Military Deployment
Periodic Occupational and Environmental Monitoring Summary (POEMS): Forward Operating Base Fenty and vicinity, Afghanistan: 2019 to 2021

AUTHORITY: This periodic occupational and environmental monitoring summary (POEMS) has been developed in accordance with Department of Defense (DoD) Instructions 6490.03 and 6055.05 (References 1-2).

PURPOSE: This POEMS documents the Department of Defense (DoD) assessment of deployment occupational and environmental health (OEH) risk for Forward Operating Base (FOB) Fenty, Camp Dyer, FOB Finley-Shields and Nangarhar, Afghanistan. It presents a qualitative summary of health risks identified at this location and their potential medical implications. The report is based on information collected from 01 January 2019 through 31 December 2021 to include deployment OEHS sampling and monitoring data (e.g., air, water, and soil), field investigation and health assessment reports, as well as country and area-specific information on endemic diseases.

This assessment assumes that environmental sampling for FOB Fenty and vicinity during this period was performed at representative exposure points selected to characterize health risks at the population–level. Due to the nature of environmental sampling, the data upon which this report is based may not be fully representative of all the fluctuations in environmental quality or capture unique occurrences. While one might expect health risks pertaining to historic or future conditions at this site to be similar to those described in this report, the health risk assessment portions pertaining to environmental sampling are limited to the time period in which samples were collected and information was gathered. This assessment covers the time period of 1 January 2019 through 31 December 2021 however, samples were only collected between 17 January 2019 and 20 July 2020. The last occupation and environmental health assessment (OEHSA) was started on 18 July 2020 and closed in 13 March 2021 (Reference 3).

The POEMS can be useful to inform healthcare providers and others of environmental conditions experienced by individuals deployed to FOB Fenty and vicinity during the period of this assessment. However, it does not represent an individual exposure profile. Individual exposures depend on many variables such as; how long, how often, where and what someone is doing while working and/or spending time outside. Individual outdoor activities and associated routes of exposure are extremely variable and cannot be identified from or during environmental sampling. Individuals who sought medical treatment related to OEH exposures while deployed should have exposure/treatment noted in their medical record on a Standard Form (SF) 600 (Chronological Record of Medical Care).

SITE DESCRIPTIONS: FOB Finley-Shields and Nangarhar were both inactive during the time frame of this assessment. Camp Dyer was located on FOB Fenty and no samples were associated with Camp Dyer during calendar years (CYs) 2019-2021. Therefore FOB Fenty will be the focus of this assessment. FOB Fenty is located in the Nangarhar Province in Afghanistan, southeast of the city of Jalalabad and 50 km west of the Afghanistan-Pakistan border. FOB Fenty is built around Jalalabad Airport and is surrounded by mountains and marshland.

SUMMARY: Conditions that may pose a Moderate or greater health risk are summarized in Table 1. Table 2 provides population based risk estimates for identified environmental health conditions that may have some level of risk at FOB Fenty and vicinity. As indicated in the detailed sections that follow Table 2, controls established to reduce health risk were factored into this assessment. In some cases, (e.g., ambient air) specific controls are noted, but not routinely available/feasible.

Table 1: Summary of Occupational and Environmental Conditions with MODERATE or Greater Health Risk

Short-term health risks & medical implications:

The following hazards may be associated with potential acute health effects in some personnel during deployment at FOB Fenty and vicinity:

For continuous noise exposure, the risk was 'High to Low'; risk may have been reduced by appropriate hearing protection used by personnel in higher risk areas (around sources of continuous noise such as flight lines, generators and power production). For heat stress, risk can be greater during months of May through October, and greater for susceptible persons including those older than 45, of low fitness level, unacclimatized, or with underlying medical conditions, and those under operational constraints (equipment, PPE, vehicles). Risks from heat stress may have been reduced with preventive medicine controls, work-rest cycles, proper hydration and nutrition, and mitigation.

Air quality: For inhalable coarse particulate matter less than 10 micrometers in diameter (PM_{10}) from environmental dust (including the Airburner fire box and/or incinerators), the PM_{10} overall short-term health risk was not evaluated due to no data for analysis. For inhalable fine particulate matter less than 2.5 micrometers in diameter ($PM_{2.5}$) from environmental dust (including the Airburner fire box and/or incinerators), the $PM_{2.5}$ overall short-term health risk was "Low." However, the FOB Fenty and vicinity area is a dust-prone desert environment, with a semi-arid climate, also subject to vehicle traffic. Consequently, exposures to PM_{10} and $PM_{2.5}$ may vary, as conditions may vary, and may result in mild to more serious short-term health effects (e.g., eye, nose or throat and lung irritation) in some personnel while at this site, particularly during exposures to high levels of dust such as during high winds or dust storms. For PM_{10} and $PM_{2.5}$, certain subgroups of the deployed forces (e.g., those with pre-existing asthma/cardio-pulmonary conditions) are at greatest risk of developing notable health effects. An Airburner fire box and incinerators existed in FOB Fenty; however, the PM_{10} and the $PM_{2.5}$ overall short-term health risks specifically for the fire box and incinerators were not evaluated due to no known environmental samples collected near the fire box and/or incinerators provided for analysis– see Section 10.7. Where the fire box and/or incinerators existed, exposures may vary, and exposures to high levels of PM_{10} and $PM_{2.5}$ from smoke may result in mild to more serious short-term health effects (e.g., eye, nose or throat and lung irritation) in some personnel and certain subgroups. Although most short-term health effects from exposure to particulate matter and/or fire box and incinerator smoke should have resolved post-deployment, providers should be prepared to consider the relationship between deployment exposures and current complaints. Some individuals may have sought treatment for acute respiratory irritation while at FOB Fenty and vicinity. Personnel who reported with symptoms or required treatment while at site(s) with fire box activity should have exposure and treatment noted in medical record (e.g., electronic medical record and/or on a Standard Form (SF) 600 (Chronological Record of Medical Care).

