Severity
Ethylbenzene	Peak	2.0 mg/L	4.2 mg/L	14d 5L/d NEG	Negligible
	Average	0.47 mg/L	4.2 mg/L	14d 5L/d NEG	Negligible

Based on the duration of use of the water—longer than 14 days, the 14-day water MEGs are the appropriate short-term MEGs for comparison purposes. Based on the estimated consumption rate in the field of about 8L/day, the 5L/day MEGs are the most appropriate to use (see the appropriate severity ranking chart). The severity ranking chart recommends a Negligible severity rank when a PEPC is less than the 14d Negligible MEG.

6.3. Rank Acute Hazard Probability

Refer to TG 230 Section 3.4.5.3 for guidance. Assess the hazard probability for each PEPC using Worksheet G.5 (airborne exposures) or Worksheet G.6 (water exposures).

Acute Peak PEPC scoring for Ethylbenzene

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Acute Peak PEPC		Hazard Probability Scoring				Total Score	Hazard Probability
		Degree of exposure	Representativeness of field data	Duration of exposure	Rate of exposure		
Ethylbenzene	2.0 mg/L	1	2	2	3	8	Occasional

The following text explains the rationale underlying the scoring.

- **Factor 1 (Degree of exposure).** The acute PEPC is actually lower than the comparison MEG used to rank severity, which is the 14d, 5L/d Negligible MEG of 4.2 mg/L. Method B is used because the PEPC is less than the MEG. This scores as a 1.
- **Factor 2 (Representativeness of field data).** All analytical results appear to be valid. There is no specific information mentioned that would cause us to believe that the samples over or underestimate exposure. The one peak sample did occur at the end of the sampling period, which could indicate that the Ethylbenzene levels are increasing. This means the true peak could be much higher and these samples underestimate that, or it could simply be a single elevated result. Without further data however this factor should be scored as a 2.
- **Factor 3 (Duration of exposure).** The duration of exposure to an acute peak water PEPC based on grab samples can be fairly undefined. In this scenario, personnel use this water supply for 15 months. However, concentrations can change over time as water quality varies. It is assumed that a sample represents the condition of the water supply until another sample is collected and shows different results. We can see from the samples collected about once per month over a 6-month period that the concentration of ethylbenzene changed at least every month (we are not able to tell if it changed more frequently). Therefore, it is assumed that the population exposure duration for the peak PEPC is 30 days. The exposure duration associated with the comparison short-term MEG is 14 days. The ratio is 30/14, which is about 2.1. This scores as a 2.
- **Factor 4 (Rate of exposure).** A 5L/d MEG is used and the water is consumed at an estimated rate of 8L/day. This scores as a 3.

CASE STUDY 4**Methylene Chloride and Ethylbenzene Contamination in Water****Acute Average PEPC scoring for Ethylbenzene**

Acute Average PEPC		Hazard Probability Scoring				Total Score	Hazard Probability
		Degree of exposure	Representativeness of field data	Duration of exposure	Rate of exposure		
Ethylbenzene	0.47 mg/L	1	2	2	3	8	Occasional

The following text explains the rationale underlying the scoring.

- **Factor 1 (Degree of exposure).** The average PEPC is actually lower than the comparison MEG used to rank severity, which is the 14d, 5L/d Negligible MEG of 4.2 mg/L. Method B is used because the PEPC is less than the MEG. This is scored as a 1.
- **Factor 2 (Representativeness of field data).** The six samples were collected from August 2007 to October 2008. All analytical results appear to be valid. There is reason to believe that Ethylbenzene levels are not yet well characterized due to the relatively high concentration in the sample collected on 27 December 2007. It is not known whether the average acute PEPC calculated from the data from these 6 months will overestimate or underestimate (in other words, would measured concentrations of Ethylbenzene in the remaining 9 months of the 15-month time period cause the average acute PEPC to be significantly higher or lower) the average acute PEPC for the entire 15-month period. This is scored as a 2.
- **Factor 3 (Duration of exposure).** The duration of exposure in the field for an acute average water PEPC based on grab samples can be fairly undefined. As described in the acute peak PEPC assessment, each sample in the data set represents about a month. Therefore, it is assumed that the population exposure duration for the acute average PEPC is 30 days. The exposure duration associated with the comparison short-term MEG is 14 days. The ratio is 30/14, which is about 2.1. This scores as a 2.
- **Factor 4 (Rate of exposure).** A 5L/d MEG is used and the water is consumed at an estimated rate of 8L/day. This scores as a 3.

6.4. Estimate of Tactical Risk and Level of Confidence

CASE STUDY 4**Methylene Chloride and Ethylbenzene Contamination in Water**

Refer to TG 230 Section 3.4.5.4 for guidance. Use the risk assessment matrix in Table G-2 to combine the hazard severity and hazard probability selections to derive a Risk Level. Use the guidance in Worksheet G.8 to set levels of confidence.

Acute Hazard		Severity	Probability	Risk Level	Confidence
Ethylbenzene	Peak	Negligible	Occasional	LOW	High
	Average	Negligible	Occasional	LOW	High

Conclusion statement

Additional detail is provided in the overall Risk Characterization section at the end.

Based on current data, use of this ROWPU-treated well water for drinking water at the base camp poses a Low tactical risk.

Rationale for confidence levels

Consider all of the information at hand and communicate to the decision maker the level of confidence they have in the risk level being presented. Use the guidance in Worksheet G.8 to set levels of confidence.

The confidence in the acute risk estimates is high. The 6 months are relatively well characterized, and since the peak acute PEPC is below the 14-day 5 L/day MEG, there is high confidence that the risk is LOW for those 6 months. Little variability in water quality is expected since the source water is from a well and it is assumed the ROWPU is properly maintained and operated. This assessment is based on the best available data, however, the assessment is based on 6 consecutive months of data for a 15-month deployment and there is no way to know what might impact the water supply in the remaining 9 months of the deployment and how it would ultimately effect the risk.

7. CHRONIC RISK ASSESSMENT

Refer to TG 230 Section 3.4.6 for guidance.

7.1. Screen for Chronic Hazards

Refer to TG 230 Section 3.4.6.1. Screen for hazardous exposures that may lead to long term health effects. Use the chronic screening criteria described in Worksheet G.3 and enter the results in the table below.

Chemical Name	Chronic PEPC	1 Year 5L/d Negligible MEG	Frequency of Detection	Result
Ethylbenzene	0.47 mg/L	1.4 mg/L	66 %	Exclude as a hazard

For Ethylbenzene the detection frequency is greater than 5%, however the Chronic PEPC for Ethylbenzene is less than the 1 year 5L/day Negligible MEG. Therefore no chronic health risk is identified for this exposure.

