

Safety and Health Guidance for Mortuary Affairs Operations:

Infectious Materials



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Technical Guide 195A Safety and Health Guidance for Mortuary Affairs Operations: Infectious Materials Handling

1. **PURPOSE.** This Technical Guide (TG) is a quick reference handbook that explains the safety and health hazards related to the search, recovery, evacuation, tentative identification, and processing of human remains at Mortuary Affairs (MA) collection points (MACPs), theater mortuary evacuation points (TMEPs), and MA contaminated remains mitigation sites (MACRMSs). In addition, this TG provides the control measures and safe work practices that will protect MA and support personnel from occupational exposure(s) to these hazards.

2. **REFERENCES.** Appendix A is a list of references. Copies of the U.S. Army Institute of Public Health and U.S. Army Public Health Command (USAPHC)/U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM) reference documents may be obtained on line at <http://phc.amedd.army.mil/Pages/default.aspx>.

3. **ACRONYMS.** Appendix B contains a list of acronyms used in this TG.

4. **BACKGROUND.** This publication supersedes TG 195-A-E, dated May 2009. This version of the TG includes new fact sheets that address ergonomic concerns and decontamination procedures for equipment such as body armor, transport vehicles and refrigerated food MILVANS.

5. **SCOPE.**

a. This TG is primarily written for Soldiers designated with the military occupational specialty (MOS) 92M, Mortuary Affairs Specialist, and ancillary personnel providing support at the MACPs, TMEPs, and MACRMSs. The TG presents information that is useful to both personnel and leadership and distinguishes between the responsibilities of each. While the general guidelines are geared towards informing personnel, leadership must know the necessary safety and health requirements to verify work is carried out safely.

b. Disaster response teams may also find the information in this TG helpful. For example, the 2001 version of this TG was used by both military and various civilian personnel who supported disasters such as Hurricane Katrina in 2005 and the Asian Tsunami in 2004.

6. USING THIS TG.

a. The primary safety and health concern when handling human remains is the possibility of contracting an infection or disease following an exposure to human blood that contains infectious microorganisms, other potentially infectious materials (OPIM), or infectious aerosols.

b. The following USAPHC TGs are definitive references for comprehensive guidance on the topics discussed in TG 195A. Therefore, this TG should be used as a supplement to –

(1) TG 190, Guide to Managing Occupational Exposure to Bloodborne Pathogens, April 2004.

(2) TG 320, Guide to Coping with Deployment and Combat Stress, February 2014.

These references are available on-line at
<http://phc.amedd.army.mil/Pages/default.aspx>.

(3) DOD components may access the expanded version of TG 195 at Army Knowledge Online.

c. The design of this TG allows for many different uses. The separate fact sheets contained within lend themselves for use in training sessions. The entire TG may also be used to develop standing operating procedures, or for general guidance.

TG 195A
Fact Sheet 1
Infectious Diseases and Their Transmission

Principal Diseases

Mortuary Affairs personnel may be exposed to a number of pathogens (disease-causing microorganisms such as bacteria and viruses) that can cause infection in personnel performing search, recovery, decontamination, tentative identification (ID), evacuation and, when required, temporary interment, disinterment, and reinterment of human remains. Infection can occur when harmful pathogens enter a body and begin to multiply. Disease is the result of infection when signs and symptoms of an illness appear. The general categories and some specific examples of infectious diseases associated with handling human remains are listed in Table 1. Infectious diseases associated with handling human remains. Victims dying from trauma are no more likely than the local population to have acute or rare infections. Instead, where disease is present, it is far more likely to be due to bloodborne viruses such as hepatitis B virus (HBV), hepatitis C virus (HCV), and human immunodeficiency virus (HIV); intestinal tract infections (*Escherichia coli*, Salmonellosis, and Hepatitis A); and possibly *Mycobacterium tuberculosis* (MTB).

Table 1. Infectious diseases associated with handling human remains

Bloodborne	Respiratory	Gastrointestinal	Contact
<ul style="list-style-type: none"> • Hepatitis B virus (HBV) • Hepatitis C virus (HCV) • Human immunodeficiency virus (HIV) also known as acquired immunodeficiency syndrome (AIDS) 	<ul style="list-style-type: none"> • <i>Mycobacterium tuberculosis</i> (MTB) 	<ul style="list-style-type: none"> • <i>Campylobacter</i> gastroenteritis • Cholera • Enteric fevers (typhoid and paratyphoid) • <i>Escherichia coli</i> • Hepatitis A • Rotavirus infection • Polio • Salmonellosis • Shigellosis • Typhoid 	<ul style="list-style-type: none"> • Methicillin-Resistant <i>Staphylococcus Aureus</i> (MRSA) • Other Staphylococcal infections

Chain of Infection

The human body is a natural host to many organisms, but only a few of them are pathogenic. When a person dies, the environment in which these pathogens live can no longer support them. However, this does not happen immediately, and the transmission of an infectious agent (e.g., bacterium, virus, or prion) from a human remain to a living person can occur. A model used to understand this infection process is the “chain of infection.” Each link in the chain of infection must be present and it must occur in sequential order for an infection to occur. The links are: infectious agent, reservoir, portal of exit from the reservoir, mode of transmission, and portal of entry to a susceptible host.

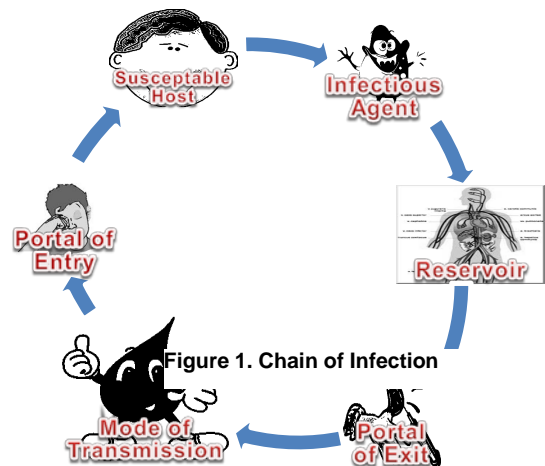


Figure 1. Chain of Infection

Infectious agent. First a pathogen must be present. Simply put, no pathogens, no infection. **Unfortunately, there is no way of rapidly confirming whether a human remain harbors pathogens such as HBV, HCV, or HIV.**

Reservoir. Second, the pathogens need a place where they can survive, grow, or multiply. The human body is a common reservoir for many human disease pathogens.

Portal of exit. Third, pathogens need a way out of the reservoir. Blood from a needlestick, excrement from the deceased, and other body fluids are ways pathogens are released from the body and introduced into the work environment.

Mode of transmission. Fourth, pathogens must have a way to move from the reservoir to the new host. The modes of transmission are: direct contact (touch); indirect contact with contaminated food, water, equipment and environmental surfaces; inhalation of contaminated air; ingestion of contaminated food and water; and vectors (insects, rodents, and other living creatures).

Portal of entry. Fifth, once the pathogens find their way out of the reservoir, they must find a way to enter the new host. This portal of entry can be the host's eyes, nose, mouth, airways, gastrointestinal tract, or breaks in the skin, such as an abrasion, cut, or puncture wound.

Susceptible host. Finally, the new host must be susceptible to the disease. Susceptibility is affected by a number of factors, including the number of bacteria or viruses present and the host's immune system's ability (both natural immunity and acquired immunity due to immunizations and use of prophylactic drugs) to defend against them.

Breaking the Chain of Infection

The following short list suggests ways personnel who handle human remains can break the chain of infection and stay healthy –

- Treat all body fluids, organs, and tissues as if they are infectious.
- Before beginning work, assess the potential for exposure and select the proper controls, safe work practices and personal protective equipment (PPE) to prevent exposures.
- Wear PPE (for example, gloves, masks, protective clothing, splash-resistant eyewear, and face shields) to avoid contact with blood and other potentially infectious materials (OPIM).
- Wear a respirator when exposure to an airborne infectious agent is possible.
- Practice good personal hygiene and avoid touching your eyes, nose, mouth, and skin.
- Wash hands with soap and water often and dry them thoroughly. Always wash hands with soap and water if contaminated with blood, OPIM or soiled with inorganic material. Always wash and dry hands after removing gloves. Use an alcohol-based hand rub (ABHR) to sanitize hands when soap and water are not available.
- As soon as possible following an occupational exposure, wash contaminated skin with soap and water, and flush blood and OPIM from the eyes, nose, and mouth with large amounts of running water. Use an eyewash station if available.
- Practice good housekeeping, wash and disinfect all work surfaces and reusable equipment, PPE, and vehicles used to transport human remains.
- Always handle sharp objects with care.
- Properly handle, store, and dispose of regulated medical waste (RMW).
- Immediately seek medical treatment for all injuries no matter how minor, and all exposures to blood and OPIM.
- Get plenty of rest, avoid stress, and eat properly to enhance the immune system's ability to fight infection and disease. Consume wholesome foods and beverages from approved sources.
- Attend training courses to learn how infectious pathogens are transmitted, the signs and symptoms of the subsequent diseases, and the ways to prevent infection.
- Get vaccinated with the HBV vaccine. Complete HBV series with a follow up titer.
- Keep your required immunizations current.
- Following these general safety measures and the more detailed guidance provided in this technical guide (TG 195A) will reduce the risk of infection and subsequent diseases listed in Table 1.

**TG 195A
Fact Sheet 2
Exposure Determination and Risk Management**

Purpose

This fact sheet describes the four key steps that Mortuary Affairs Commanders must take to protect personnel from infection –

- Determine potential for personnel exposure to blood and other potentially infectious materials (OPIM).
- Identify the hazards associated with personnel exposure to blood and OPIM.
- Assess the risks.
- Eliminate the hazards or reduce the risks to the lowest level possible.

The Occupational Safety and Health Administration’s (OSHA’s) process for conducting and documenting exposure determinations and the Army’s process for managing risk are two tools Commanders can use to determine potential for exposure and eliminate hazards and control risks.

Exposure determinations

Mortuary Affairs operations must comply with OSHA’s Bloodborne Pathogen Standard, 29 CFR 1910.1030, to prevent personnel exposure to blood and OPIM. OPIM includes: any unfixed human (living or dead) tissues or organs (except intact skin), semen, vaginal secretions, cerebrospinal (brain and spine) fluid, synovial (joints) fluid, pleural (lungs) fluid, pericardial (heart) fluid, peritoneal (abdominal cavity) fluid, amniotic (amniotic sac surrounding an unborn baby during pregnancy) fluid, any body fluid that is visibly contaminated with blood, and all body fluids in situations where it is difficult or impossible to differentiate between body fluids.

The OSHA requires all employers develop an Exposure Control Plan (ECP) when personnel perform jobs where they are reasonably expected to be exposed to blood and OPIM while they carry out their duties. The purpose of the ECP is to establish procedures that will eliminate or minimize personnel exposure to bloodborne pathogens. The ECP must identify two job groups: those jobs where **all** personnel performing them are expected to be exposed to blood and OPIM and those jobs where only **some** of the personnel performing them are likely to be exposed.

- Job classifications where all personnel are exposed. For example, all personnel assigned the Military Occupational Specialty (MOS) 92M, Mortuary Affairs Specialist, are potentially exposed to blood and OPIM; therefore, the ECP need only list the MOS 92M, Mortuary Affairs Specialist.
- Job classifications where only some of the assigned personnel have occupational exposure, then the ECP must list the job classification and the tasks that could result in exposure. Closely related tasks may be grouped under a single heading.

Example:

Job Classifications Where All Personnel are Exposed	Job Classifications Where Some Personnel are Exposed	
<u>Job Classification</u>	<u>Job Classification</u>	<u>Task</u>
Mortuary Affairs Specialist	Unit Supply Specialist	<ul style="list-style-type: none"> • Decontaminating equipment • Disposing of sharps • Cleaning up blood and OPIM spills
Laboratory Technician	Housekeeper	

The use of personal protective equipment (PPE) may not be considered when determining job classifications having potential for exposure to blood and OPIM for two reasons. **First**, PPE does not eliminate the hazard; therefore, PPE must always be used in conjunction with engineering and administrative controls and safe work practices. **Second**, PPE is not fail-safe. For example, exposure can occur when gloves tear or when blood or OPIM soaks through protective clothing and comes in contact with underlying clothing or skin.

Components of the ECP include engineering and work practice controls, PPE, housekeeping, containment and labeling. The ECP must be reviewed at least annually and updated anytime there is a change in work practices that could result in new occupational exposures.

Hazard versus risk

- What is a Hazard? A hazard is a condition with the potential to cause injury, illness, or death of personnel or damage to or loss of equipment or property.

- What is Risk? Risk is the chance or probability that a person will be harmed or experience an adverse health effect if exposed to a hazard. Risk can also be assigned to the probability that equipment or property will be damaged or lost.

The terms hazard and risk are often used interchangeably but this simple example explains the difference between the two. If there was a spill of water on the floor of a room then that water would present a slipping **hazard** to personnel passing through the room. If a physical barrier was used to prevent personnel access to the room, then the hazard (water on the floor) would remain though the **risk** (probability of an incident involving injury occurring and the severity of the injury) would be minimized.

Risk Management

The Army uses a 5-step cyclic risk management process to identify/eliminate hazards and minimize risk. This process is described in Army Techniques Publication (ATP) 5-19, Risk Management, 2014.