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Final Approval Date (12 August 2022)

Table 1: Continued

Long-term health risks & medical implications:

The following hazards may be associated with potential chronic health effects in some personnel during deployment at FOB Fenty and vicinity:

For continuous noise exposure, the long-term risk was 'High to Low'; risk may have been reduced by appropriate hearing protection used by personnel in higher risk areas (around sources of continuous noise such as flight lines, generators and power production).

Air quality: For inhalable fine particulate matter less than 2.5 micrometers in diameter ($PM_{2.5}$) from environmental dust (including the Airburn fire box and/or incinerators), the overall long-term health risk was "Low." Inhalable coarse particulate matter less than 10 micrometers in diameter (PM_{10}) from environmental dust (including burn pits/boxes and/or incinerators) was not evaluated for long-term health risk due to no data for analysis and no available health guidelines. However, FOB Fenty and vicinity is a dust-prone desert environment with a semi-arid climate. An Airburn fire box and incinerators existed at FOB Fenty; however, the PM_{10} and the $PM_{2.5}$ overall long-term health risks specifically for fire boxes and incinerators were not evaluated due to no environmental samples identified as being collected near the fire box and/or incinerators - see Section 10.7. Near the fire box or incincerators, exposures may vary, as conditions may have varied. For inhalational exposure to high levels of dust containing PM_{10} and $PM_{2.5}$, such as during high winds or dust storms, and for exposures to incinerator and/or fire box smoke, it is considered possible that some otherwise healthy personnel, who were exposed for a long-term period to dust and particulate matter, could develop certain health conditions (e.g., reduced lung function, cardiopulmonary disease). Personnel with a history of asthma or cardiopulmonary disease could be more likely to develop such chronic health conditions. While the dust and particulate matter exposures and exposures to fire box and/or incinerator smoke are acknowledged, at this time there were no specific recommended post-deployment medical surveillance evaluations or treatments. Providers should still consider overall individual health status (e.g., any underlying conditions/susceptibilities) and any potential unique individual exposures (such as burn pits/barrels/boxes, incinerators, occupational or specific personal dosimeter data) when assessing individual concerns. Certain individuals may need to be followed/evaluated for specific occupational exposures/injuries (e.g., annual audiograms as part of the medical surveillance for those enrolled in the Hearing Conservation Program; and personnel covered by Respiratory Protection Program and/or Hazardous Waste/Emergency Responders Medical Surveillance).

Reviewed by USCENTCOM CCSG (24 May 2022)
Final Approval Date (12 August 2022)

Table 2. Population-Based Health Risk Estimates –FOB Fenty and Vicinity [1, 2]