CASE STUDY 4

Methylene Chloride and Ethylbenzene Contamination in Water

8. RISK CHARACTERIZATION SUMMARY

Refer to TG 230 Section 3.4.7 and tables G-2 through G-6 for guidance.

8.1. Summary Table

The summary should present the risk level(s), associated anticipated impacts to the tactical and lifecycle missions, and the level of confidence associated with the assessments. Recommended actions should be presented.

OEH Hazard		Tactical Risk Estimate	Lifecycle Risk Estimate	Current Recommended Actions
Media/Source	Chemical	(acute effects)	(chronic effects)	
ROWPU-treated Well Water used as a Drinking Water Source	Methylene chloride	No tactical risk	No lifecycle risk	Continue routine monitoring Document data in designated DoD archive.
	Ethylbenzene	<p>Low</p> <p>Expected losses have little or no impact on accomplishing the mission. <i>Little to no in-theater medical resources anticipated for protection and treatment. However, a summary of any negative or low level sampling results should be documented and archived particularly if some personnel express concerns.</i></p> <p>Confidence in the assessment is high on a low-medium-high scale.</p>	No lifecycle risk	Continue routine monitoring. If additional high hits are found, then re-assess the risk and search for the source of the chemical. Document data in designated DoD archive.

8.2. Potential Health Effects

Refer to the tables in TG 230 Appendices B, C, D, and E. Additional information is also available in RD 230. This section should present the potential health effects that are relevant in the final assessments. When risk levels are Moderate or higher, the identification of potential health effects should be based on consultations with appropriately trained subject matter experts at USAPHC or other such service organization.

Methylene chloride

- **Chronic exposure:** Based on current data, no acute health effects are expected.

Ethylbenzene

CASE STUDY 4**Methylene Chloride and Ethylbenzene Contamination in Water**

- **Acute exposure:** Based on current data, no acute health effects are expected.

8.3. Answers to Key Post-Risk Assessment Questions

Refer to Worksheet G.2. These questions should be considered when preparing a risk assessment. The case study answers provide teaching points.

- Has the risk assessment incorporated any of the unique considerations identified in TG 230 Section 3.5? There are no unique considerations in TG-230 section 3.5 that apply to this assessment.
- Is data quality adequate to base risk management decisions on the risk assessment? Yes. There is almost six months worth of data and the water source is ground water, which is typically less variable than surface water sources. All analytical results appear to be valid. There may be reason to believe that the time-concentration profile for Ethylbenzene is not yet well characterized due to the high hit in December. However, since there are several months of data and the high hit is very recent, there is adequate data to make decisions now.
- Is it worth collecting additional data to increase the confidence in the risk assessment conclusion? Yes, drinking water sources must be monitored monthly according to TB MED 577 and additional data is needed to determine if concentrations of Ethylbenzene are increasing or if the high hit in December was a minor deviation from the average concentrations found in the ground water. It would be useful to determine the source of these organics in the ground water, especially if monitoring results indicate that concentrations are increasing over time.
- Are there readily available exposure control measures that can be implemented? As both of these chemicals are volatile organics, air stripping towers and carbon filters should reduce the amount of each in the water supply. Methylene chloride has a high vapor pressure so air stripping towers should be effective, while carbon filtration would be a better choice for Ethylbenzene because of its low solubility in water. Carbon filtration would also work well for Methylene chloride.

8.4. Bottom-line-up-front briefing statements (BLUF Statements)

Refer to TG 230 Section 4 for over-arching risk communication guidance. The following bullets should represent succinct case-study specific points that should be emphasized when communicating to stakeholders.

- This assessment evaluated chemicals contained in the drinking water supply, which is ROWPU-treated well water.
- Methylene chloride and Ethylbenzene were detected in the treated water during nearly six months of sampling. Both organic compounds may be coming from the same source. Methylene chloride is used as an industrial solvent and paint stripper, and is found in some

CASE STUDY 4**Methylene Chloride and Ethylbenzene Contamination in Water**

aerosol and pesticide products. Ethylbenzene is naturally found in coal tar and petroleum, and is also found in gasoline, paints, inks, and pesticides.

- Ethylbenzene poses a potential acute health hazard, but at the detected concentrations, the risk due to acute health effects is LOW. Confidence in this assessment is high.
- Methylene chloride does not pose a hazard at the detected concentrations.
- Continued, routine monitoring of the treated water quality is encouraged. Special attention should be paid to the results for organic compounds to see if concentrations increase over time. If so, the risk assessment should be re-evaluated.

CASE STUDY 4

**Methylene Chloride and Ethylbenzene
Contamination in Water**

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CASE STUDY 5**Arsenic Contamination in Drinking Water
from Different Water Sources****Teaching Points**

- Illustrates a risk assessment of two different sources of drinking water for a population.
- Involves a chemical with MEGs and TB MED 577 standards.
- Performs a risk assessment for a 30 day mission in context of a longer deployment.
- Demonstrates USAPHC SME input into the process.

1. BACKGROUND

This is a hypothetical case study designed to illustrate the TG 230 risk assessment process. It is the end of March and the 24th Transportation Company has a 30 day mission in April to provide daily logistical support from Camp A to Camp B. Every day two squads of the unit convey from Camp A to Camp B and therefore Soldiers are consuming water from both Camps. Camp A is their home base and where Soldiers consume an estimated 11 L/day from bottled water. The water source at Camp B is treated well water and Soldiers consume approximately 2 L/day from that source.

PVNTMED personnel have certified that the bottled water from camp A is potable in accordance with the Tri-Service Field Water Standards and other requirements found in TB MED 577.

Camp B is located in an active combat zone where the Commander has determined that long-term water portability standards must be waived for the foreseeable future. For the purposes of this assessment, it is assumed that this waiver is in place for the company's entire 30 day mission.

2. DEFINE THE PURPOSE OF THE RISK ASSESSMENT

Refer to TG 230 Section 3.4.1 for guidance. Appendix G provides a process flow-chart.

The supporting PVNTMED team detected Arsenic during routine drinking water surveillance. You have been asked to evaluate the health risk to the unit associated with drinking these two water sources during their 6 month rotation, which includes the 30 day mission to Camp B.

3. COLLECT DATA AND DESCRIBE EXPOSURE SETTING

Refer to TG 230 Section 3.4.2 for guidance.

3.1. Data Sampling Summary

Include a description of who collected the data and how data were collected (i.e. sampling method).

The bottled water from Camp A was sampled every two weeks for 3 months (January–March) by the Veterinary Detachment and submitted to the laboratory for analysis.