1. **Identify hazards.** A systematic approach works best to identify hazards. For example, job hazard analyses, periodic surveys, walk-around inspections, personnel interviews, and both formal and informal observations may be used to identify hazards in materials, equipment, and in the work environment. Hazard identification must be an ongoing process because despite efforts to eliminate existing hazards and prevent the introduction of new hazards, some hazards will persist, less familiar hazards will escape attention, and new hazards will be introduced as technology, work practices, or the work environment change. A word of caution: always use hazard identification to look for ways to make the workplace safer, not to assign blame.
2. **Assess the hazards.** Once a potential hazard is identified, determine the hazard's potential for occurring (probability) and its subsequent effects (severity).
3. **Determine level of risk.** A risk assessment is where the severity of the hazard and its potential outcomes are considered in conjunction with other factors including the level of exposure, the number of personnel exposed, and the risk of that harm being fulfilled. In addition, the risk assessment looks at what must be accomplished to eliminate or reduce the impact of the hazard. A good approach to conducting a risk assessment is to have personnel who are the most familiar with the job or task, review the process step-by-step and write down a description of each step. Personnel should review the job or task several times to be sure that nothing is missed. Finally, analyze each step to determine the impact of the potential hazard(s) and how they can be eliminated or reduced. It is important to ensure that the residual risk following implementation of control measures is "as low as is reasonably practicable (ALARP)," keeping in mind that the cost to reduce the risk must be balanced with the benefit gained.
4. **Develop controls and make risk decisions.** Once the source of the hazard has been identified, develop possible solutions to eliminate the hazard or minimize the risk. Consider the following –
 - Eliminate the hazard by substituting the hazard with a lesser one or outsourcing the process.
 - Use engineering controls – redesigning equipment or changing processes by placing a barrier between personnel and the hazard or isolating the hazard by restricting access.
 - Use administrative controls – reducing exposure to hazards through work practice controls, safe work practices, work schedules, improved education and training programs, and changes in human behavior.
 - Use PPE – using PPE when engineering and administrative controls, and work practice controls, and safe work practices do not eliminate the hazard.

The risk assessment should be documented, and the documentation should include the job or task, the hazard(s), the recommended controls, how the final decision may affect other activities in the workplace, whether or not any residual risk remains, and how residual risk will be managed.
5. **Implement controls.** Make the changes to eliminate the hazard(s) or to reduce risk once leadership approves the risk assessment. Use interim controls to manage risk to personnel when the final solutions cannot be implemented immediately.
6. **Supervise and evaluate.** The final step in the risk assessment process is continuing evaluation. Monitor, evaluate, and get feedback from personnel on the effectiveness of the controls used to make sure that they addressed the hazard and whether it is necessary to make additional modifications or improvements to protect personnel.

Begin the risk management process again. Risk assessment and risk management are ongoing processes.

TG 195A
Fact Sheet 3
Hand Hygiene and Universal Precautions

Hand hygiene is the single most important procedure for preventing the spread of infection. In addition to hand hygiene, Mortuary Affairs personnel must use universal precautions to significantly reduce the risk of contracting diseases that are transmitted through contact with blood, other potentially infectious materials (OPIM¹), feces and urine of human remains. Hand hygiene consists of washing hands with soap and water and drying hands thoroughly with disposable towels. Sanitizing hands with a waterless, alcohol-based hand rub (ABHR) is an alternative.

Hand washing

Frequent hand washing and good hand washing technique minimize the spread of pathogenic microorganisms that can cause infection. The primary goal of hand washing is to physically remove pathogens, not necessarily kill them. Vigorously rubbing all surfaces of lathered hands together suspends the pathogens, while rinsing the hands under a stream of water and the friction during drying mechanically removes them. Washing hands with antibacterial soaps has become increasingly popular in recent years; however, these soaps may not be any more effective in killing or removing pathogens than regular soap. Also, using antibacterial soaps may lead to development of bacteria that are resistant to the soap's antibacterial agents. Triclosan, the active ingredient in antibacterial soaps, may be linked to health issues such as hormone disruption and cancer.

Good hand washing technique requires washing hands with plain soap and water. Instructions for washing with soap and water are as follows –

- Wet hands with warm, running water and apply liquid soap or use a clean bar soap. Lather well.
- Rub hands vigorously together for at least 15 to 20 seconds (about the same time that it takes to sing "Happy Birthday" twice through).
- Scrub all surfaces, including the backs of hands, wrists, forearms, between the fingers, the cuticles and under fingernails.
- Rinse well.
- Rub the backs and the palms of hands with a clean disposable paper towel. Carefully dry all sides of each finger, spaces between the fingers, and thumbs. Discard the paper towel and repeat if necessary to ensure hands are thoroughly dry. Spend a total of about 20 seconds drying all the surfaces of hands and fingers while humming two more rounds of "Happy Birthday."
- Use the paper towel to turn off the faucet and open the door.
- Discard the paper towel in a waste receptacle.

Alcohol-based hand rubs (ABHRs)

ABHRs in gel form are an alternative to hand washing when soap and water are not available. Using ABHRs does not physically remove dirt, oils, blood and OPIM like proper washing with soap and water. They are, however, more effective than soap and water in killing pathogens, but still, they do not kill all of the pathogens. The CDC recommends choosing alcohol based products that contain at least 60 percent isopropyl or ethyl alcohol and encourages their use for sanitizing hands that are not visibly soiled. Commercially prepared ABHRs contain ingredients that help prevent skin dryness and irritation that may occur due to frequent hand washing. ABHRs should not be used beyond their expiration date because the active ingredients that provide the pathogen-killing action are reduced over time due to evaporation or chemical degradation. Antimicrobial wipes or pre-moistened towelettes (for example, baby wipes) are not as effective as washing hands with plain soap and water or ABHRs, and they may not be used as a substitute.

Instructions for using an ABHR –

- Apply about ½ teaspoon (about the size of a quarter) of the gel into the palm of the hand.

¹ OPIM include semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, peritoneal fluid, amniotic fluid, any body fluid that is visibly contaminated with blood, all body fluids in situations where it is difficult to impossible to differentiate between body fluids, and unfixed tissues (except intact skin) and organs from a human (living or dead).

- Rub hands together, covering all surfaces of hands and wrists with particular attention to the cuticles and between the fingers. Continue rubbing until hands are dry.
- Do not dry hands using a paper towel. Air drying is an essential part of proper usage of ABHRs.
- If hands are visibly dirty, wash with soap and water, if available, rather than using an ABHR.
- Some ABHR manufacturers recommend washing hands with plain soap and water after 5 to 10 uses of an ABHR.

Always wash hands –

- Whenever they are visibly soiled.
- Before and after removing gloves and other personal protective equipment (PPE). NOTE: Always remove contaminated PPE carefully to avoid contact with skin, mucous membranes, and underlying clothing. Gloves should always be the last piece of PPE removed, unless two pairs of gloves are worn. In that case the outer gloves are removed before the other PPE is removed. The second pair of gloves is removed after all other PPE is removed.
- Before inserting or removing contact lenses.
- Before eating, drinking, or using tobacco.
- Before and after treating wounds or cuts.
- After using the toilet.
- After coughing, sneezing, and using a handkerchief or disposable tissue.
- After touching human remains, blood, and OPIM.
- After touching animals (dead or alive) or animal waste.
- After handling or touching soiled and contaminated equipment and surfaces.
- After handling regulated medical waste (RMW) such as gauze or bandages that are saturated or dripping with human blood and solid waste (garbage).

Universal precautions

Universal precautions (UP) means treating all human blood and OPIM as if they are known to be infectious for the human immunodeficiency virus (HIV), hepatitis B virus (HBV), and other bloodborne pathogens. Essentially, UP are good hygiene habits, such as hand washing, wearing PPE, and correct handling of sharps to reduce the risk of exposure to blood and OPIM.

UP require –

- Wearing gloves when there is potential for touching any blood and OPIM and when handling items or touching surfaces contaminated with blood and OPIM. Wearing gloves does not eliminate the need for hand washing. Likewise, the use of hand washing does not eliminate the need to wear gloves.
- Wearing masks and splash-resistant eyewear or face shields to prevent exposure of mucous membranes of the mouth, nose, and eyes during procedures that are likely to generate splashes, splatters, and aerosol droplets of blood or OPIM.
- Wearing fluid-resistant protective clothing or aprons during procedures that are likely to generate splashes of blood or OPIM.
- Staying alert for sharp objects (for example, bones, broken glass, metal, knives), disposing of sharps properly, storing reusable sharps in a manner to prevent lacerations or puncture wounds, and using mechanical means to clean up broken glass and other sharps.
- Immediately seeking first aid or medical treatment following a blood or OPIM exposure.
- Immediately reporting all accidents, especially punctures or cuts and other exposures to blood or OPIM to the immediate supervisor and reporting to the supporting medical unit.

TG 195A
Fact Sheet 4
Work Practice Controls

Work practice controls are precautionary measures that reduce the likelihood of exposure to blood and other potentially infectious materials (OPIM) by altering the way a task or procedure is performed. Work practice controls are common sense, and include processes such as preplanning work, good housekeeping, and personal hygiene.

Hand hygiene and universal precautions (UP)

Use good hand washing techniques and follow UP. Wash hands with soap and water and dry them thoroughly. Use an alcohol-based hand rub (ABHR) to sanitize hands when soap and water are not available.

Personal Protective Equipment (PPE)

- Always wear the PPE that provides appropriate protection in exposure situations.
- Always inspect PPE for cracks, holes, or other damage before each use.
- Remove PPE and underlying clothing immediately or as soon as possible when it is penetrated by blood or OPIM and before leaving the work area.
- Repair or replace damaged PPE as needed to maintain its effectiveness.
- Clean and disinfect reusable PPE after each use. Place it in clean, sealable bags, and store it in a clean and sanitary manner.

Practice good personal hygiene

- Avoid touching skin, mouth, nose, eyes, or any skin lesions or cuts with contaminated gloves, fingers or other contaminated items or surfaces.
- Cover cuts, abrasions, or other skin lesions with an appropriate water-resistant bandage before putting on PPE.
- Never consume food, beverages, or medications, or apply cosmetics, lip balm, or handle contact lenses in areas where exposure to blood or OPIM could occur.
- Never store food, beverages, medications, cosmetics, lip balm, or contact lenses in an area where they or their containers may become contaminated with blood or OPIM.
- Avoid handling personal items, such as pens, keys, cell phones and watches that you plan on using outside the work area to prevent soiling and contamination. If required specific pens, notepads, and similar items required for use should be kept in the work area.

Contain and confine blood and OPIM

- Place human remains and disassociated portions in leak-proof human remains pouches (HRPs) as specified in Mortuary Affairs guidelines. If the outside of the HRP becomes contaminated with blood or OPIM, place the contaminated HRP inside a second, clean, leak-proof HRP.
- Avoid or minimize splashing, spattering, and generation of aerosols.

Manage sharps properly

- Be alert for sharp objects, such as sharp bones, broken glass, metal, knives, etc.
- Immediately place disposable sharps into an approved sharps container for disposal.
- Immediately place reusable sharps into a puncture-resistant container until they can be cleaned and disinfected. The reusable containers should be heavy plastic or metal and have rounded corners and joints to facilitate cleaning and disinfection.
- Use tongs or other devices to retrieve reusable sharps from the containers. Never reach into a container holding contaminated sharps.
- Always use mechanical means to clean up broken glass and other sharp objects.
- Follow unit procedures for disposal of regulated medical waste (RMW).

Protect and disinfect contaminated equipment and working surfaces

- Use protective covers on equipment (for example, computer key boards) and work surfaces that are difficult to clean and disinfect.
- Disinfect all interior and exterior surfaces of reusable equipment, regulated medical waste (RMW) containers, and carts between uses.
- Maintain a cleaning schedule, which requires the cleaning and disinfection of work and equipment surfaces –
 - After completion of procedures.
 - Immediately or as soon as possible when surfaces become visibly contaminated.
 - After any spill of blood or OPIM.
 - At the end of each work shift.

Clean up blood and OPIM spills

- Keep a commercial or locally assembled spill kit available. This kit should contain at a minimum –
 - One pair of splash-resistant eyewear
 - One disposable face mask (for example, a surgical mask) to protect against potential splashing or spattering
 - Several pairs of disposable latex or vinyl gloves or one pair of reusable polyvinyl chloride (PVC) gloves. Gloves should be in a variety of sizes from extra small to extra large.
 - One disposable plastic apron.
 - One pair of disposable shoe covers. Shoe covers should be sized to fit over military combat boots.
 - One head cover.
 - Absorbent disposable towels.
 - Disinfectant [and its Safety Data Sheet (SDS)].
 - Two red plastic bags with twist ties.
 - A scoop or a scraper.
 - Alcohol-based hand rub (ABHR).
- Wear appropriate PPE when cleaning up spills.
 - Wear disposable latex or reusable PVC or vinyl gloves.
 - Wear eye and face protection and a fluid-resistant gown if splashing is likely.
 - Wear shoe covers to protect shoes and prevent cross-contamination.
- Clean up spills immediately.
 - Remove visible material with absorbent towels and then clean the area with water and detergent.
 - Decontaminate the area using clean disposable towels and appropriate EPA-approved tuberculocidal disinfectant, such as a 1:100 solution of unscented household bleach and tap water. Wet the area thoroughly and allow it to air dry. If the surface is metallic, rinse thoroughly with clean drinking water.

Use chemicals safely

- Follow the manufacturers' directions on container warning labels and SDSs for safe storage, handling, and use along with the appropriate PPE.

Ergonomic considerations

- Have more than one person involved in lifting the human remains to reduce the potential for injury.
- Follow appropriate lifting techniques.
- Use mechanical lifts or other devices when available.

Supervisors must –

- Train personnel and oversee that they follow safe work practices.
- Define work area boundaries and require personnel to remove PPE before leaving the work area.
- Whenever possible, provide hand washing facilities stocked with soap, warm water, and disposable paper towels.
- Provide ABHRs when soap and water are not available.
- Train personnel to properly wash and dry their hands and/or properly use ABHRs.
- Instruct personnel to always wash hands after removing PPE and before leaving the work area.
- Provide all PPE that is expected to be needed. PPE must be readily accessible, appropriate for the specific task or procedure, available in the correct sizes, and durable under normal conditions of use. Hypoallergenic gloves, glove liners, powder-less gloves, or other similar alternatives must be readily accessible to personnel who are allergic to the gloves normally provided.
- Require personnel to wear PPE and to replace PPE as needed to maintain its effectiveness. Note: all respirators must be maintained and repaired by trained personnel, but some respirators must be maintained and repaired by trained and certified technicians [for example, a self-contained breathing apparatus (SCBA)].
- Maintain adequate supplies, such as RMW containers, laundry bags, disposable PPE, detergents, disinfectants, and spill clean-up materials. Make sure that they are readily available.
- Provide designated areas and containers for the storage of contaminated PPE and RMW, and permit only trained personnel to handle these containers.
- Make provisions for laundering contaminated clothing and for decontaminating PPE.
- Make provisions for washing and drying personal clothing, including uniforms contaminated with blood or OPIM, in a laundry which can handle contaminated medical laundry such as a hospital or military field laundry.

- Make provisions with the supporting medical unit for first-aid and medical treatment in case of injury, and report all incidents and exposures involving blood and OPIM.
- Provide a portable emergency eyewash device to completely flush the eyes. The devices should provide a 15-minute supply of continuous free-flowing water and allow the hands to remain free to hold the eyelids open to aid in the complete flushing of the eyes. Portable emergency eyewash devices are acceptable only if they meet these requirements. Follow the manufacturer's instructions for maintaining the emergency eye wash device. Water used in portable emergency eye wash stations must be potable and the water temperature must be tepid (60° - 100° F). Emergency eye wash devices must be protected from freezing.

TG 195A
Fact Sheet 5
Personal Protective Equipment

Personal protective equipment (PPE) program

The OSHA standards 29 CFR 1910.132-138 list the requirements for setting up and managing an effective PPE program. The program must include provisions for –

- Identifying hazards, determining the types of PPE to be worn by personnel, and informing personnel of the selection decisions.
- Selecting appropriate PPE.
- Educating and training personnel.
- Supervising personnel to ensure they use required PPE.

PPE must be worn in any situation where there is potential for exposure to blood and other potential infectious materials (OPIM). PPE must not allow blood and OPIM to pass through or reach the skin, eyes, mouth or underlying clothing under normal conditions of use. Supervisors should review each job and task with an industrial hygienist, safety professional, or other knowledgeable person to determine what PPE is needed to protect personnel from exposure to blood and OPIM. In general, PPE selection is based on –

- The type of work to be performed.
- The anticipated type of exposure.
- The anticipated quantity of blood or OPIM to be encountered.
- Other safety and health hazards that may pose a risk to personnel, such as exposure to sharps.
- Ease of use and comfort.
- Its compatibility with other PPE being used.
- Whether its use creates additional safety or health risks.
- Hypoallergenic gloves, glove liners, powder-less gloves, or other similar alternatives must be readily accessible to those personnel who are allergic to the gloves normally provided.

Once selected, the PPE should be included in standing operating procedures or other job task instructions and supervisors should enforce its use.

Education and training

- Personnel required to wear PPE and their supervisors must know –
 - Why and when it is necessary to wear PPE
 - What PPE must be worn
 - How to properly put on, remove, adjust, and wear their PPE
 - The limitations of the PPE
 - The proper care, maintenance, useful life, and disposal of the PPE
 - The procedures for replacing PPE when it becomes unserviceable
- Personnel and their supervisors must receive training –
 - Before performing any work requiring the use of PPE
 - When they do not demonstrate the required knowledge or skill in the use of their PPE
 - When there are changes in the identified hazards
 - When there are changes in the PPE to be used
- Personnel must demonstrate an understanding of the training provided and the ability to use PPE properly.
- Training must be documented.

TG 195A Fact Sheet 6

Recommended Personal Protective Equipment to Prevent Occupational Exposure to Blood and Other Potentially Infectious Materials

Personal protective equipment (PPE) is the last line of defense in preventing blood and other potentially infectious materials (OPIM) from coming in contact with work or street clothes and undergarments and coming into contact with skin, eyes, mouth and other mucous membranes. Employers must provide PPE at no cost to personnel who are likely to come in contact with blood or OPIM. Recommended PPE to protect personnel from blood and OPIM exposure include –

Hand Protection

- Wear fluid-resistant polyvinyl chloride (PVC), vinyl, nitrile, or nitrile gloves with cut-resistant Kevlar lining and coated slip resistant fingers and palms when handling human remains. Hypoallergenic gloves, glove liners, powder-less gloves, or other similar alternatives must be readily accessible to personnel who are allergic to the gloves normally provided.
- Wear structural fire-fighting gloves (29 CFR 1910.156, *Fire Brigades*) to provide insulation from heat and protection from physical hazards for situations where broken glass and sharp edges may be encountered, such as extricating human remains from wreckage.
- Select gloves that fit tightly around the wrists to prevent contamination of the hands for situations where large amounts of blood and OPIM are likely to be encountered.
- Always inspect gloves for tears and punctures before putting them on, and replace them immediately if they become punctured or torn.
- Remove contaminated gloves with care to avoid skin contact with the glove's exterior surface.
- Immediately wash hands with plain soap and water and thoroughly dry hands with a disposable paper towel or use an alcohol-based hand rub (ABHR) after removing gloves.

Eye and Face Protection

- Wear a surgical mask and a full face shield and splash-resistant safety glasses or goggles where there is potential for splashing or spattering of blood or other OPIM or the generation of airborne particles from dried blood.
- Wear splash-resistant safety glasses or goggles over eye glasses.

Head and Body Protection

- Wear fluid-resistant aprons, coveralls, and other protective clothing that will prevent blood and OPIM from penetrating and contaminating the PPE's inner surfaces and subsequently underlying clothing and skin.
- Wear a head cover when contact with large quantities of blood and OPIM is anticipated.
- Consider the need for hard hats when tasks involve recovery of human remains from wreckage.
- Keep an extra change of work clothing on hand at all times.

Foot Protection

- Wear water-resistant boots or appropriate shoe covers when there is potential for footwear to become grossly contaminated.
- Wear water-resistant boots with steel toes and insoles (not just steel shank) when tasks involve recovery of human remains from wreckage.
- Boot covers must be worn over suede tactical boots.

Respiratory Protection

- Wear appropriate respiratory protection when the Preventive Medicine Authority determines that there is potential for exposure to airborne pathogens, like *Mycobacterium tuberculosis* (MTB).
- When Mortuary Affairs personnel are required to wear respirators, a Respiratory Protection Program must be in place that addresses –
 - Written standing operating procedures for respirator selection and use.
 - Respirator selection based on the type and degree of the hazards present.
 - Medical evaluation of personnel required to wear respirators.
 - Fit testing procedures for all tight-fitting respirators.
 - Education and training.
 - Regular cleaning and disinfection of respirators.
 - Proper storage of respirators.
 - Respirator maintenance, inspection, repair, and disposal.
 - Air quality, quantity, and flow of breathing air for atmospheric respirators.

- Surveillance of work conditions and degree of exposure.
- Respiratory Protection Program evaluation.

The following table lists various tasks performed by Mortuary Affairs or other personnel and the types of PPE that should be worn to prevent exposure to blood and OPIM when performing these tasks.

Table 2. Tasks or Activities and Required PPE

Task or Activity	Gloves	Eyewear Goggles/ Face Shield	Surgical Mask¹	Apron/ Protective Clothing	Head Cover	Shoe/ Boot Cover or Rubber Boots
Extricating human remains from wreckage	Yes	Yes ²	Yes	Yes	Yes ³	Yes
Extricating personal effects from wreckage	Yes	Yes ²	Yes	Yes	Yes ³	Yes
Handling human remains	Yes	Yes	Yes	Yes	No ^{4,5}	Yes
Handling human remains contained in a Human Remains Pouch (HRP)	Yes	No	No	Yes	No	No
Handling contaminated clothing and personal effects	Yes	No ⁴	No ⁴	Yes	No ⁴	No ⁴
Collecting blood, body fluids, tissues, etc.	Yes	Yes	Yes	Yes	Yes	Yes
X-raying human remains contained in a HRP	Yes	No	No	Yes	No	No
Cleaning Mobile Integrated Remains Collection System (MIRCS) or work area floors	Yes	No ⁴	No ⁴	Yes	No	No
Cleaning MIRCS or work area instruments/equipment	Yes	Yes	Yes	Yes	No	No
Cleaning MIRCS or work area tables and surfaces	Yes	Yes	Yes	Yes	No	No
Disposing of regulated medical waste (RMW)	Yes	No	No	No ⁵	No	No

¹ Surgical masks are not respirators, unless they are jointly approved as a N95 respirator by NIOSH and FDA.

² Should be both splash and impact protective.

³ Hardhats and impact resistant eyewear may be required for extraction from wreckage.

⁴ Unless splashing is likely or a mist/aerosol/particulate can be generated.

⁵ Unless soiling is likely.

TG 195A
Fact Sheet 7
Handling Contaminated Personal Protective Equipment

Contaminated personal protective equipment (PPE) and clothing must be handled properly to protect personnel from occupational exposure to blood and other potentially infectious materials (OPIM) and to prevent the spread of contamination within the work environment.

Proper handling procedures

- Never wear contaminated PPE and clothing outside of the work area.
- Remove and replace PPE and underlying clothing as soon as possible when they become damaged, heavily soiled, or penetrated by blood or OPIM.
- Remove contaminated PPE and clothing in a manner to avoid contact with skin, mucous membranes, and underlying clothing.
- Do not remove protective gloves until other PPE is removed and placed in appropriate container.
- Place contaminated, disposable PPE and clothing that is saturated, dripping, or caked with blood into a RMW container.
- Place contaminated, reusable PPE and clothing into leak-resistant bags or containers that are either color-coded red or labeled with a fluorescent orange or orange-red biohazard warning symbol immediately upon removing them.
- Always wash hands after removing PPE and clothing and before leaving the work area.
- Do not reuse disposable gloves.
- Wear protective gloves and other appropriate PPE when handling, cleaning and disinfecting contaminated PPE.
- Never wash contaminated clothing with personal laundry. Instead place it in a designated container for washing by a commercial laundering facility. In a field environment, contaminated clothing should be laundered using the same equipment, chemicals and water temperature as used for contaminated medical laundry.
- Bags with contaminated clothing must be clearly labeled to alert and protect laundry personnel.
- If commercial or Army field laundry services are not available, follow the manufacturer's instructions for cleaning and disinfecting reusable PPE and clothing. If the manufacturer's instructions are not available, start with a cold water rinse cycle to remove blood and OPIM, then wash and dry PPE and clothing. Use the longest heavy duty cycle and the highest temperature consistent with clothing laundry instructions. For low-temperature washing, use chemicals suitable for low temperature washing at the proper concentrations. Rinse in warm water and then dry PPE and clothing thoroughly.
- If reusable respirators are used, follow the manufacturer's instructions or the guidance in OSHA 29 CFR 1910.134, Appendix B-2 to clean and disinfect respirators.
- Use an EPA-registered disinfectant to decontaminate reusable gloves, splash-resistant eyewear, face shields, and similar PPE. Follow the manufacturer's recommendation for disinfectant concentrations and contact times.
- Brush scrub contaminated boots and leather goods with soap and hot water.
- Store cleaned and disinfected PPE in a clean location and in keeping with the PPE manufacturer's instructions. If possible PPE should be stored in covered containers or sealed plastic bags to minimize recontamination.

Supervisors must –

- Define work area boundaries. Use colored warning tape or paint and require personnel to remove PPE before leaving the work area.
- Provide designated areas and clearly identified containers for the storage of contaminated PPE and regulated medical waste (RMW), and permit only trained personnel to handle them.
- Make provisions for laundering reusable contaminated clothing and for decontaminating reusable PPE.
- Maintain adequate supplies, such as RMW containers, laundry bags, disposable PPE, detergents, disinfectants, etc., and make sure that they are readily available.

The illustrations and directions provided on the back of this page show proper procedures for putting on and removing PPE and clothing.

Donning a Protective Gown



- Select appropriate type and size
- Opening is in the back
- Secure at neck and waist
- If gown is too small, use two gowns
 - Gown #1 ties in front
 - Gown #2 ties in back

Removing a Protective Gown



- Unfasten ties
- Peel gown away from neck and shoulder
- Turn contaminated outside toward the inside
- Fold or roll into a bundle
- Place in laundry bag or discard

Donning a Surgical Mask

- Place over nose, mouth, and chin
- Fit flexible nose piece over nose bridge
- Secure on head with ties or elastic
- Adjust to fit



Removing a Surgical Mask



- Untie the bottom, then untie the top tie
- Remove from face
- Discard

Donning Eye and Face Protection



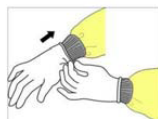
- Position goggles over eyes and secure to the head using the ear pieces or headband
- Position face shield over face and secure on brow with headband
- Adjust to fit comfortably

Removing Eye and Face Protection



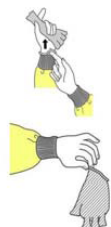
- Grasp ear or head pieces with ungloved hands
- Lift away from face
- Place in designated receptacle for processing or disposal

Donning Don Gloves



- Don gloves last
- Select correct type and size
- Insert hands into gloves
- Extend gloves over protective gown cuffs

Removing Gloves



- Grasp outside edge near wrist
- Peel away from hand, turning glove inside-out
- Hold in opposite gloved hand
- Slide ungloved finger under the wriths of the remaining glove
- Peel off from inside, creating a bag for both gloves
- Discard

Donning a Particulate Respirator



- Select a fit tested respirator
- Place over nose, mouth, and chin
- Fit flexible nose piece over nose bridge
- Secure on head with elastic
- Adjust to fit
- Perform a fit check
 - Inhale – respirator should collapse
 - Exhale – check around face for leakage

Removing a Particulate Respirator



- Lift the bottom elastic over your head first
- Then lift off the top elastic
- Discard

Illustrations courtesy of CDC

**TG 195A
Fact Sheet 8
Warning Labels and Signs**

Warning labels and signs are required to identify the actual or potential presence of a biological hazard and to identify equipment, containers, rooms, etc., that contain or that are contaminated with bloodborne pathogens such as hepatitis B virus (HBV), hepatitis C virus (HCV) and human immunodeficiency virus (HIV). All containers used to store contaminated items, such as soiled linens, personal protective equipment (PPE), and regulated medical waste (RMW), must be placed in a color-coded (red) bags or containers or containers labeled with the biohazard symbol (Figure 2). Entrances to the main RMW storage area must be marked with the words “Regulated Medical Waste” and the biohazard symbol. Other information may need to be added to meet local or state requirements, or host country Final Governing Standards (FGS).