The ROWPU-treated well water at Camp B was sampled on six different days (all in January) by local PVNTMED technicians using their standard sampling procedures for treated water. Water

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from Different Water Sources**

samples were submitted to the supporting laboratory for analysis. Similar samples were collected in February and March, but the laboratory lost the samples, so that data is available.

3.2. Available Arsenic sampling data and statistics

Camp A		bottled water
Date	Arsenic (mg/L)	
Jan 10	0.009	
Jan 24	0.02	
Feb 3	0.01	
Feb 17	0.01	
Mar 1	0.009	
Mar 16	0.02	
Minimum	0.009	
Maximum	0.02	
Count	6	
Detection Limit	0.001	
Limit of Quantitation	0.003	
Detection Frequency	100 %	
Sample Time	Grab	

Camp B		treated well water
Date	Arsenic (mg/L)	
Jan 4	0.15	
Jan 5	0.1	
Jan 6	0.34	
Jan 7	0.2	
Jan 8	0.25	
Jan 9	0.3	
Minimum	0.1	
Maximum	0.34	
Count	6	
Detection Limit	0.001	
Limit of Quantitation	0.003	
Detection Frequency	100 %	
Sample Time	Grab	

3.3. MEG Tables**Arsenic (7440-38-2) (mg/L)**

	7 day	14 day	1 yr
NEG 15L/day	0.1	0.02	-
NEG 5 L/day	0.3	0.06	0.06

3.4. Chemical information

Provide general information about the chemical(s) and the general source(s) in the environment.

Arsenic: The Agency for Toxic Substances and Disease Registry (ATSDR) has a publically available ToxFAQ™ and Toxicological Profile for this chemical. The following is general information obtained from these sources.

Arsenic is a widely distributed naturally occurring element. Inorganic arsenic compounds are mainly used to preserve wood. Copper chromated arsenate (CCA) is used to make “pressure-treated” lumber. CCA is no longer used in the U.S. for residential uses; it is still used in industrial applications. Organic arsenic compounds are used as pesticides, primarily on cotton fields and orchards. Ingesting very high levels of arsenic can result in death. Exposure to lower levels can cause nausea and vomiting, decreased production of red and white blood cells, abnormal heart rhythm, damage to blood vessels, and a

CASE STUDY 5**Arsenic Contamination in Drinking Water
from Different Water Sources**

sensation of “pins and needles” in hands and feet. Several studies have shown that ingestion of inorganic arsenic can increase the risk of skin cancer and cancer in the liver, bladder, and lungs. The Department of Health and Human Services and the EPA have determined that inorganic arsenic is a known human carcinogen.

3.5. Describe the Exposure Setting

Refer to TG 230 Section 3.4.2 for guidance. The description should answer as many of the pre-assessment key questions from Worksheet G.2 as possible. If an answer is unavailable, then indicate that information is missing.

The population at risk is the 24th Transportation Company (n = 120 Soldiers) during a six month mission at Camp A, which includes 30 days of daily logistical support from Camp A to Camp B. The potential hazard being assessed is Arsenic in bottled water from camp A and in treated well water from Camp B. The primary exposure route of concern is ingestion of the water.

- What is the population at risk?
- What is the timeframe under consideration?
- What is the exposure event or ambient environmental condition under consideration?
- What is known about the source of the chemicals?
- What are the exposure pathways?
- What else is known about the exposure setting?
- What are the activity patterns of the population at risk?
- Where are the sampling locations relative to where exposure occurs?
- Is there adequate data quality to conduct a chronic assessment?

Every day two squads of the unit convey from Camp A to Camp B and therefore Soldiers are consuming water from both Camps. Camp A is their home base and where Soldiers consume an estimated 11 L/day from bottled water. The water source at Camp B is treated well water and Soldiers are expected to consume approximately 2 L/day from that source during the short 30-day mission for Camp B. While driving M1081 standard cargo trucks requires minimal physical labor, the climate is hot and dry. This is why drinking rates are so high.

There appears to be enough data for a chronic risk assessment for the Camp A water source because the data set is a good representation of results across a number of months. The data set for Camp B is 6 days in one week and exposure to Camp B will only last 30 days, so a chronic assessment for the Camp B water source is not appropriate.

4. PRESCREEN

Refer to TG 230 Section 3.4.3 and Worksheet G.3 for guidance. Enter the results into the table below.

CASE STUDY 5**Arsenic Contamination in Drinking Water
from Different Water Sources**

Arsenic Source	Maximum Sample Concentration	Pre-Screening MEG	Result
Camp A – bottled	0.02 mg/L	0.02 mg/L (14d 15L/day MEG)	Exclude as a hazard
Camp B – treated well	0.34 mg/L		Retain as a hazard

The Pre-screening MEG was selected as the lower of the 1-year 5L/day Negligible MEG or the 14-day 15L/day Negligible MEG. For this chemical the 14-day 15L/day MEG was the lower of the two and selected as the Pre-screening MEG. Note that the Camp A source is excluded as posing a hazard because the maximum concentration is equal to the screening MEG. As presented in TG 230 Section 3.4.3 and Worksheet G.3, the concentration must be greater than the MEG to be retained as a hazard.

5. GENERATE THE RISK ASSESSMENT DATA SET

Refer to TG 230 Section 3.4.4 and Worksheet G.4 for guidance. Enter the results into the table below.

Arsenic Source	Acute Exposure		Chronic Exposure
	Peak PEPC	Average PEPC	Average PEPC
Camp B – treated well	0.34 mg/L	0.22 mg/L	0.22 mg/L

The acute peak PEPC is the highest sample concentration from the source. The acute and chronic average PEPCs are the arithmetic averages. The average PEPC is an estimate of the average concentrations across the duration of use of the water source, which for this scenerio is 30 days. Here, the calculated average is based on data collected only 6 days (the other samples were lost). For the purposes of conducting an assessment, it must be assumed that the calculated average is a 'reasonable' estimate of what the ultimate 30-day average will be to which the population will be exposed. Our confidence in this decision can be incorporated into the assessment downstream in the process, in the hazard probability ranking and the risk assessment confidence level.

6. ACUTE RISK ASSESSMENT

Refer to TG 230 Section 3.4.5 for guidance.

6.1. Screen for Acute Hazards

Refer to TG 230 Section 3.4.5.1 and Worksheet G.3 for guidance to perform screen for acute hazards. Enter the results into the table below.

Arsenic Source	Peak PEPC	Screening MEG		Result
Camp B – treated well	0.34 mg/L	0.02 mg/L	14d 15L/d NEG	Retain as an acute hazard

CASE STUDY 5

Arsenic Contamination in Drinking Water from Different Water Sources

6.2. Rank Acute Hazard Severity

Refer to TG 230 Section 3.4.5.2 for guidance. The peak and average PEPC across the selected exposure duration are used to select a hazard severity for each PEPC using Worksheet G.5 (airborne exposures) or Worksheet G.6 (water exposures).

Arsenic Source	PEPC		Comparison MEG		Hazard Severity
Camp B – treated well	Peak	0.34 mg/L	0.06 mg/L	14d 5L/d NEG	Negligible*
	Average	0.22 mg/L			

* Note that a standard protocol for setting these severity levels is unavailable because there are no 14d Marginal MEGs (see TG 230 Figure 3-4). In these situations, it is recommended that USAPHC be contacted in order to validate, or determine, the severity ranking.

Based on the duration of use of the water—longer than 14 days, the 14 day water MEG is the appropriate short-term MEG for comparison purposes. The 5L/d MEG is most appropriate at camp B based on the estimated consumption rate of about 2 L/d from the treated water supply.

When a PEPC is greater than the corresponding Negligible MEG and no Marginal MEG is available, then the severity determination for this exposure needs to be site-specific and be determined by a qualified subject matter expert.

Note: These exposure estimates require that USAPHC subject matter experts, or other qualified medical/health professionals, be consulted in order to rank hazard severity.

USAPHC Opinion for this Hypothetical Case Study:

The average exposure is below the 7d 5L/d Negligible MEG and the peak exposure is just above this MEG. However, these exposure concentrations are about 5-times the comparison 14d MEG and exposure is expected to last 30 days. It is known that water consumption will be only 2L/d from this water source, so the 5L/d Negligible MEGs are “overly protective” if the exposure were to be 14 days.

This water would be considered potable for a 7 days of use based on TB MED 577, where the standard is 0.3 mg/L. However, it would not be considered potable for uses more than 7 days. The 14d MEGs were set to equal the 2005 >7d TB MED standard for Arsenic.

The key question in this case is whether this exposure level (0.22 – 0.34 mg/L) represents higher than an acute Negligible hazard severity. Exposures less than a Marginal MEG would constitute a Negligible severity; however, there is no publically available exposure guideline that would approximate this threshold for what would be considered a Marginal severity. However, the ATSDR toxicological profile for Arsenic provides a review of intermediate (15-365 days), oral exposure studies that suggest that serious health effects have been observed in humans at doses above 0.05 mg/kg-d (see Figure 3-3 on p. 119 of the 2007 profile). This dose level can represent a point of departure for consideration of what level may represent a Marginal MEG. Plugging this dose level into a simple exposure equation for a 2L/d consumption rate results in a water concentration of 1.75 mg/L. Clearly, the field exposures from the camp B water source are less than this. Therefore, the severity level associated with this exposure is

CASE STUDY 5**Arsenic Contamination in Drinking Water
from Different Water Sources**

ranked as Negligible.

6.3. Rank Acute Hazard Probability

Refer to TG 230 Section 3.4.5.3 for guidance. Assess the hazard probability for each PEPC using Worksheet G.5 (airborne exposures) or Worksheet G.6 (water exposures).

Acute Peak PEPC scoring for Arsenic in Treated Well Water at Camp B

Arsenic Exposure		Hazard Probability Scoring					Hazard Probability
		Degree of exposure	Representativeness of field data	Duration of exposure	Rate of exposure	Total Score	
Camp B – treated well	0.34 mg/L	2	3	1	1	7	Seldom

The following text explains the rationale underlying the scoring.

- **Factor 1 (Degree of exposure).** Since a formal Marginal MEG is unavailable, method B is used to score this factor. The acute PEPC is greater than the 14d 5L/d Negligible MEG. This scores as a 2.
- **Factor 2 (Representativeness of field data).** The field data were collected in January and it is now the end of March. While well water sources are typically less variable than surface water, there remains uncertainty of whether these past data are good representations of current conditions. In order to provide a health-protective risk estimate, it is assumed that the January data may underestimate exposure. This decision scores as a 3.
- **Factor 3 (Duration of exposure).** The duration of exposure in the field for a peak water PEPC based on grab samples can be fairly undefined. Each sample in the data set represents one day, since samples are taken every day for six days. Therefore, it is assumed that the population exposure duration for the peak PEPC is 1 day. The exposure duration associated with the comparison short-term MEG is 14 days. The ratio is 1/14, which is much less than 1. This scores as a 1.
- **Factor 4 (Rate of exposure).** A 5L/d MEG is used and the water is consumed at an estimated rate of 2L/day. This scores as a 1.

CASE STUDY 5

Arsenic Contamination in Drinking Water from Different Water Sources

Acute Average PEPC scoring for Arsenic in Treated Well Water at Camp B

Arsenic Exposure		Hazard Probability Scoring					Hazard Probability
		Degree of exposure	Representativeness of field data	Duration of exposure	Rate of exposure	Total Score	
Camp B – treated well	0.22 mg/L	2	3	2	1	8	Occasional

The following text explains the rationale underlying the scoring.

- **Factor 1 (Degree of exposure).** Since a formal Marginal MEG is unavailable, method B is used to score this factor. The acute PEPC is greater than the 14d 5L/d Negligible MEG. This scores as a 2.
- **Factor 2 (Representativeness of field data).** The field data were collected in January and it is now the end of March. While well water sources are typically less variable than surface water, there remains uncertainty of whether these past data are good representations of current conditions. In order to provide a health-protective risk estimate, it is assumed that the January data may underestimate exposure. This decision scores as a 3.
- **Factor 3 (Duration of exposure).** The duration of exposure in the field for an average water PEPC based on grab samples can be fairly undefined. The data set average represents a six-day average, since samples are taken every day for six days. However, the exposure is 30 days and the six-day average is the current best estimate of the 30-day average. The exposure duration associated with the comparison short-term MEG is 14 days. The ratio is 30/14, which is 2.14. This scores as a 2.
- **Factor 4 (Rate of exposure).** A 5L/d MEG is used and the water is consumed at an estimated rate of 2L/day. This scores as a 1.

6.4. Estimate of Tactical Risk and Level of Confidence

Refer to TG 230 Section 3.4.5.4 for guidance. Use the risk assessment matrix in Table G-2 to combine the hazard severity and hazard probability selections to derive a Risk Level. Use the guidance in Worksheet G.8 to set levels of confidence.

Acute Hazard		Severity	Probability	Risk Level	Confidence
Arsenic in Camp B – treated well	Peak	Negligible	Seldom	LOW	Low
	Average	Negligible	Occasional	LOW	Low

CASE STUDY 5**Arsenic Contamination in Drinking Water
from Different Water Sources****Conclusion statement**

Additional detail is provided in the overall Risk Characterization section at the end.