Figure 2. Biohazard Symbol
Occupational Safety and Health Administration (OSHA)
29 CFR 1910.1030

The following table provides guidance for labeling containers of contaminated materials.

Table 3. Contaminated Materials Labeling Requirements.

Item	Biohazard Symbol		Red
	X	or	
Sharps Container	X	or	X
RMW bag ²			X
RMW disposal container	X	or	
Reusable contaminated instruments container	X	or	X
Individual specimen containers that are placed inside a larger container that is labeled or red in color	X ¹	or	X
Specimens and RMW shipped to another facility	X	or	X
Contaminated laundry	X ¹	or	X ¹
Contaminated equipment requiring service	X ³		

Source: Department of Labor, OSHA. Occupational Exposure to Bloodborne Pathogens: Precautions for Emergency Responders. (OSHA 3150), Washington, D.C. GPO 1992.

¹ Alternative labeling or color coding is sufficient if it permits all personnel to recognize the containers as requiring compliance with universal precautions. Personnel must know the specific use of the container based on the color of the container.

² Bags and containers used for shipment must be marked IAW 49 CFR 173.197. Contact the Preventive Medicine Activity for assistance.

³ Requires a label indicating where the contamination exists.

TG 195A
Fact Sheet 9
Regulated Medical Waste

Regulated medical waste (RMW). RMW is waste that is potentially capable of causing disease in man and may pose a risk to both personal and community health if not handled or treated properly. These wastes may also be called infectious waste, biohazardous waste, clinical waste, biomedical waste, or medical waste. RMW includes –

- Liquid or semi-liquid blood or other potentially infectious materials (OPIM).
- Contaminated items that would release blood or OPIM if compressed.
- Items that are caked with dried blood or OPIM and are capable of releasing these materials during handling.
- Used and unused sharps (such as needles and scalpel blades).
- Pathological and microbiological wastes containing blood or OPIM.

U.S. Army Medical Command (MEDCOM) Regulation 40-35, Management of Regulated Medical Waste and state, local and host nation Final Governing Standards (FGS) provide a detailed description of RMW.

Safety precautions for handling RMW include –

- Wear appropriate gloves when handling RMW waste containers or bags.
- Segregate RMW from general trash at its point of origin. Items such as disposable personal protective equipment (PPE) that are contaminated with blood and OPIM and which would release these substances if compressed and items caked with dried blood or OPIM and that are capable of releasing these materials during handling are considered RMW.
- Place RMW in red bags or containers lined with a red bag. Label the outside of the container with the biohazard symbol.
- Place disposable sharps in a sealable, puncture-resistant, leak-proof container.
- Replace sharps containers when they are $\frac{3}{4}$ full.
- Place blood-soaked, dripping, or blood-caked disposable PPE and waste materials into leak-proof plastic bags or containers.
- Close and seal bags and containers holding RMW before removal or replacement to prevent spillage or protrusion of their contents during handling, transport, or storage while waiting final disposal.
- Place RMW bags or containers in secondary bags or containers when contamination of outside surfaces occurs or when there is potential for leakage.
- Avoid excessive rough handling to prevent rupture of bags or containers holding RMW. Never throw bags containing RMW into carts or dumpsters.
- Never place RMW in a trash compactor or in any other way attempt to compact or crush RMW.
- Carry sealed bags by their necks and away from the body.
- Store RMW in a secure, clean, pest-free (for example, free of insects, rodents, and animals) area. Identify the storage area with the word “Regulated Medical Waste” in English and in the host country’s language along with the international biohazard symbol. Check the host country’s FGS for additional requirements.
- Always check local, state, and FGS for additional requirements. In the event of conflict, always follow the most stringent requirements.

Transportation of RMW

RMW is considered a hazardous material (HAZMAT) and must meet all hazardous materials transportation requirements including UN packaging, marking, labeling, and shipping papers requirements. Personnel involved in the preparation, movement, and handling of these materials must receive general awareness, function specific, safety, and security training at a supervisory level within 90 days of employment. (Untrained personnel must be supervised until trained.) Only DOD personnel formally trained per Defense Transportation Regulation (DTR) 4500.9-R, Part II, Chapter 204 and appointed in writing by their Supervisor or Activity Commander may sign shipping papers for medical waste. Additionally, all drivers must have driver’s training and comply with AR 600-55, 49 CFR, Defense Transportation Regulations (DTR) 4500.9-R, DoD 4500.36, and all applicable National and International transportation regulations.

RMW may be transported in military, government, or contractor vehicles. RMW must be secured to prevent excessive movement and cannot be transported in the same vehicle with food items. Vehicles used to transport RMW must be cleaned and disinfected before being used for any other purpose. A spill kit must be readily available to decontaminate any surfaces in the event of a leak or spill.

RMW Bags and Shipping Containers

Inner packaging used to transport RMW must meet the Department of Transportation (DOT) requirements of 49 Code of Federal Regulation (CFR) Sections 173.134 and 173.197(e) for tear and impact resistance. The bags must be marked and certified by the manufacturer to meet the 165 g Impact Strength American Society for Testing and Materials (ASTM) D 1709-01 and 480 g Tear Strength ASTM D 1922-00a standards. The bags must be durably marked or tagged with the name and location of the offeror. Liquids must be in rigid inner packaging and sharps must be in sharps containers.

RMW outer shipping containers must comply with National and International transportation standards. Shipments within the U.S. must comply with the DOT 49 CFR as well as State and local requirements. International shipments must comply with Host Nation and International transport regulations. All shipments require United Nations specification packaging and must be properly marked and labeled in accordance with transportation standards. Shipping papers completed in accordance with National and International transportation standards MUST accompany the shipment. Contact Preventive Medicine or Logistics/Supply for assistance in procuring the required RMW bags, shipping containers, markings and labels. Always check local, State and Host Nation standards for additional marking and labeling requirements.

Treatment and Disposal of RMW

Follow MEDCOM Reg. 40-35, local, and state regulatory requirements for RMW generated in CONUS, Alaska, Hawaii, and U.S. territories. For RMW generated OCONUS, MEDCOM Reg. 40-35 and FGS standards must be followed. Where the FGS does not exist, the Overseas Environmental Baseline Guidance Document, DOD 4715.05-G, must be followed. Guidance for RMW management in deployed and field settings is provided in Technical Manual 3-34.56, Waste Management for Deployed Forces. In case of conflicting requirements follow the most stringent requirements.

TG 195A
Fact Sheet 10
Tuberculosis

Tuberculosis infection

Tuberculosis (TB) is an infection caused by the *Mycobacterium tuberculosis* (MTB) bacterium. These bacteria usually attack the lungs, but they can also damage other parts of the body. TB is primarily an airborne disease. Mortuary Affairs personnel may be exposed to MTB when handling a human remains having TB at the time of death and air is expelled through the remains' respiratory tract and mouth. The *Clinical Anatomy* journal recently reported that TB can remain viable in unembalmed human remains up to 36 days after death.

Having TB infection is different than having TB disease. An infected person has MTB bacteria in his body; however, he is not sick because his body's immune system stops the bacteria from growing and they become inactive. This is called latent TB infection. People with latent TB infection have no symptoms and cannot spread the infection to others. Most people who have TB infection never develop TB disease; however, some people develop TB disease soon after becoming infected (within weeks) before their immune system can fight the TB bacteria, while other people may get sick years later when their immune system becomes weak for various reasons. Once a person is infected with TB, the chance of developing TB disease is higher if the person –

- Has human immunodeficiency virus (HIV) infection.
- Has been recently infected with MTB (in the last 2 years).
- Has other health problems, like diabetes, that make it hard for the body to fight the bacteria.
- Abuses alcohol or uses illegal drugs.
- Was not treated correctly for TB infection in the past.

There are two kinds of tests that are used to detect TB bacteria in the body: the TB skin test (TST) and TB blood tests. These tests can be given by the local medical or preventive medicine authorities. Persons with a positive reaction to either of the tests are given other tests to see if they have latent TB infection or TB disease. In certain areas of the world where TB is common, people are vaccinated with Bacille Calmette-Guérin (BCG). Persons with BCG immunizations can have false positive skin tests. These individuals should be referred to the supporting medical unit.

Tuberculosis disease

A person with TB disease is sick, and if not properly treated, can spread the infection to other people that they come in close contact with. Symptoms of TB disease include –

- A bad cough that lasts 3 weeks or longer.
- Pain in the chest.
- Coughing up blood or sputum.
- Weakness or fatigue.
- Weight loss.
- No appetite.
- Chills.
- Fever.
- Sweating at night.

Most individuals with TB disease can be cured with drugs. A person with TB disease must continually take the prescribed medication for about nine months. However, some people may require a year or more for successful treatment. If a person stops taking the medicine before completing treatment, the bacteria may come back and be even more resistant to the drugs used to treat TB, causing multi-drug resistant tuberculosis (MDR-TB) which is much harder to treat.

Precautions to prevent infection

Personnel should take the following precautions when local medical or preventive medicine authorities determine that Mortuary Affairs personnel are at risk of exposure to MTB or other airborne droplet transmitted diseases –

- Attend local TB information and training programs.
- Wear a National Institute for Occupational Safety and Health– (NIOSH–) approved particulate respirator certified under 42 Code of Federal Regulations Part 84. Non-powered particulate filters classified as N95, N99, N100, R95, R99, R100, P95, P99, and P100 all meet the NIOSH criteria for TB protection. Filters classified as N95 are the minimum acceptable level when personnel perform high-hazard procedures. If a powered air purifying respirator (PAPR) is used, then high-efficiency particulate air (HEPA) filters must be used. In addition, whenever personnel wear respirators to protect themselves against MTB, a complete respirator protection program compliant with 29 CFR 1910.134 and AR 11-34 must be in place.
- Control the release of infectious aerosols by –
 - Temporarily placing a surgical mask or disposable cloth over the mouth and nose of the human remains to contain any aerosols that may be generated when the remains are moved.
 - Placing human remains and disassociated portions in leak-proof human remains pouches (HRPs).
 - Keeping human remains in refrigerated holding rooms under negative air pressure in relation to adjacent areas.
- Manage waste by coordinating with the theater surgeon to determine whether or not non-bloody wastes that are suspected of being contaminated with MTB (or any other highly contagious disease agent) should be isolated and/or managed as regulated medical waste (RMW). The decision is based on the nature of the disease, prevalence, the method of transmission, and other risks.
- Participate in the medical surveillance program. The medical surveillance program includes provisions for –
 - Conducting screening for TB by the TST per DA PAM 40-11. The local Preventive Medicine Authority may increase the frequency of TB screening based on the results of a TB risk assessment.
 - Keeping records of personnel exposure to MTB, skin tests, medical evaluations and treatment.
- Always report all injuries and exposures to immediate supervisors and the supporting medical unit.

TG 195A
Fact Sheet 11
Selecting Chemical Disinfectants

Environmental cleaning and disinfecting with an appropriate disinfectant is an important part of breaking the chain of infection. Consider the following when selecting a disinfectant –

- Is the disinfectant effective against the known or suspected microorganisms that are contaminating the work surfaces or equipment?
- What precautions and personal protective equipment (PPE) are needed to protect personnel who apply the disinfectant?
- What precautions must be taken to protect the environment?

Note: This fact sheet does not address the selection and use of chemical sterilants since it is highly unlikely that Mortuary Affairs equipment includes critical medical instruments or objects that are designed to be introduced into a living person's blood stream or come into contact with tissues through broken skin.

General cleaning strategies

- For housekeeping purposes, use low- or intermediate-level Environmental Protection Agency- (EPA-) registered hospital detergents and disinfectants and disinfectants with a tuberculocidal claim from EPA Registered-Disinfectants List B or List E. The lists of EPA registered disinfectants, including List B and List E, are available online at <http://www.epa.gov/oppad001/chemregindex.htm>.
- Clean non-critical equipment with a detergent/disinfectant and if needed followed by an application of a low- or intermediate-level disinfectant. The disinfectant should be an EPA-registered hospital disinfectant with or without a tuberculocidal claim, depending on the nature of the surface and the degree of contamination.
- Clean non-critical equipment and surfaces (for example, floors, walls, table tops) located in areas where there is exposure to blood and other potentially infectious materials (OPIM) using a one-step process and an EPA-registered hospital detergent/disinfectant designed for general housekeeping purposes.
- Clean administrative offices with detergent and water.
- Clean-up and decontaminate blood and other potentially infectious materials (OPIM) spills promptly using an EPA-registered disinfectant from the EPA Registered-Disinfectant Lists D or E that have specific label claims for human immunodeficiency virus (HIV) or hepatitis B virus (HBV). If using a chlorine-based product, an EPA-registered sodium hypochlorite product is preferred, but if such products are not available, use a generic sodium hypochlorite solution such as household chlorine bleach.
- Follow the detergent/disinfectant manufacturer's directions on the chemical warning label and safety data sheet (SDS) for the safe handling, storage, use, dilution rates if required, and recommended contact times.
- Contact the nearest military treatment facility or Preventive Medicine Activity for assistance in selecting and purchasing appropriate detergents/disinfectants. This is mandatory in overseas operations where EPA listed products are not available. The Command Surgeon must be contacted to determine which if any local detergents/disinfectants are used and at what concentration.