Based on current data, use of this ROWPU-treated well water for drinking water at the base camp B poses a Low tactical risk.

Rationale for confidence levels

Consider all of the information at hand and communicate to the decision maker the level of confidence they have in the risk level being presented. Use the guidance in Worksheet G.8 to set levels of confidence.

The rationale for the Low confidence level for the assessment of the acute/short-term exposure is primarily based on the fact that the data set is out of date. The treated well water data was collected three months ago. While the exposure levels are greater than the existing 14d Negligible MEG and there is no formal Marginal MEG, USAPHC subject matter experts were consulted to determine the severity level of the hazard.

7. CHRONIC RISK ASSESSMENT

Refer to TG 230 Section 3.4.6 for guidance.

As stated in case study Section 3.5, there appears to be enough data for a chronic risk assessment for the Camp A water source because the data set is a good representation of results across a number of months. However, the Camp A bottled water source does not contain any identified hazards (see the Prescreen results in case study Section 4).

The data set for Camp B is 6 days in one week and exposure to Camp B will only last 30 days, so a chronic assessment for the Camp B water source is not appropriate.

CASE STUDY 5

Arsenic Contamination in Drinking Water from Different Water Sources

8. RISK CHARACTERIZATION SUMMARY

Refer to TG 230 Section 3.4.7 and tables G-2 through G-6 for guidance.

8.1. Summary Table

The summary should present the risk level(s), associated anticipated impacts to the tactical and lifecycle missions, and the level of confidence associated with the assessments. Recommended actions should be presented.

OEH Hazard		Tactical Risk Estimate	Lifecycle Risk Estimate	Current Recommended Actions
Media/Source	Chemical	(acute effects)	(chronic effects)	
ROWPU-treated Well Water used as a Drinking Water Source at Camp B	Arsenic	<p>Low *</p> <p>Expected losses have little or no impact on accomplishing the mission. <i>Little to no in-theater medical resources anticipated for protection and treatment. However, a summary of any negative or low level sampling results should be documented and archived particularly if some personnel express concerns.</i></p> <p>Confidence in the assessment is low on a low-medium-high scale.</p>	No lifecycle hazards identified	<p>Collect water samples during the mission.</p> <p>Document data in designated DoD archive.</p>

*This summary prepared in consultation with USAPHC subject matter experts.

8.2. Potential Health Effects

Refer to the tables in TG 230 Appendices B, C, D, and E. Additional information is also available in RD 230. This section should present the potential health effects that are relevant in the final assessments. When risk levels are Moderate or higher, the identification of potential health effects should be based on consultations with appropriately trained subject matter experts at USAPHC or other such service organization.

Arsenic in drinking water

- Acute exposure:** Exposure to low levels of arsenic can cause nausea and vomiting, decreased production of red and white blood cells, abnormal heart rhythm, damage to blood vessels, and a sensation of “pins and needles” in hands and feet.
- Chronic exposure:** Not applicable.

CASE STUDY 5**Arsenic Contamination in Drinking Water
from Different Water Sources****8.3. Answers to Key Post-Risk Assessment Questions**

Refer to Worksheet G.2. These questions should be considered when preparing a risk assessment. The case study answers provide teaching points.

- Has the risk assessment incorporated any of the unique considerations identified in TG 230 Section 3.5? There are no unique considerations in TG-230 section 3.5 that apply to this assessment.
- Is data quality adequate to base risk management decisions on the risk assessment? Yes. There appears to be adequate data to make decisions now.
- Is it worth collecting additional data to increase the confidence in the risk assessment conclusion? Yes, drinking water sources must be monitored monthly according to TB MED 577 and additional data is needed to determine if concentrations of Arsenic in the treated-well water are different from those measured three months ago in January.
- Are there readily available exposure control measures that can be implemented? The possibility of transporting bottled water into camp B could need to be considered in context of the other combat-oriented mission requirements.

8.4. Bottom-line-up-front briefing statements (BLUF Statements)

Refer to TG 230 Section 4 for over-arching risk communication guidance. The following bullets should represent succinct case-study specific points that should be emphasized when communicating to stakeholders.

- This assessment evaluated Arsenic in bottled water from camp A and ROWP-treated well water from camp B. Arsenic is naturally occurring and is also used to preserve wood and is used in some pesticide formulations.
- Arsenic was detected in both water sources but only the levels of arsenic in the treated water from camp B pose a health hazard. It is not clear why the treatment did not remove the arsenic.
- Arsenic in camp B well water poses a LOW TACTICAL AND LIFECYCLE RISK. Confidence in this assessment is low because the data are old.
- Continued, routine monitoring of the treated water quality is encouraged.

CASE STUDY 6**Naphthalene and Bis(2-Ethylhexyl)Adipate Contamination in Non-Drinking Water****Teaching Points**

- Shows how water can be evaluated for personal hygiene exposures.
- Deals with chemicals with some samples results reported as not detected.
- Demonstrated how incomplete data coverage over time can be used to assess exposure.
- Demonstrates USAPHC SME input into the process.

1. BACKGROUND

This is a hypothetical case study designed to illustrate the TG 230 risk assessment process. The military population assigned to base camp Zulu uses well water to supply the field showers supporting the camp. The supporting PVNTMED team detected Naphthalene and Bis (2-Ethylhexyl) Adipate during routine water surveillance.

Note: The water MEGs were derived based on ingestion exposures and did not factor in other routes of exposure (i.e., inhalation and dermal exposures). It is recognized that bottled water is usually the primary drinking source in recent deployments, and field water is commonly used for non-drinking purposes such as showering, laundering, cooking, and other activities requiring potable water. Development of water MEGs for assessing non-drinking exposures was considered for the current TG 230 revision, but was not performed (see RD230 for more details). Until hygiene or cooking water MEGs are established, USAPHC recommends an interim approach to identify potential chemicals of concern for hygiene and cooking activities. This case study demonstrates this approach. See TG 230 Section 3.5.2 for more information.

Note: According to military doctrine, potable water, including that used for non-consumptive purposes must still meet military field drinking water standards as described in TB MED 577.

2. DEFINE THE PURPOSE OF THE RISK ASSESSMENT

Refer to TG 230 Section 3.4.1 for guidance. Appendix G provides a process flow-chart.

Evaluate the health risk to military population at Camp Zulu associated with using well water for personal hygiene during a 6 month deployment (November 2007 – April 2008). This water source is not used for drinking, as bottled water is supplied for that purpose. Acute and chronic health risks need to be addressed.

CASE STUDY 6**Naphthalene and Bis(2-Ethylhexyl)Adipate Contamination in Non-Drinking Water****3. COLLECT DATA AND DESCRIBE EXPOSURE SETTING**

Refer to TG 230 Section 3.4.2 for guidance.

3.1. Data Sampling Summary

Include a description of who collected the data and how data were collected (i.e. sampling method).

The camp's well water was sampled on six different days by local PVNTMED technicians using their standard sampling procedures for tap water. Water samples were submitted to the supporting laboratory for analysis.

3.2. Available sampling data and statistics

Naphthalene		Bis(2-Ethylhexyl)Adipate	
Date	mg/L	Date	mg/L
8 Dec 07	ND	8 Dec 07	6.5
11 Dec 07	8.0	11 Dec 07	3.6
2 Jan 08	ND	2 Jan 08	2.9
25 Jan 08	3.0	25 Jan 08	ND
14 Feb 08	4.0	14 Feb 08	2.9
18 Mar 08	2.5	18 Mar 08	3.8
Minimum	ND	Minimum	ND
Maximum	8.0	Maximum	6.5
Count	6	Count	6
Detection Limit	0.08	Detection Limit	0.02
Limit of Quantitation	0.2	Limit of Quantitation	0.08
Detection Frequency	66%	Detection Frequency	83%
Sample Time	NA	Sample Time	NA

3.3. MEG Tables**Naphthalene (91-20-3) (mg/L)**

	7 day	14 day	1 yr
NEG 15L/day	N/A	N/A	N/A
NEG 5 L/day	N/A	N/A	2.8

Bis(2-Ethylhexyl)Adipate (103-23-1) (mg/L)

	7 day	14 day	1 yr
NEG 15L/day	9.3	9.3	N/A
NEG 5 L/day	28	28	8.4

CASE STUDY 6**Naphthalene and Bis(2-Ethylhexyl)Adipate Contamination in Non-Drinking Water****3.4. Chemical information**

Provide general information about the chemical(s) and the general source(s) in the environment.

Naphthalene: The Agency for Toxic Substances and Disease Registry (ATSDR) has a publically available ToxFAQ™ and Toxicological Profile for Naphthalene. The following is general information obtained from these sources.

Naphthalene is a white solid that evaporates easily. Fuels such as petroleum and coal contain naphthalene. It is also called white tar, and tar camphor, and has been used in mothballs and moth flakes. Burning tobacco or wood produces naphthalene. It has a strong, but not unpleasant smell. The major commercial use of naphthalene is in the manufacture of polyvinyl chloride (PVC) plastics. Its major consumer use is in moth repellents and toilet deodorant blocks. Naphthalene enters the environment from industrial and domestic sources, and from accidental spills. Exposure to naphthalene happens mostly from breathing air contaminated from the burning of wood, tobacco, or fossil fuels, industrial discharges, or moth repellents. Naphthalene can dissolve in water to a limited degree and may be present in drinking water from wells close to hazardous waste sites and landfills. Naphthalene can become weakly attached to soil or pass through soil into underground water. Exposure to large amounts of naphthalene also cause nausea, vomiting, diarrhea, blood in the urine, and a yellow color to the skin. Large exposures may also damage or destroy some of your red blood cells. This could cause you to have too few red blood cells until your body replaces the destroyed cells. This condition is called hemolytic anemia. Some symptoms of hemolytic anemia are fatigue, lack of appetite, restlessness, and pale skin. Animals sometimes develop cloudiness in their eyes after swallowing high amounts of naphthalene. It is not clear whether this also develops in people.

Bis(2-Ethylhexyl)Adipate: The Environmental Protection Agency has a publically available Ground Water and Drinking Water Consumer Fact Sheet for Bis(2-Ethylhexyl)Adipate. The following general information was obtained from this source. Note that this chemical is often referred to as Adipate.

Adipate is a light-colored, oily liquid with an aromatic odor. It is used in making plastics. It is also used as a solvent; in aircraft lubricants; as a hydraulic fluid; as a plasticizer or solvent in the following cosmetics: bath oils, eye shadow, cologne, foundations, rouge, blusher, nail-polish remover, moisturizers and indoor tanning preparations; in meat wrapping operations. Adipate is released in fly ash from municipal waste incineration, wastewater effluent from sewage treatment plants and chemical manufacturing plants. Since adipates are known to leach from plumbing made of PVC plastic, they have been recognized as a potential drinking water contaminant. If released to soil or water, adipate is expected to be broken down by microbes. It will adhere to sediments in water bodies and will not leach through soil to ground water. Adipate is not known to cause any health problems when people are exposed to it at levels above the Maximum Contaminant Level (MCL) of 0.4 mg/L for relatively short periods of time. Adipate has the potential to

CASE STUDY 6**Naphthalene and Bis(2-Ethylhexyl)Adipate Contamination in Non-Drinking Water**

cause the following effects from a lifetime exposure at levels above the MCL: reduced body weight and bone mass; damage to liver and testes; cancer.

3.5. Describe the Exposure Setting

Refer to TG 230 Section 3.4.2 for guidance. The description should answer as many of the pre-assessment key questions from Worksheet G.2 as possible. If an answer is unavailable, then indicate that information is missing.

The population at risk is the entire population (n~600) at the base camp from November 2007 – April 2008, a 6 month period. This well water is used primarily to supply the field showers for personal hygiene use. The potential chemical hazards are waterborne in showers, so dermal contact, vapor and aerosol inhalation, and incidental ingestion are the primary exposure routes of concern.

There is no particular exposure event. The PVNTMED personnel have no knowledge of the source of chemicals at this time.

A large proportion of Camp Zulu Soldiers are engaged in light physical labor as they occupy prepared defensive positions and perform administrative functions. Bottled water is supplied and used for consumption.

The camp's well water was sampled on six different days from December – March from the field shower heads. There is adequate data quality to conduct a chronic assessment—this is a well source and there is no reason to believe the concentrations will have significant variability.

- What is the population at risk?
- What is the timeframe under consideration?
- What is the exposure event or ambient environmental condition under consideration?
- What is known about the source of the chemicals?
- What are the exposure pathways?
- What else is known about the exposure setting?
- What are the activity patterns of the population at risk?
- Where are the sampling locations relative to where exposure occurs?
- Is there adequate data quality to conduct a chronic assessment?

4. PRESCREEN

Refer to TG 230 Section 3.4.3 and Worksheet G.3 for guidance. Enter the results into the table below.