Low- and intermediate-level disinfectants

Quaternary ammonium compounds

- Characteristics:
 - Low-level disinfectants
 - Active ingredient: benzalkonium chloride
 - Acceptable to control vegetative bacteria and non-lipid containing viruses
 - Relatively nontoxic
 - Antibacterial compounds with detergent properties
 - Act as deodorizers

- Effective at temperatures at 212°F (100°C)
- Stable in storage
- Neutralized by soap
- Effectiveness is reduced by organic materials
- Applications: commonly used for general housekeeping, disinfecting environmental surfaces and cleaning blood and OPIM spills.
- Contraindication: not to be used for cleaning instruments.
- Disinfectant concentration: 0.1% to 0.2% concentration of active ingredients.
- Health hazards: nasal irritant and can promote contact dermatitis.
- PPE: polyvinyl chloride (PVC) gloves.

Phenolic compounds

- Characteristics:
 - Low-/intermediate-level disinfectants
 - Active ingredient: phenol, 2-phenylphenol or thymol
 - Effective against vegetative bacteria, including *Mycobacterium tuberculosis*, fungi and lipid-containing viruses
 - Not readily neutralized by organic materials
 - Commercially available with added detergents to provide one-step cleaning and disinfecting
 - Stable at dilutions used for disinfection
 - Relatively inexpensive
- Application: Disinfection of equipment and work surfaces.
- Concentration: 1% to 2% concentration of active ingredients.
- Shelf-life: greater than 1 week.
- Health hazards: toxic and somewhat corrosive.
- PPE: Splash-proof safety goggles and butyl rubber or neoprene gloves. Note: Butyl rubber gloves are preferred.

Iodophor germicidal detergent solutions

- Characteristics:
 - Low-/intermediate-level disinfectants
 - Active ingredient: iodine
 - Effective against vegetative bacteria, viruses, Gram-negative and Gram-positive organisms, and tubercle bacilli
 - General disinfectant when mixed with other substances
 - Corrosive to metals unless combined with inhibitors
 - Effectiveness can be reduced by organic materials
 - Can vaporize at 120°F to 125°F
 - Should not be used in hot water
 - Stable in storage if kept cool and tightly covered
 - Still active if the solution is brown or yellow
- Application:
 - Disinfecting hard and environmental surfaces. Note: Iodine is a dye and it may permanently stain certain surfaces, such as wood, linoleum, and concrete. It may also change the skin color of human remains.
 - Commonly used as a skin disinfectant
- Concentration: 2% concentration of active ingredients.
- Shelf-life: greater than 1 week.
- Health hazards:
 - Some individuals are allergic to iodophors. An iodophor is an antiseptic or disinfectant that combines iodine with another agent, such as a detergent.
 - Prolonged contact with liquid solutions may lead to skin burns.
- PPE: none required.

Ethyl or isopropyl alcohol

- Characteristics:
 - Intermediate-level disinfectant
 - Variable effectiveness against some bacteria and fungi
 - Active ingredients: 70% ethyl alcohol or 85% isopropyl alcohol
- Application: general surface disinfectant.
- Concentration:
 - 70% concentration of active ingredients for ethyl alcohol
 - 85% concentration of active ingredients for isopropyl alcohol
- Shelf-life: greater than 1 week for both ethyl and isopropyl alcohol.
- Health hazards: both ethyl and isopropyl alcohol are eye and mucous membrane irritants.
- PPE: Splash-proof safety goggles, face shields, and nitrile rubber gloves. Note: neoprene or Teflon gloves may also be used for isopropyl alcohol, and butyl rubber or neoprene gloves may be used for ethyl alcohol.

Sodium hypochlorite

- Characteristics:
 - Intermediate-level disinfectant
 - Active ingredient: 5.25% active sodium hypochlorite
 - Universally active against all microorganisms, has a biocidal effect on *Mycobacterium tuberculosis*, *Staphylococcus aureus* and other vegetative bacteria, and HIV
 - Corrosive to metals
 - Neutralizes rapidly in the presence of organic matter
- Application: disinfecting environmental surfaces and cleaning blood and OPIM spills.
- Concentration: 3% concentration of active ingredients. A 1:100 dilution [500 parts per million (PPM) of bleach (approximately 1/2 cup of bleach to 1 gallon of tap water)] effectively disinfects blood. Gross contamination must be cleaned with soap and water before applying the bleach solution. Contact time for bleach is generally considered the time it takes the solution to air dry. Metallic surfaces must be thoroughly rinsed to prevent corrosion. Diluted bleach solutions should always be stored in a plastic container similar to the container used by the manufacturer, and the container must be labeled according to the local Hazard Communication Program requirements.
- Shelf-life: less than 1 week.
- Health-hazards: irritant to skin and mucous membranes
- PPE: splash-proof safety goggles and vinyl or latex gloves for repeated or prolonged use.

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Fact Sheet 12
Safe Use of Chemical Disinfectants

Hand contact with environmental surfaces and equipment contaminated with blood and other potentially infectious materials (OPIM), enteric (intestinal) viruses, and other pathogens increases the risk of cross contamination and potential for infection. Regular cleaning and disinfecting of non-critical equipment and environmental surfaces is an important way to break the chain of infection. It is important to know that all disinfectants are hazardous chemicals, and that some disinfectants are more toxic than others. Therefore, all disinfectants must be handled, stored, and disposed of properly to avoid harm to personnel and the environment. This fact sheet talks about the basic terminology related to disinfection procedures that personnel must know, as well as the safe work practices that will reduce their risk of exposure to infectious pathogens and hazardous chemicals.

Terminology

- Antiseptics are chemicals that are designed to destroy microorganisms on skin or living tissue.
- Cleaning is a process of physically removing all visible and non-visible contamination from a surface using soap and water, detergent and water, or enzymes. Cleaning includes the removal of blood, body fluids, and other biological material from a surface. The act of cleaning is more important than the cleaning product used; it is the friction created by the physical action of cleaning that actually removes infectious agents from surfaces. Cleaning should always be performed from the “cleanest” (least contaminated) area to the “dirtiest” (most contaminated) area to prevent the spread of contaminants. Cleaning must always be completed before disinfection.
- Contaminated means that an instrument, device, or surface was in contact with pathogenic microorganisms that are capable of producing infection or disease.
- Decontamination means destroying or removing pathogens on instruments, devices, or environmental surfaces to the point where they are safe to handle, use, or dispose. Decontamination can range from cleaning to disinfection or sterilization.
- Detergents are cleaning agents that help to remove dirt and grease from porous surfaces (such as fabrics, clothes, non-treated wood) and/or non-porous surfaces (such as metals, plastics, and treated wood). All detergents are made principally of soaps or surfactants.
- Disinfectants are substances that are applied to non-living objects to destroy microorganisms that are living on the objects. Disinfection does not necessarily kill all microorganisms, especially resistant bacterial spores.
- Disinfection falls between cleaning and sterilization. This process eliminates nearly all pathogens, but not necessarily all microbiological life. There are three levels of disinfection based on the types of microorganisms killed –
 - High-level disinfection kills all microorganisms except for high numbers of bacterial spores. Formaldehyde, glutaraldehyde, ortho-phthalaldehyde, hydrogen peroxide, and peracetic acid are some examples of high-level disinfectants. These disinfectants are typically used to decontaminate medical devices such as respiratory therapy equipment and endoscopes that come in contact with a patient’s mucous membranes or non-intact skin.
 - Intermediate-level disinfection kills most bacteria, including mycobacteria and viruses. Examples of intermediate-level disinfectants include alcohols, hypochlorites, and iodophor disinfectants. These disinfectants are used to decontaminate less intrusive patient care equipment such as oral or rectal thermometers.
 - Low-level disinfection kills most viruses and fungi. Phenolic disinfectants and quarternary ammonium compounds are examples of low-level disinfectants. Low-level disinfectants are typically used to clean environmental surfaces and non-critical equipment, but cannot be relied on to kill resistant microorganisms such as *Multidrug-Resistant Tuberculosis (MDR-TB)* or bacterial spores.
- Pathogens are infectious agents otherwise known as germs or microorganisms such as a virus, bacterium, prion, or fungus that causes disease.
- Sterilants are agents that destroy microorganisms. Sterilization destroys all forms of life and is achieved by steam, dry heat, ethylene oxide gas, gamma radiation, hydrogen peroxide, and peracetic acid-based

compounds. Sterilization is used to decontaminate critical medical instruments or objects that are introduced into a living patient's bloodstream or come into contact with tissues through broken skin.

Safe work practices

- Supervisors must develop written procedures and a routine cleaning schedule. At a minimum, surfaces must be cleaned and decontaminated with an appropriate disinfectant after completion of procedures, immediately or as soon as possible when visibly contaminated, after a blood or OPIM spill, and at the end of the work shift if the surface may have become contaminated following the last cleaning and disinfection. In addition, surfaces with high hand contact (for example, door knobs and light switches) should be cleaned and disinfected more frequently than those with minimal hand contact (for example, floors and ceilings).
- Use protective coverings such as plastic wrap, aluminum foil, or imperviously-backed absorbent paper to cover equipment and environmental surfaces that are difficult to clean and decontaminate. Remove and replace coverings when they become visibly contaminated or at the end of the work shift if they may have become contaminated during the shift. This is especially true for computer keyboards, and other equipment which cannot be easily contaminated.
- Choose the disinfectant that will achieve the appropriate level of disinfection (low, intermediate, high).
- Always read the manufacturer's label and safety data sheets (SDSs) to learn the appropriate personal protective equipment (PPE) to wear when working with disinfectants and the precautions for their safe use, storage, and disposal.
- Always read the label on the disinfectant container before use to make sure that the disinfectant is designed to kill the contaminating microorganism, and that it is compatible with the surface of the equipment being cleaned and disinfected. Also, learn the manufacturer's instructions for the expiration times after mixing, the proper dilution rate, and the contact time.
- Never mix disinfectants together or mix disinfectants with bleach. Together, they may create a toxic gas, for example, mixing ammonia with sodium hypochlorite can produce toxic chloramine fumes.
- Follow the manufacturer's directions for the lowest concentration level to do the job.
- Post procedures for using disinfectants at the dispensing station.
- When used, calibrate dispensing equipment carefully and often (at least each time a new container is opened). Water may be used to calibrate dispensers to eliminate waste. In addition, check for leaks and malfunctions.
- Mix only the amount of disinfectant solution needed to do the job.
- Label transfer containers that will be used by multiple workers or remain in the work area beyond the work shift with—
 - The manufacturer's or distributor's name, address and telephone number
 - Product name or identifier
 - Signal word
 - Hazard statement(s)
 - Precautionary statement(s)
 - Pictogram(s)
 - Name, date, and initials of the person who diluted/mixed the solution and its shelf life or use by date.
- Clean surfaces with water, soap or detergent, and mechanical action (scrubbing) to remove all visible dirt and organic matter before using a disinfectant. In many cases, surface cleaning may be the highest level of cleaning necessary.
- Follow the manufacturer's recommendations for disinfectant application and surface contact time.
- Avoid spills and keep disinfectant containers closed when not in use.
- Contact the local Preventive Medicine Activity for procedures for properly disposing of disinfectants.

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Fact Sheet 13
Proper Mixing and Use of Chlorine Bleach for Disinfecting

Background.

- Chlorine is a very effective disinfectant. This Fact Sheet covers uses, proper concentrations and mixing instructions for household type chlorine bleach.
- Sodium hypochlorite is the active ingredient in chlorine bleach. Sodium hypochlorite is an oxidizing agent. When sodium hypochlorite comes in contact with viruses, bacteria, mold or fungi, it oxidizes molecules in the cells of the germs and kills them.
- Scientists also believe that the hypochlorous acid that forms when sodium hypochlorite is added to water can break down the cell walls of some germs. The hypochlorous acid also seems to be able to cause certain proteins to build up in bacteria, making their cells unable to function. Non-chlorine bleaches that are oxidizing agents can also act as disinfectants on some surfaces, but they are less potent than chlorine bleach. When used at proper concentration and contact time chlorine bleach is an inexpensive, practical and effective disinfectant.

Use instruction.

- Household bleach comes in a variety of strengths. Regular bleach contains from 5.25 to 6% active ingredients. Manufacturers also make a variety of concentrated bleaches. The Clorox® Company SDS lists concentrations up to 10%. Most concentrated bleaches are 8.25%. The mixing instructions on this fact sheet are provided for the most common chlorine concentrations. <http://www.thecloroxcompany.com.pdf>

What is the Target Sanitizing Solution Parts Per Million (ppm)?

- The target concentration is the amount of active ingredient in solution that will kill the bacteria and viruses on the surface. These concentrations were determined by laboratory testing and practical experience.

How are the target solutions prepared from difference concentrations of household bleaches?

- Disinfecting hard surfaces with standard sodium hypochlorite bleach require contact between the chlorine bleach and any bacteria on the surface.
- Household bleach 5.25% is equal to approximately 50,000 parts per million (ppm) available chlorine by weight. If you want a 5,000 ppm solution, the bleach is diluted 1 part bleach in 9 parts of water. A 500 ppm solution is a dilution of the bleach to 1% or 1 part bleach in 99 parts water. A problem you have to deal with is that the concentration of household bleach varies by manufacturer and some of the chlorine in the bleach is lost when the containers are left open.

How do you get the target concentration of chlorine?

- Public Health Command has done the math for you. Mixing instructions to obtain the target strength starting with the common product strengths are listed on Table 4. You have to know the volume of the container that will be used to mix the bleach. Table 4 uses common volume measurements such as teaspoons, tablespoons, quarts, gallons and liters.
- Because of the variability of chlorine, you should check the actual chlorine concentration in the disinfectant solution you are using. The easiest and least expensive way to do this is with a chemical test strip. This is a paper which has a chemical that reacts with chlorine. The paper changes color and the color change is related to the concentration of chlorine in the solution. These test kits are available on the internet. Test strips are designed to measure chlorine in specific ranges. Be sure you buy test strips for the concentration of chlorine you want to measure.

What are minimum contact times?

- Contact times are a measure of how long a surface must be kept wet with the disinfectant solution for the chlorine to kill the harmful bacteria or viruses. Contact times vary based on the microorganism of concern, the surface you are trying to disinfect and the amount of dirt and soils on the surface.
 - Household chlorine bleach prepared at a minimum concentration of 500 parts per million (ppm) is effective against methicillin-resistant *Staphylococcus aureus* (MRSA). Surfaces must be cleaned prior to disinfection, using an appropriate detergent to remove soil residues. Disinfected surfaces must have a minimum wet contact time of 1 minute for proper disinfection and surfaces must be air dried.

Additional Guidance:

- Products that do not bear an EPA or equivalent national standard marking (e.g., EU marking on foreign brands) recognized by the medical authority may not be used until reviewed and approved by the medical authority or Command Surgeon.
- Approved disinfection products shall have bactericidal, fungicidal and virucidal activity. Germicides should be formulated with mycobactericidal properties to ensure effectiveness since mycobacteria are the most difficult to destroy.
- Personnel are required to follow the manufacturers' mixing instruction and disinfection procedure (e.g., contact time and clear water rinse following disinfection) provided on the product label.
 - In many cases regarding bleach products, the manufacturer's mixing formula (or product to water ratio) will yield a bleach solution concentration that far exceeds the minimum standards prescribed by the Army. In some cases the resulting concentration will be in excess of 500 parts per million (ppm). Table 4 provides the recommended mixing formulas for two base-strength bleach products. Adhering to the prescribed mixing formula will yield the minimum desired disinfection concentration.
 - Chlorine test paper or a test kit, appropriate for measuring the desired range of bleach concentration (e.g., 0 – 500 ppm) shall be available and used each time a bleach sanitizing solution is prepared to verify the desired sanitizing concentration is attained.

Table 4. Bleach solution preparation and application

Target Sanitizing Solution (ppm) ¹	Bleach Product Strength ^{2, 3, 4}		Minimum Wet Contact Time ⁵	Surfaces ^{6, 7}
	5.25 – 6 %	8.25%		
50	1 teaspoon per 1 gallon water -- [5 milliliters (ml) per 3.8 liters (L) water]	½ teaspoon (2.3 ml) per 1 gallon water (3.8 L) water	1 minute	Floors; walls; sinks; showers; toilets; fixtures; furniture; toys; food contact surfaces
	1 Tablespoon (15 ml) per 4 gallons (15.2 L) water	2 teaspoon (10 ml) per 4 gallons (15.2 L) water		
100	½ Tablespoon (7 ml) per 1 gallon (3.8 L) water	1 teaspoon (5 ml) per 1 gallon (3.8 L) water	30 seconds	
500	1 Tablespoon (15 ml) per 1 quart (0.95 L) water	2 teaspoon (10 ml) per 1 quart (0.95 L) water	1 minute	Surfaces subject to contamination from bodily excretions; MRSA control
	¼ cup (59 ml) per 1 gallon (3.8 L) water	1½ tablespoons (22 ml) per 1 gallon (3.8 L) water		
1000	1/3 cup (79 ml) per 1 gallon (3.8 L) water	3 tablespoons (44 ml) per 1 gallon (3.8 L) water	10 minutes	Norovirus Response (non-porous surfaces): tile floors; counter-tops; sinks; toilets
5000	1.5 cups (355 ml) per 1 gallon (3.8 L) water	1 cup (237 ml) per 1 gallon (3.8 L) water	10 minutes	Norovirus Response: porous surfaces; wooden floors

¹ 1 part per million (ppm) is equal to 1 milligram per liter (mg/L).
² Only use unscented, household, liquid bleach; gel-type products and industrial-strength products (e.g., greater than 8.25% sodium hypochlorite) are not authorized for preparing disinfection solutions.
³ Prescribed mixing formula assumes the lowest base strength of bleach product (specified in the column) is used. Products containing a higher base strength will result in a bleach solution concentration that is higher than the specified target for the formula; use test paper to verify final concentration of prepared solution.
⁴ Some products that are not EPA-registered, to include some generic and foreign brands, may contain a base sodium hypochlorite strength that is less than 5%. Containers of products that have been previously opened and stored for 30 days or more may also have a degraded base strength that is less than 5%.
⁵ Surface must remain wet for specified time in order to achieve desired disinfection.
⁶ Bleach will seriously damage some textiles and other vulnerable surfaces (e.g., metal).
⁷ This table is not intended to provide a comprehensive list of surfaces in which recommended bleach concentrations should be applied. Refer to specific chapters within this technical guide and other publications developed for emergency response disinfection procedures.

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Fact Sheet 14
Cleaning and Disinfecting Unique Work Environments

Cleaning and decontaminating surfaces and equipment in unique work environments such as transport vehicles and refrigeration units constitutes an important element in preventing the spread of infections among Mortuary Affairs personnel. Pathogenic microorganisms (disease causing germs) can live on contaminated surfaces and equipment for extended periods. The most common means of infection transmission occurs when an individual's gloved or ungloved hands come in contact with a contaminated surface and he then touches his eyes, mouth, nose or unprotected skin. He can also spread contamination to other work surfaces and equipment in this manner. Without clear written policies and procedures for the care, cleaning and disinfection of these unique work environments, personnel are at increased risk for exposure to bloodborne and other pathogenic microorganisms.

Transport vehicles

Equipment Design. Wherever possible, use vehicles that comply with the following design criteria –

- Surfaces are free of sharp projections, edges, and corners. Hangers and supports for equipment are mounted as flush as possible with the surrounding surfaces.
- Interior surfaces, including interiors of storage compartments, are designed for ease of cleaning and disinfection –
 - Seats and other surfaces are nonabsorbent, heavy vinyl and washable. Alternative design is the seats are removable and the seat covers can be commercially washed and disinfected.
 - Horizontal surfaces are seamless and impermeable to contaminants
 - Joints and corners where vertical surfaces meet horizontal surfaces, are sealed (for example, floor and wall joints are sealed and bordered with corrosion resistant cove molding or the floor covering extends at least 3" up the sidewalls)
 - All potentially exposed surfaces can be reached for cleaning and decontamination
 - All high-touch areas (for example, switches, indicators, control devices, and handles) and horizontal and vertical surfaces are compatible with soap, water, and EPA-registered hospital disinfectants
 - Equipment and adequate space are available to prevent injury and cross-contamination of surfaces, equipment, and supplies –
 - Enclosed compartments and drawers are provided to store clean supplies (for example, disinfectants, disposable towels, and trash bags) and personal protective equipment (PPE)
 - Designated areas and appropriate receptacles are provided for collecting and storing general trash, sharps, regulated medical waste (RMW) and contaminated PPE, textiles and linens

Transport vehicles should be properly cleaned after every transport and at the end of the work shift. To facilitate cleaning, use protective coverings such as plastic wrap, aluminum foil, or imperviously-backed absorbent paper to cover equipment and environmental surfaces that are difficult to clean and decontaminate. Remove and replace coverings when they become visibly contaminated or at the end of the work shift if they have become contaminated during the shift. Avoid contaminating environmental surfaces in the driver's compartment (for example, steering wheels, light switches, and gear shifts). Should the surfaces in the driver's compartment become contaminated, clean and disinfect them according to the vehicle manufacturer's recommendations.

Personnel assigned to clean and disinfect transport vehicles must be trained consistent with the Occupational Safety and Health Administration's (OSHA's) Bloodborne Pathogens standard. They must know the local disinfection protocols and safe work practices including, but not limited to universal precautions, hand-hygiene, cleaning and disinfection protocols, and the disposal of RMW. In addition, personnel must wear PPE to include gloves, splash-resistant safety goggles, and protective gowns before starting the cleaning/disinfecting process. A full-face shield or a surgical mask, head cover, and shoe covers must be worn when splashing is likely or when a mist/aerosol/particulate can be generated.

Cleaning and decontaminating procedures –

- Remove heavily contaminated equipment and place it in a designated area where contaminants can be hosed off into a containment area. Some equipment items may take extensive cleaning and decontamination efforts. These items must be red-bagged or labeled with the biohazard symbol until cleaning and decontamination is complete.
- Immediately remove patient restraint straps (litter, gurney) and equipment bags, when they are contaminated with blood or other potentially infectious materials (OPIM) and place them into a red

biohazard bag. Wash these items with an appropriate detergent according to the manufacturer's instructions and disinfect. Air or machine dry as recommended.

- Clean (scrub with soap or detergent) blood and OPIM from equipment and surfaces before applying disinfectants. Wipe off all visible debris and soil with disposable towels. Place the towels into a red or properly marked biohazard bag or container if blood-soaked.
- Select an appropriate EPA-registered hospital disinfectant. Check to make sure that the disinfectant has not exceeded its shelf-life. Follow the manufacturer's instructions and recommendations for the proper dilution rate and the contact time.
- Clean and disinfect all areas, equipment, and compartment surfaces that have been visibly soiled. Disinfect all touch surfaces of the compartment, such as the handles, seats, and bars.
- Inspect all surfaces to ensure that no visible signs of debris, soil or contaminants are present. If such signs still exist, then repeat the cleaning/decontamination process.
- Decontaminate the radio equipment by spraying disinfectant on a towel and wiping down the portable radio and microphones/mobile radio.
- Aircraft cleaning crews must make sure that all cleaning materials meet the required specifications for aerospace standards.

Refrigerated Food Military-Owned Demountable Container (MILVAN)

The same model refrigerated MILVANs are issued to and used by field food service operations, field medical units, and Mortuary Affairs units. In an extreme emergency, refrigerated MILVANs assigned to food service units or medical units can be temporarily used to hold human remains. Under no circumstances should human remains and food be stored together in a MILVAN.

The following procedures apply to food refrigerators that were used during an emergency to hold human remains or items contaminated with blood or other potentially infectious materials (OPIM) and are now being returned to service with field food service units.

Prior to returning a refrigerated MILVAN to use for food it must be –

- Free of all visible soil.
- Free of blood or body fluids.
- Free of all pathogenic and most non-pathogenic bacteria, molds and spores.
- Free of odors that remain from use as a morgue or holding OPIM.
- The most difficult task is to eliminate any odors. Odors may remain even after thorough cleaning and disinfection.
- Personnel assigned to clean and disinfect MILVANs must be trained consistent with the OSHA's Bloodborne Pathogens standard, and they must know the local disinfection protocols and safe work practices including, but not limited to universal precautions, hand-hygiene, and the disposal of regulated medical waste (RMW). In addition, personnel must wear personal protective equipment (PPE) to include gloves, splash-resistant safety goggles, protective gowns/ coveralls, and chemical resistant safety boots, before starting the cleaning/disinfecting process. A surgical mask or a full-face shield, head cover, and shoe covers must be worn when splashing is likely or when a mist/aerosol/particulate can be generated. Adequate ventilation must be provided in confined areas.

Cleaning and disinfecting procedures –

- Shut off the refrigeration unit.
- Power-wash the inside and the outside of the refrigerated MILVAN using a powered sprayer with detergent. Clean the inside of the refrigerated MILVAN, paying particular attention to its joints and seams. Work from the ceiling to walls and finally the floor, then power-wash the doors. After washing, rinse all surfaces with warm water.
- Cleaning must include the condenser, cooling fins, and if present, any air ducts or fans both inside and outside the refrigerated space.
- Steam cleaning is an acceptable alternative to power washing, provided additive-free steam is used.
- After the refrigerated MILVAN has been power washed and is clean, disinfect all surfaces including any air vents and internal cooling fins using a 200 ppm chlorine solution. This solution is made by adding 1 ounce (2 tablespoons) of 5.25% - 6%, unscented, household bleach in 2 gallons of water. A stainless steel sprayer is ideal for spraying the chlorine solution on the ceiling, walls and floor. The surfaces should be thoroughly wet and allowed to air dry.
- NOTE: The condenser coils should be power washed with detergent only and not disinfected with the chlorine solution, as the chlorine solution is too corrosive to the soft metal.

- If the floors are removable, remove the flooring and then power wash or steam clean and sanitize them outdoors using the procedures described above. The permanent floor must be cleaned and sanitized following procedures as outlined above.
- Allow the MILVAN to thoroughly air dry before closing. When completely dry, close the MILVAN and keep it closed for a minimum of 24 hours.
- After 24 hours, open the MILVAN and determine if any residual odors are detected. A “disinterested officer” should determine if there are any residual odors. If odors persist, after cleaning and disinfection, serious consideration should be given NOT to return the MILVAN for use as a food refrigerator.
- The container is tested for bacteria (such as for total coliform and e. coli bacteria) before using it for food storage.
- Personal Protective Equipment (PPE). Contact the installation industrial hygienist for PPE requirements for personnel working inside the MILVAN, including respiratory protection, head cover, coveralls, gloves and boots.
- Retrograde Wash downs. Additionally, at the completion of operations outside the continental United States, retrograde wash downs are necessary in order to meet U.S. Department of Agriculture requirements to safeguard United States agriculture and natural resources from risks associated with the entry, establishment, or spread of animal/plant pests and noxious weeds. The MILVANs should be cleaned to be free of visible dirt, insect infestation, or prohibited plants or animal material. Performance of these wash downs is addressed in the Armed Forces Pest Management Board Technical Guide No. 3 — Retrograde Wash downs: Cleaning and Inspection Procedures (March 2008).
http://www.dodinvasives.org/AFPMB_Retrograde_Washdowns.pdf

Mobile Integrated Remains Collection System (MIRCS) and Multi-Temp Refrigerated Container System (MTRCS). Both the MIRCS and MTRCS should be cleaned and disinfected using the same procedures used to clean and disinfect refrigerated MILVANS.