Chemical Name	Maximum Sample Concentration	2.5 × 1yr 5L/d Negligible MEG	Result
Naphthalene	8.0 mg/L	7.0 mg/L	Retain as a hazard
Bis(2-Ethylhexyl)Adipate	6.5 mg/L	21 mg/L	Exclude as a hazard

For non-drinking water, the prescreening method compares the peak concentration to 2.5 times the 1 year Negligible MEG for the 5 L/day consumption rate. The applicable pre-screening MEGs are 2.8 mg/L (Naphthalene) and 8.4 mg/L (Bis(2-Ethylhexyl)Adipate). The table shows the adjusted values.

CASE STUDY 6**Naphthalene and Bis(2-Ethylhexyl)Adipate
Contamination in Non-Drinking Water****5. GENERATE THE RISK ASSESSMENT DATA SET**

Refer to TG 230 Section 3.4.4 and Worksheet G.4 for guidance. Enter the results into the table below.

Chemical Name	Acute Exposure		Chronic Exposure
	Peak PEPC	Average PEPC	Average PEPC
Naphthalene	8.0 mg/L	3.0 mg/L *	3.0 mg/L *

*See text.

5.1. Acute PEPCs

The acute peak PEPC for a water source is simply the maximum detected concentration. Since there is no known “exposure event” (such as a spill or major storm impacting ground water), the acute average PEPC is an estimate of the average concentration across the duration of use of the water source. The calculated average value from the data set is based on data collected over 4 months, but actually represents an estimate of the 6-month average because that is the exposure duration.

The calculated average value also incorporated results less than the detection limit. There were 2 out of 6 samples flagged as not detected. For the purposes of calculating the average PEPC, the ND values were assigned surrogate values based on the method described in TG230 Section 3.4.4.3. In this case, ½ of the Limit of Quantitation (LOQ) was used.

5.2. Chronic PEPCs

The chronic average PEPC is an estimate of the average concentration across the duration of use of the water source. The calculated average value from the data set is based on data collected over 4 months, but actually represents an estimate of the 6-month average because that is the exposure duration. This assumption is reasonable because there is no known “exposure event” (such as a spill or major storm impacting ground water) and this is a well source and there is no reason to believe the concentrations will have significant variability. The calculated average value also incorporated results less than the detection limit, just as in the calculation of the acute average PEPC.

CASE STUDY 6**Naphthalene and Bis(2-Ethylhexyl)Adipate Contamination in Non-Drinking Water****6. ACUTE RISK ASSESSMENT**

Refer to TG 230 Section 3.4.5 for guidance.

6.1. Screen for Acute Hazards

Refer to TG 230 Section 3.4.5.1 and Worksheet G.3 for guidance to perform screen for acute hazards. Enter the results into the table below.

Chemical Name	Peak PEPC	Screening MEG		Result
Naphthalene	8.0 mg/L	7 mg/L	2.5 x 1yr NEG 5L/d	Retain as an acute hazard

NA – not available

There is no 14d Negligible MEG for Naphthalene at this time. Therefore, Naphthalene was screened with 2.5 times the 1yr Negligible MEG for the 5L/d rate. It was retained as an acute hazard because it was greater than this comparison MEG.

6.2. Rank Acute Hazard Severity

Refer to TG 230 Section 3.4.5.2 for guidance. The peak and average PEPC across the selected exposure duration are used to select a hazard severity for each PEPC using Worksheet G.5 (airborne exposures) or Worksheet G.6 (water exposures).

Chemical Name	PEPC		Comparison MEG		Hazard Severity
	Naphthalene	Peak	8.0 mg/L	7 mg/L	2.5 x 1yr NEG 5L/d
Average		3.0 mg/L	7 mg/L	2.5 x 1yr NEG 5L/d	Negligible

* See below

The standard acute hazard severity ranking method requires a 14d Negligible MEG, which is unavailable. The comparison to the adjusted 1yr MEG can be used to rank the acute average PEPC as Negligible because it is less than the comparison value. However, since the acute peak PEPC is greater than this, USAPHC should be contacted for assistance.

Note: The guidance recommends that USAPHC be contacted for assistance in these situations.

USAPHC Opinion for this Hypothetical Case Study:

The acute peak PEPC (8 mg/L) is just above 2.5 times the 5L/d 1yr Negligible MEG (7 mg/L) and the exposure duration for the peak – about one month, see the sampling data table – is much shorter than 1-year. Therefore, an acute hazard severity rank of Negligible is a reasonable decision for the acute peak PEPC.

CASE STUDY 6**Naphthalene and Bis(2-Ethylhexyl)Adipate Contamination in Non-Drinking Water****6.3. Rank Acute Hazard Probability**

Refer to TG 230 Section 3.4.5.3 for guidance. Assess the hazard probability for each PEPC using Worksheet G.5 (airborne exposures) or Worksheet G.6 (water exposures).

Acute Peak PEPC scoring for Naphthalene

Acute Average PEPC		Hazard Probability Scoring					Hazard Probability
		Degree of exposure	Representativeness of field data	Duration of exposure	Rate of exposure	Total Score	
Naphthalene	8.0 mg/L	2	2	1	2	7	Seldom

The following text explains the rationale underlying the scoring.

- **Factor 1 (Degree of exposure).** In this case, there is no directly relevant MEG. However, 2.5 times the 5L/d 1yr Negligible MEG was used as the comparison MEG to rank severity. Therefore, this factor should be scored relative to that criterion. Method B is used because the the next higher severity MEG for the time-frame is unavailable. Since the peak PEPC is greater than the comparison value, it scores as a 2.
- **Factor 2 (Representativeness of field data).** Since there is no known “exposure event” and this is a well source, there is no reason to believe the concentrations will have significant variability. Therefore, the calculated peak value from the data set is based on data collected over 4 months is an adequate estimate of true highest peak concentration over the 6-month average concentration. This scores as a 2.
- **Factor 3 (Duration of exposure).** Since the duration of exposure is 6 months and the duration associated with the MEG used to rank severity is 1 year, the ratio (180d/365d) is about 0.5. This scores as a 1.
- **Factor 4 (Rate of exposure).** Based on the water use in field showers and the Worksheet chart, it is assumed that there will be moderate water contact or incidental consumption of water (e.g., temporary facilities with centralized small unit showers). This scores as a 2.

CASE STUDY 6

Naphthalene and Bis(2-Ethylhexyl)Adipate Contamination in Non-Drinking Water

Acute Average PEPC scoring for Naphthalene

Acute Average PEPC		Hazard Probability Scoring					Hazard Probability
		Degree of exposure	Representativeness of field data	Duration of exposure	Rate of exposure	Total Score	
Naphthalene	3.0 mg/L	1	2	1	2	6	Unlikely

The following text explains the rationale underlying the scoring.