Canvas and Web Straps.

Canvas and other types of web straps are extremely difficult to decontaminate. Personnel performing cleaning and disinfection procedures must wear PPE including impervious or water resistant outer garments, full apron, eye protection and gloves. Unroll the straps completely and place them in a washbasin. Mix a slurry of laundry detergent and warm water. Use bottled water or follow the directions for disinfecting water at <http://water.epa.gov/drink/emmerprep> when bottled water is unavailable. The slurry should have the consistency of a thin, sloppy mud. Scrub the straps using a brush designated to clean the straps. Rinse the straps in clean water, and then soak them in clean, warm water for 10 minutes. After soaking, decontaminate the canvas and web straps in boiling water for 3 minutes. Rinse and air dry the straps after removing them from the boiling water.

Chlorine bleach and other chemical disinfectants which are listed on the EPA list G, Registered Products Effective Against Norovirus can be used to disinfect canvas and web straps. However, determine whether a specific chemical disinfectant will affect the strength of the straps prior to using the disinfectant (see FM 3-5/MCWP 3-37.3). Examine the straps for structural problems and staining before returning them to service. Replace straps if blood stains cannot be removed.

TG 195A
Fact Sheet 15
Blood-Soaked OCIE including Body Armor

1. Purpose.

This fact sheet provides medical guidance on managing blood-soaked Organizational Clothing and Individual Equipment (OCIE) including uniforms, boots, helmets, Modular Lightweight Load-carrying Equipment (MOLLE), and Interceptor Body Armor (IBA)-Improved Outer Tactical Vest (IOTV), a newer improved form of the Outer Tactical Vest (OTV) along with its associated components (soft armor panel inserts, four ballistic plate inserts, collar, and groin protectors). The Modular Body Armor Vest (MBAV) and Soldier Plate Carrier System (SPCS) used by Special Forces and Airborne units if blood-soaked are included. This paper addresses the blood-soaked nature of the items, not their final disposition. Serviceability and final disposition of all OCIE must occur through military logistics channels consistent with defense logistics policies and procedures.

2. Background. OCIE is issued to military personnel at the Central Issuing Facility (CIF). Some items like the IOTV, MBAV, and SPCS body armor and their components were introduced in recent years to save more lives in combat. They provide greater coverage and protection against high-velocity and fragmented munitions than their predecessor OTV. The MOLLE which consists of a backpack, vest, system accessories, and pouches (e.g. radio, magazine, flashlight), is worn in conjunction with body armor to carry essential military gear in direct support of tactical operations. The MOLLE replaces the older bulky 'snap-and-click' systems with the pouch attachment ladder system (PALS) making it easily adaptable to any tactical environment. Use and proper maintenance of these items determines their reliability. Military logisticians determine their serviceability. Should injury or death occur from ballistic interactions during combat, blood-soaked OCIE, blood-soaked body armor, and blood-soaked MOLLE including helmets may result.

3. Infectious Nature. MA personnel should consult with their local medical staff or preventive medicine personnel and follow all infection control procedures to minimize their exposure to blood and other potentially infectious material (OPIM) when handling blood-soaked items. OCIE, helmets, IOTV, MBAV, SPCS, and their components that are blood-soaked (saturated or dripping with blood) or blood-caked (caked with dried blood) which have not been laundered or treated in anyway may contain infectious agents. Mortuary Affairs (MA) and medical personnel removing these items from wounded personnel should follow 29 CFR 1910.1030 and exercise universal precautions when handling blood-soaked items. Some infectious agents like Ebola pose a greater risk of infection than others due to their pathogenicity. Adherence to strict infection control guidelines including use of personal protective equipment (PPE) and procedures is a necessity to prevent the risk of exposure and spread of the highly infectious agent.

4. Disinfection/Decontamination. MA personnel should not remove gear (including body armor and helmets), clothing, or other personal effects except to perform life-saving measures or for safety and/or security reasons. MA personnel should always practice hand hygiene, especially when their hands are visibly soiled; after removing personal protective equipment (PPE); before eating, drinking, or using tobacco products; and before and after treating cuts and wounds.

a. OCIE (minus body armor) – Once removed, OCIE is managed following personal effects guidelines. If directed, wash OCIE with soap and hot water. Use color safe, non-chlorine bleach to remove blood-stains. Use of chlorine bleach is prohibited unless Command-directed or the individual was exposed to highly infectious agent. Destruction is required for all articles of clothing which cannot be made presentable due to bloodstains. Disposal of OCIE exposed to highly infectious agents should adhere to Command-directed waste management guidelines for highly infectious wastes.

b. IOTV, MBAV, SPCS - Body armor of deceased persons should be turned in to the nearest mortuary affairs collection point for forward shipment to Dover Port Mortuary. Body armor from wounded personnel should be tracked and monitored and shipped to the Joint Personal Effects Depot (JPED) for assessment and management. Do not wash the blood-soaked IOTV, MBAV, SPCS nor their components. Should laundering be directed after assessment, personnel should remove all ballistic panels and wipe off the IOTV with a damp cloth, then lay it flat out of sunlight to dry at room temperature. Do not put IOTV or other body armor in a washer or in a dryer. Washing the IOTV cover with a soft bristle brush and mild detergent to remove heavily soiled dirt, perspiration, body oil/fluid, blood, or perspiration is acceptable provided personnel do not use simple green. Exercise universal precautions and hand hygiene when cleaning blood-soaked body armor. Repeat steps for each component of the IOTV. IOTV must be reassembled for turn-in. Never submerge the ballistic panels for the OTV or IOTV in water or wash them in washing machines, car washes, or any other industrial wash facility using a large volume of water as it could severely damage the ballistic panels of the IOTV and compromise its ballistic

integrity. Damage could result in a Statement of Charges. Destruction of blood-soaked IOTV as special medical waste is acceptable if directed by a medical officer and its disposition is documented and signed by the medical authority IAW with AR 735-5.

c. Advanced Combat Helmet (ACH) – If personnel are deceased, keep ACH on remains and transport the remains to a mortuary affairs collection point for processing and onward movement to the Dover Port Mortuary. If ACH is removed from the living service member, adhere to personal effects and investigational protocols. If laundering is directed, remove the ACH pads from the ACH helmet and clean the inside of the ACH with a soft bristle brush. Be careful not to scrub off the Velcro patches inside the helmet.

5. Management of Items from Highly Infectious Persons. Persons who are positive with a highly infectious disease like Ebola Virus Disease (EVD) should not be touched, handled, moved, or transported until handlers are in full PPE. Extreme caution is necessary to ensure bodily fluids and other potentially infectious materials (OPIM) do not transfer from the infected person to the protected handler. Removal of OCIE, IOTV, ACH, and other load-carrying equipment may present an unnecessary contact hazard and put others who are unprotected at risk of exposure. Strict adherence to Command policies and guidance on managing highly infectious persons and equipment is a must.

6. Logistical Requirements. All blood-soaked OCIE, ACH, and body armor must be tracked and monitored for accountability purposes. AR 735-5 provides guidance in Chapter 14 on damaged organizational clothing items and equipment. Unit commanders (or their designated representative) must write a damage statement and return the property with statement to the CIF or issue point for exchange. In cases of severe contamination, a medical officer may authorize destruction of OCIE, ACH, IOTV, or related equipment or material. Logistics personnel will determine serviceability of OCIE, IOTV, MBAV, SPCS, and their components. .

7. Psychological Considerations. The management of blood-soaked body armor, OCIE and other personal equipment raises important psychological issues for two identifiable groups. The first group includes personnel assigned to clean and disinfect such gear. These personnel may experience negative psychological after effects similar to those associated with body recovery and body handling. This may be particularly true if the equipment still has visible human tissue attached. USAPHC TG 320 provides guidance that is likely to be beneficial to such personnel. The second group includes personnel to whom the cleaned and decontaminated equipment is reissued. The presence of blood stains that cannot be removed is likely to be demoralizing, may lead to symptoms of psychological stress, and may cause soldiers to lose confidence in protective equipment. Whenever possible, body armor and other personal equipment that, after having been cleaned and disinfected, continues to show visual staining by blood should not be reissued. Follow directives for management and disposition.

8. References and Trademarks.

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- b. AR 735-5, Policies and Procedures for Property Accountability, 28 February 2005.
- c. TM 10-8470-203-10, Body Armor Set, Individual Countermine (Basic
- d. TM 10-8470-204-10, Advanced Combat Helmet (ACH)
- e. U.S. Army Medical Command (MEDCOM) Regulation 40-35, Management of Regulated Medical Waste, 15 July 2014.
- f. USAPHC TG 320, Guide to Coping with Deployment and Combat Stress, January 2011.

TG 195A
Fact Sheet 16
Handling Loads Ergonomically

Moving Heavy Loads

Manually moving heavy items is very stressful and is a common cause of injuries to muscles, tendons and joints. In general, lifting and lowering objects from and to the floor increases the risk of back injury and carrying or handling objects above shoulder height increases risk of both back and shoulder injuries. Injuries may be recognized immediately by a sudden twinge of pain; however, more often they occur over time after numerous episodes of small, non-painful micro-traumas that suddenly manifest as pain during a relatively simple maneuver such as tying ones shoes.

Mortuary Affairs Ergonomic Risks

Mortuary Affairs Specialists (92Ms) perform many duties that require heavy lifting including moving remains in filled transfer cases that weigh as much as 550 pounds. Shouldering human remains transfer cases (HRTCs) stresses the upper extremities, increasing risk of injury to the shoulders, arms and forearms. Ergonomic injury may result from forceful and/or repetitive motions or harsh pressure from resting a heavy HRTC on the shoulders. Personnel can reduce their chances of injury by identifying high risk activities and actively intervening to reduce those risks.

Mortuary Affairs Ergonomic Risk Management

Considering the types of activities that 92Ms perform, injury risk may be controlled by doing the following:

- Holding loads close to the body
- Keeping postures close to neutral
- Distributing loads equally amongst team members
- Balancing and stabilizing container contents

Hold loads close.

By holding objects closer to their bodies, lifters reduce compression forces in their backs and lower injury risks. For example, if an object is held half the distance away from the body (i.e., hands are located 8 inches away from the body instead of 16 inches) it cuts the forces generated by the back muscles by fifty percent, reduces compression forces inside the discs by the same measure, and improves safety.

Keep postures close to neutral

Neutral posture is the position near the midpoint of the range of motion for any given joint. It can be thought of as a balance point where tissues on either side are neither stretched nor compressed. Keeping joints neutral tends to minimize physical stress and reduce injury risk.

For the low back, posture is neutral when the spine is curved slightly inward with the trunk erect (not bent forward, backward or to either side). Soldiers should maintain awareness of postures and try to keep their low backs as close to this neutral posture as a task allows. While handling loads they should contract their back muscles to stabilize themselves properly so that motion occurs primarily at the hip and knee joints. The following exercise will help train back muscles to stabilize properly:

- Stand straight with your arms relaxed at your sides
- Visualize a rod passing horizontally through both hip bones. Imagine that rod as the pivot point for pelvic motion

- Rotate your pelvis by rolling your buttocks behind and bowing your back inward
- Hold that position for 3 - 5 seconds and contract the back muscles forcefully. Focus on how your muscles feel when you hold that contraction
- Relax your back muscles and allow your pelvis to return to the start position
- Repeat for five or six repetitions

Application: In the beginning, practice this exercise without handling a load. Next, practice it while lifting light loads resting on a platform one to two feet above the floor to a waist-high shelf. With repetition you can train your back muscles to stabilize your back when you are required to move heavier objects and objects resting on the floor.

Distribute loads equally between team members

It is important to distribute loads properly to control injury. Two strategies help accomplish this goal: Load balancing and effort balancing.

Balance loads

Load balancing entails arranging the contents of containers so that weight is distributed equally with respect to centers of gravity. All items should be secured in a manner to prevent shifting during movement so that lifters handle a consistent and equal weight share. Sudden unexpected weight shifts have been known to cause injury.

Balance efforts

It is important to balance the forces equally between all members of the lifting team. Since each member of the lifting team is connected to the object excess forces directed to that object are transmitted to other team members. Reaction to unanticipated forces or failure to coordinate efforts of the team can result in strain or injury. The following recommendations can improve team effort coordination and reduce injury risk:

- Select team members with similar heights and muscular strength capacities
- Assign no more lifters than the size of the object will accommodate
- Use lifting devices to handle items, whenever permissible
- Designate a lifting team leader to provide audible or non-verbal signals to coordinate team actions

Unusually harsh working conditions

The following recommendations may help 92Ms working in harsh conditions that include performing sustained recovery operations, responding to mass casualty events or working in chemical, biological, radiological and nuclear (CBRN) environments.

- Remember to adjust work-rest cycles in accordance with TB MED 507 when performing physically demanding work in harsh environments that require sustained exertions or working in temperate climates, especially while wearing body armor or Mission Oriented Protective Posture (MOPP) gear or EPA/OSHA Level A, B, C, or D personal protective equipment.
- Decontaminating decedents may be very physically demanding. Static forces transferred to the operator's body while holding decedents increase injury risk. Whenever possible, it is preferred that decontamination be a team effort to share the tasks of holding and performing decontamination procedures.

**TG 195A
Fact Sheet 17
Medical Considerations for Personnel**

Medical surveillance for individuals

There is no special medical surveillance technique or schedule for Mortuary Affairs personnel. Standard medical surveillance practices include –

- Screening for tuberculosis (TB) by the tuberculin skin test (TST) per DA PAM 40-11. The local Preventive Medicine Authority may increase the screening frequency based on the incidence of endemic TB in the geographical location.
- Annual periodic health assessment per AR 40-501, 10-10a, Sep 2008.
- Evaluation and clearance to wear respiratory protection per Occupational Safety and Health Administration (OSHA) 29 CFR 1910.134 and AR 11-34 (for personnel required to wear a respirator).

Immunizations are the vaccines (shots) that protect personnel from serious diseases such as hepatitis B (HBV) and tetanus. Medical surveillance reduces the risk of exposure to hazards by identifying early on any hazards that could increase the risk of infectious disease.

Standard immunizations

Immunizations for Mortuary Affairs personnel should include at a minimum –

- Those specified for active-duty personnel in AR 40-562.
- Hepatitis A
- Hepatitis B
- Tetanus

Other immunizations

The Preventive Medicine Authority or Command Surgeon may determine the need for other immunizations –

- When applicable for the mission or theater of operations.
- When unusual circumstances or threats suggest that personnel may be exposed to biological (infectious) hazards for which standard immunizations provide inadequate protection.

Note: Before modifying the standard immunization regimen, the local Preventive Medicine Authority may contact the following to clarify the nature and the level of the infectious threat and available preventive medicine measures –

Chief, Operational Medicine Division
US Army Research Institute of Infectious Diseases
Fort Detrick, MD 21702-5011
Commercial (301) 619-4996, DSN 343-4996
After Duty Hours (240) 688-7694

Disease Control Consultant
Office of the Surgeon General
ATTN: HQDA (DASG-PPM-NC)
5109 Leesburg Pike
Falls Church, VA 22041-3258
Commercial (703) 681-3160, DSN 761-3160

TG 195A
Fact Sheet 18

Record Keeping: Injury and Exposure Incidents and Education and Training

Injury and exposure incidents

Supervisor's must –

- Investigate all accidents and exposure incidents, including any cuts or needlesticks from contaminated sharps.
- Document –
 - The route of exposure (for example, inhalation, skin contact, mucous membrane contact, cuts, punctures, etc.
 - The circumstances under which the exposure occurred (for example, the engineering controls in use at the time of the incident, work practices followed, a description of any devices in use, personal protective equipment (PPE) worn, the work area location, procedures being performed, and training level/status of personnel involved in the incident.
- Evaluate the effectiveness of the policies and control measures in place for both injury and exposure incidents.
- Establish corrective actions and monitor the effectiveness of those actions.

Personnel must –

- Start self-care immediately by –
 - Flushing blood and other potentially infectious material (OPIM) from the eyes, nose, and mouth with large amounts of running water. Use an eyewash station if available.
 - Allowing puncture wounds to bleed and then washing the wound with soap and water.
 - Washing blood and OPIM off the skin with soap and water, especially when skin rashes, cuts, or scrapes are present.
- Immediately seek first aid or medical treatment following an injury or exposure, including any cuts or needlesticks from contaminated sharps or punctures from sharp objects.
- Report all injuries and exposures to their immediate supervisor and the supporting medical unit. The supporting medical unit will help supervisors access the U.S. Combat Readiness Center's/Safety Center's online accident reporting tool or submit a completed DA Form 285, U.S. Army Accident Report Form for military personnel.

Education and training records

Bloodborne Pathogens. Mortuary Affairs personnel who have occupational exposure to blood and other potentially infectious materials (OPIM) must attend education and training that explains the –

- Occupational Safety and Health Administration's (OSHA's) Bloodborne Pathogens Standard, 29 Code of Federal Regulations (CFR) 1910.1030.
- Exposure control plan and instructions on how to obtain a written copy of the plan.
- Basic incident and prevalence, modes of transmission, and symptoms of bloodborne diseases.
- Criteria for the recognition of the tasks and other activities in which exposure may occur.
- Methods that prevent or minimize occupational exposure (for example, engineering controls, work practice controls, PPE and their limitations).
- Selection criteria for PPE, availability, and the criteria for its use, handling, decontamination, and disposal.
- Hepatitis B (HBV) vaccine to include vaccine's benefits, efficiency, safety, administration, and availability.
- Procedures for reporting and cleaning up spills of blood and OPIM.
- Warning signs, labels, and color-coding systems used.

Individuals conducting the training must demonstrate knowledge of the occupational hazards associated with bloodborne pathogens and be familiar with the manner in which the elements in the training program are related to the work place.

Personnel must receive bloodborne pathogens training at the time of initial assignment and annually thereafter. Additional training must be provided when existing tasks are modified, and before the introduction of new tasks and procedures.

Tuberculosis (TB). Mortuary Affairs personnel who have occupational exposure to TB must attend initial and ongoing education and training that explains the –

- Prevention, transmission, and symptoms of TB infection and disease.
- Medical surveillance and therapy processes.
- Tasks and procedures having potential for exposure to TB.
- Site-specific protocols, including the purpose and proper use of engineering controls, safe work practices, and PPE.
- Procedures for reporting exposure incidents and illnesses.

PPE.

Personnel required to wear PPE must be trained to know –

- When PPE must be worn.
- What PPE must be worn.
- How to properly inspect, put on, remove, adjust and wear the PPE.
- Limitations of the PPE and what to do if the PPE fails during use.
- Proper care, maintenance, useful life, decontaminating procedures, storage, and disposal of PPE.

Personnel must receive training –

- Before performing any work requiring the use of PPE.
- When they do not demonstrate required knowledge or skill in the use of their PPE.
- When there are changes in the identified hazards.
- When there are changes in the PPE to be used.
- Personnel who are required to wear respiratory protection must receive annual respiratory protection training per OSHA 29 CFR 1910.134(k) and AR 11-34.

Hazard Communication.

Mortuary Affairs personnel who have occupational exposure to hazardous chemicals must attend education and training that explains the –

- OSHA Hazard Communication (HAZCOM) Standard, 29 CFR 1910.1200.
- Any operations in their work area where hazardous chemicals are present.
- The location and availability of the written HAZCOM Program, including the required list(s) of hazardous chemicals and safety data sheets (SDSs).
- The methods and observations used to detect the presence or release of a hazardous chemical in the work area (for example, industrial hygiene monitoring results, continuous monitoring devices, visual appearance or odor of hazardous chemicals when being released).
- The physical and health hazards of the chemicals in the work area.
- The measures to take to prevent exposure, such as engineering controls, safe work practices, emergency procedures, and PPE to be used.
- How to read and understand warning labels and the information on the SDSs.

Personnel must receive training –

- At the time of their initial assignment and before working with any hazardous chemical.
- Whenever a new physical or health hazard is introduced into the work area and personnel have not received prior training on the new physical or health hazard.

Personnel's attendance at all education and training sessions must be documented. Except for HAZCOM, training records must be kept for a minimum of 3 years. HAZCOM training records must be kept for the duration of employment plus 30 years. Documentation must include –

- The dates of the training sessions.
- The summary of the topics discussed.
- The names and qualifications of the individuals conducting the training.
- The names and job titles of all personnel attending the training.

TG 195A
Fact Sheet 19
Psychological Considerations: How to Face the Dead

In combat or disaster situations, you may see, hear, smell, and perhaps have to handle human remains. The remains may be from men and women of all ages. As a result of these situations, you might:

- experience combinations of feelings that include pity, horror, sadness, repulsion, and anger.
- feel guilty for failing to prevent it, for surviving it, or for not helping enough.
- blame yourself or the United States.
- feel emotionally numb.
- identify with the victim as being similar to yourself or someone you love.
- have disturbing dreams or have intrusive images/flashbacks.

These are all normal, honorable experiences and feelings. Do not keep them hidden. Share them with your teammates who may be experiencing similar feelings.

The following are lessons learned by people who have had experience with handling human remains. These tips can help you complete your important mission and cope with the experience.

Mission-related Tips:

- Remember the larger purpose of what you must do. You are showing care, giving hope, and preventing disease for the living. You are recovering and handling bodies for registrations and respectful burial.
- If forewarned of the mission, prepare yourself as best as you can for what you will see and do. Take the appropriate supplies and equipment.
- Limit exposure to the stimuli. Use screens, ponchos, curtains, partitions, covers, and human remains pouches to maintain privacy.
- Mask odors with disinfectants, deodorants, or air fresheners. It is normal for odors to trigger memories.
- Be compassionate, but AVOID FOCUSING on any individual victims, especially those you most identify with. Do not focus on personal effects.
- Have people who did not search the body for effects examine the personal materials collected for intelligence or identification of the body.
- Remind yourself that the body is not “the person,” just the remains.

Self-care Tips:

- Keep humor alive, even “graveyard humor” with battle buddies who understand it, but don’t get too gross or personal (no picking on each other).
- Say silent prayers; ask unit or local chaplains to conduct memorial services.
- Schedule frequent breaks.
- Schedule time for 7-8 hours of sleep each night.
- Maintain a healthy diet of wholesome foods and drink plenty of fluids.
- Use the facilities arranged by the Command to wash your hands & face, for showers, and fresh clothes.

Group Support Tips:

- Gather your team together for mutual support and encouragement.
- Acknowledge the horrible aspects, but don’t dwell on the details of these memories.
- Help teammates or subordinates in distress by being a good listener. Do not jump in with “off the shelf” answers. Do not mistake his/her feelings as a weakness. Reassure your teammates that those feelings are normal and honorable.
- Remind your teammates that the mission must go on, and the team needs everyone.

These tips for effective coping cannot make a horrible and tragic event acceptable or easy, but using these tips can help you and your teammates better manage the stress in order to complete the mission. Be proud of what you have done, and use these lessons learned to take care of yourself, your battle buddies, and your family. If you find yourself having a difficult time dealing with your experiences, reach out for help. Contact a behavioral health provider, chaplain, Military OneSource, or the Defense Center of Excellence for Psychological Health & Traumatic Brain Injury’s 24/7 Outreach Center (1-866-966-1020, resources@dcoeoutreach.org, or realwarriors.net/livechat). These resources can provide you with ways to cope and get through difficult times. You are not alone.

Reference: USAPHC Technical Guide 320. Guide to Coping with Deployment and Combat Stress, January 2011.

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29 CFR 1910.134, Respiratory protection

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Appendix B Acronyms

ABHR	alcohol-based hand rub
AFEB	Armed Forces Epidemiological Board (now Defense Health Board)
AIDS	acquired immune deficiency syndrome
ALARP	As low as reasonably practicable
APHC	Army Public Health Center
APR	annual percentage rate
ATP	Army Techniques Publication
BBP	blood-borne pathogen
BCG	Bacille Calmette-Gu'erin
CDC	Centers for Disease Control and Prevention
CFR	Code of Federal Regulations
CONUS	Continental United States
CRM	Composite risk management
DNA	deoxyribonucleic acid
DOT	Department of Transportation
DOTMLPF	Doctrine, Organization, Training, Material, Leadership and Education, Personnel and Facilities
DTR	Defense Transportation Regulations
ECP	Exposure Control Plan
EPA	Environmental Protection Agency
FDA	Food and Drug Administration
FGS	Final Governing Standards
FLI	flulike illness
FM	Army Field Manual
HAZCOM	Hazard Communication
HAZMAT	Hazardous Material
HBV	hepatitis B virus
HCV	hepatitis C virus
HEPA	high efficiency particulate air
HIV	Human Immunodeficiency Virus
HTH	high test hypochlorite
HRP	human remains pouch
HRTC	human remains transfer cases
ICAM	improved chemical agent monitor
ID	identification
JP	Joint Publication
LSA	low specific activity
LTBI	latent tuberculosis infection
MA	Mortuary Affairs
MACP	Mortuary Affairs Collection Point
MACRMS	Mortuary Affairs Contaminated Remains Mitigation Site
MADCP	Mortuary Affairs Decontamination Collection Point
MDR -TB	multi-drug- resistant tuberculosis
MEDCOM	U.S. Army Medical Command
MILVAN	Military-Owned Demountable Container
MIRCS	Mobile Integrated Remains Collection System
MOPP	mission oriented protective posture

MOPP 3adj	mission oriented protective posture adjusted with optional overgarment and boots; wear mask, surgical gloves alternative to butyl gloves
MOPP 4adj	mission oriented protective posture adjusted with wet-weather gear
MOS	Military Occupational Specialty
MTB	mycobacterium tuberculosis
MTF	military treatment facility
NIOSH	National Institute for Occupational Safety and Health
OCONUS	outside Continental United States
OEBGD	Overseas Environmental Baseline Guidance Document
OPIM	other potentially infectious materials
OSHA	Occupational Safety and Health Administration
PAPR	powered air purifying respirator
PASGT-V	Personnel Armor System, Ground Troops-Vest
PCR	polymerase chain reaction
PE	personal effects
PPE	personal protective equipment
ppm	parts per million
PVC	polyvinyl chloride
PVNTMED	preventive medicine
QRGs	Quick Reference Guides
RCRA	Resource Conservation Recovery Act
RMW	regulated medical waste
SAR	supplied air respirator
SCBA	self-contained breathing apparatus
SCO	surface contaminated object
S&R	Search and Recovery
SDS	Safety Data Sheet
TB	tuberculosis
TG	Technical Guide
TMEP	Theater Mortuary Evacuation Point
TST	tuberculin skin test
UCMJ	Uniform Code of Military Justice
UP	universal precautions
USAMEDCOM	U.S. Army Medical Command
USAIPH	U.S. Army Institute of Public Health
USAPHC	U.S. Army Public Health Command
VHF	viral hemorrhagic fever viruses
WBGD	Wet Bulb Globe Temperature

Technical Points of Contact for Topics Addressed in TG 195A

Topic	APHC (Provisional) Technical Program	Phone
Infectious Materials	Industrial Hygiene and Medical Safety Management (Pgm 59)	410-436-5453
Psychological	Behavioral Health (Pgm 22)	410-436-2303
Ergonomics	Ergonomics (Pgm 88)	410-436-2736
Water Supply	Drinking Water and Sanitation (Pgm 31)	410-436-3919
Wastewater	Water Resources (Pgm 32)	410-436-3816
Waste Management	Waste Management (Pgm 37)	410-436-3651