- **Factor 1 (Degree of exposure).** In this case, there is no directly relevant MEG. However, 2.5 times the 5L/d 1yr Negligible MEG was used as the comparison MEG to rank severity. Therefore, this factor should be scored relative to that criterion. Method B is used because the PEPC is actually less than the criterion – so it scores as a 1.
- **Factor 2 (Representativeness of field data).** Since there is no known “exposure event” and this is a well source, there is no reason to believe the concentrations will have significant variability. Therefore, the calculated average value from the data set is based on data collected over 4 months is an adequate estimate of the 6-month average concentration. This scores as a 2.
- **Factor 3 (Duration of exposure).** Since the duration of exposure is 6 months and the duration associated with the MEG used to rank severity is 1 year, the ratio (180d/365d) is about 0.5. This scores as a 1.
- **Factor 4 (Rate of exposure).** Based on the water use in field showers and the Worksheet chart, it is assumed that there will be moderate water contact or incidental consumption of water (e.g., temporary facilities with centralized small unit showers). This scores as a 2.

6.4. Estimate of Tactical Risk and Level of Confidence

Refer to TG 230 Section 3.4.5.4 for guidance. Use the risk assessment matrix in Table G-2 to combine the hazard severity and hazard probability selections to derive a Risk Level. Use the guidance in Worksheet G.8 to set levels of confidence.

Acute Hazard		Severity	Probability	Risk Level	Confidence
Naphthalene	Peak	Negligible	Seldom	LOW	High
	Average	Negligible	Unlikely	LOW	High

CASE STUDY 6**Naphthalene and Bis(2-Ethylhexyl)Adipate Contamination in Non-Drinking Water****Conclusion statement**

Additional detail is provided in the overall Risk Characterization section at the end.

Use of this well water for personal hygiene and the field showers poses a Low tactical risk. Given the severity and probability ranks, the potential for any health effects is very low and probably non-existent.

Rationale for confidence levels

Consider all of the information at hand and communicate to the decision maker the level of confidence they have in the risk level being presented. Use the guidance in Worksheet G.8 to set levels of confidence.

The overall confidence in the assessment is High. There are a fair amount of samples, more than typical for field water supplies. While there is no known source of the chemicals in the well water, there is also no known “exposure event” (such as a spill or major storm impacting ground water) and there is no reason to believe the concentrations will have significant variability. The health-based criteria used in the assessment (i.e., the modified MEGs) are conservative (health-protective).

7. CHRONIC RISK ASSESSMENT

Refer to TG 230 Section 3.4.6 for guidance.

7.1. Screen for Chronic Hazards

Refer to TG 230 Section 3.4.6.1. Screen for hazardous exposures that may lead to long term health effects. Use the chronic screening criteria described in Worksheet G.3 and enter the results in the table below.

Chemical Name	Chronic PEPC	2.5 × 1yr 5L/d Negligible MEG	Frequency of Detection	Result
Naphthalene	3.0 mg/L	7.0 mg/L	66 %	Exclude as a hazard

The estimated chronic exposure to Naphthalene in the water does not pose a chronic health hazard; therefore, further assessment is not needed. Additional analysis for the chronic risk assessment is not required.

CASE STUDY 6

Naphthalene and Bis(2-Ethylhexyl)Adipate Contamination in Non-Drinking Water

8. RISK CHARACTERIZATION SUMMARY

Refer to TG 230 Section 3.4.7 and tables G-2 through G-6 for guidance.

8.1. Summary Table

The summary should present the risk level(s), associated anticipated impacts to the tactical and lifecycle missions, and the level of confidence associated with the assessments. Recommended actions should be presented.

OEH Hazard		Tactical Risk Estimate	Lifecycle Risk Estimate	Current Recommended Actions
Media/Source	Chemical	(acute effects)	(chronic effects)	
Field Shower Water	Naphthalene	<p>Low *</p> <p>Expected losses have little or no impact on accomplishing the mission. <i>Little to no in-theater medical resources anticipated for protection and treatment. However, a summary of any negative or low level sampling results should be documented and archived particularly if some personnel express concerns.</i></p> <p>Confidence in the assessment is high on a low-medium-high scale.</p>	No lifecycle risk	Document data in designated DoD archive.

*This summary prepared in consultation with USAPHC subject matter experts.

8.2. Potential Health Effects

Refer to the tables in TG 230 Appendices B, C, D, and E. Additional information is also available in RD 230. This section should present the potential health effects that are relevant in the final assessments. When risk levels are Moderate or higher, the identification of potential health effects should be based on consultations with appropriately trained subject matter experts at USAPHC or other such service organization.

Naphthalene

- **Acute exposure:** No health effects expected.
- **Chronic exposure:** No health effects expected.

CASE STUDY 6**Naphthalene and Bis(2-Ethylhexyl)Adipate Contamination in Non-Drinking Water****8.3. Answers to Key Post-Risk Assessment Questions**

Refer to Worksheet G.2. These questions should be considered when preparing a risk assessment. The case study answers provide teaching points.

- Has the risk assessment incorporated any of the unique considerations identified in TG 230 Section 3.5? The TG 230 Section 3.5 identifies one consideration that is relevant to this case study. This assessment addresses the assessment of water for purposes other than consumption.
- Is data quality adequate to base risk management decisions on the risk assessment? Yes. Confidence in the assessment is ranked high and the risk level of Low does not warrant special risk control measures.
- Is it worth collecting additional data to increase the confidence in the risk assessment conclusion? No, however routine PVNTMED water surveillance should continue.
- Are there readily available exposure control measures that can be implemented? None are required.

8.4. Bottom-line-up-front briefing statements (BLUF Statements)

Refer to TG 230 Section 4 for over-arching risk communication guidance. The following bullets should represent succinct case-study specific points that should be emphasized when communicating to stakeholders.

- This assessment evaluated chemicals contained in well water used in the field showers.
- Naphthalene and Bis(2-Ethylhexyl)Adipate were detected in the water during 4 months of sampling. Both compounds are used to manufacture of polyvinyl chloride (PVC) plastics.
- Only naphthalene poses a potential acute health hazard. The TACTICAL RISK IS LOW for Naphthalene. Confidence in the assessment is high.
- Neither chemical poses a chronic exposure hazard at the concentrations found in the water.

CASE STUDY 6

**Naphthalene and Bis(2-Ethylhexyl)Adipate
Contamination in Non-Drinking Water**

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Environmental Health Risk Assessment and Chemical Exposure
Guidelines for Deployed Military Personnel

U.S. Army Public Health Command