Source of Identified Health Risk[3]	Unmitigated Health Risk Estimate[4]	Control Measures Implemented	Residual Health Risk Estimate[4]
AIR			
Particulate matter less than 10 micrometers in diameter (PM_{10})	Short-term: No samples were available for analysis to characterize short-term health risk. Daily levels vary, acute health effects (e.g., upper respiratory tract irritation) more pronounced during days with elevated PM levels. More serious effects are possible in susceptible persons (e.g., those with asthma/pre-existing respiratory diseases).	Limiting strenuous physical activities when air quality is especially poor; and actions such as closing tent flaps, windows, and doors.	Short-term: No samples were available for analysis to characterize short-term health risk. Daily levels vary, acute health effects (e.g., upper respiratory tract irritation) more pronounced during days with elevated PM levels. More serious effects are possible in susceptible persons (e.g., those with asthma/pre-existing respiratory diseases).
	Long-term: No health guidelines		Long-term: No health guidelines
Particulate matter less than 2.5 micrometers in diameter ($PM_{2.5}$)	Short-term: The short-term health risk was Low for exposure to the ambient air. Because FOB Fenty was situated in a dusty semi-arid environment, a majority of the time mild acute (short-term) health effects were anticipated; certain peak or elevated levels may have produced mild eye, nose, or throat irritation in some personnel and pre-existing health conditions (e.g., asthma, or cardiopulmonary diseases) may have been exacerbated.	Limiting strenuous physical activities when air quality is especially poor; and actions such as closing tent flaps, windows, and doors.	Short-term: The short-term health risk was Low for exposure to ambient air. Because FOB Fenty was situated in a dusty semi-arid environment, a majority of the time mild acute (short-term) health effects were anticipated; certain peak or elevated levels may have produce mild eye, nose, or throat irritation in some personnel and pre-existing health conditions (e.g., asthma, or cardiopulmonary diseases) may have been exacerbated.
	Long-term: The long-term health risk was Low for exposure to the ambient air. A small percentage of personnel may have been at increased risk for developing chronic conditions, particularly those more susceptible to acute effects (e.g., those with asthma/pre-existing respiratory diseases).		Long-term: The long-term health risk was Low for exposure to the ambient air. A small percentage of personnel may have been at increased risk for developing chronic conditions, particularly those more susceptible to acute effects (e.g., those with asthma/pre-existing respiratory diseases).
Metals	Short-term: Not an identified source of health risk based on the available data. No parameters exceeded their 1-year Negligible MEGs.		Short-term: Not an identified source of health risk based on the available data. No parameters exceeded their 1-year Negligible MEGs.
	Long-term: Not an identified source of health risk based on the available data. No parameters exceeded their 1-year Negligible MEGs.		Long-term: Not an identified source of health risk based on the available data. No parameters exceeded their 1-year Negligible MEGs.
Volatile organic compounds (VOC)	Short-term: No data available		Short-term: No data available
	Long-term: No data available		Long-term: No data available
MILITARY UNIQUE			

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Final Approval Date (12 August 2022)

Source of Identified Health Risk[3]	Unmitigated Health Risk Estimate[4]	Control Measures Implemented	Residual Health Risk Estimate[4]
Ionizing radiation	Short-term: FOB Fenty had a Vehicle and Cargo Inspection System (VACIS) which utilizes Cobalt 60. The amount of radiation emitted was unknown but one study indicated an estimate of 0.0 – 0.004 mrem per scan.		Short-term: FOB Fenty had a Vehicle and Cargo Inspection System (VACIS) which utilizes Cobalt 60. The amount of radiation emitted was unknown but one study indicated an estimate of 0.0 – 0.004 mrem per scan.
	Long-term: FOB Fenty had a Vehicle and Cargo Inspection System (VACIS) which utilizes Cobalt 60. The amount of radiation emitted was unknown but one study indicated an estimate of 0.0 – 0.004 mrem per scan.		Long-term: FOB Fenty had a Vehicle and Cargo Inspection System (VACIS) which utilizes Cobalt 60. The amount of radiation emitted was unknow but one study indicated an estimate of 0.0 – 0.004 mrem per scan
Non-ionizing radiation	Short-term: FOB Fenty had satellite communication systems, tactical vehicle radio jammers and communication antennas. The amount of radiation emitted was unknown.		Short-term: FOB Fenty had satellite communication systems, tactical vehicle radio jammers and communication antennas. The amount of radiation emitted was unknown.
	Long-term: FOB Fenty had satellite communication systems, tactical vehicle radio jammers and communication antennas. The amount of radiation emitted was unknown.		Long-term: FOB Fenty had satellite communication systems, tactical vehicle radio jammers and communication antennas. The amount of radiation emitted was unknown..
ENDEMIC DISEASE			
Food borne/waterborne (e.g., diarrhea-bacteriological) Arthropod vector borne Water-contact (e.g., wading, swimming) Respiratory Animal contact Aerosolized dust or soil-contact	Risk levels are no longer provided in Section 6 (Endemic Diseases) for each endemic disease since the National Center for Medical Intelligence website is no longer being updated. OEHSA's provided risk levels for particular endemic diseases; however, it is not specified how the risk levels were obtained. Although risk levels are no longer provided by NCMI, country specific endemic diseases from the CDC can be found in Section 6.	**Refer to Section 6 for preventive measures**	Risk levels are no longer provided in Section 6 (Endemic Diseases) for each endemic disease since the National Center for Medical Intelligence website is no longer being updated. OEHSA's provided risk levels for particular endemic diseases; however, it is not specified how the risk levels were obtained. Although risk levels are no longer provided by NCMI, country specific endemic diseases from the CDC can be found in Section 6.
VENOMOUS ANIMAL/ INSECTS			
Snakes, scorpions, and spiders	Short-term: Low; if encountered, effects of venom vary with species from mild (e.g., *Scorpiops lindberg*) to potentially lethal effects (e.g., *Gloydius halys*).	Risk reduced by avoiding contact, proper wear of uniform (especially footwear), and proper and timely treatment.	Short-term: Low; if encountered, effects of venom vary with species from mild (e.g., *Scorpiops lindberg*) to potentially lethal effects (e.g., *Gloydius halys*).
	Long-term: None identified		Long-term: None identified

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Final Approval Date (12 August 2022)

Source of Identified Health Risk[3]	Unmitigated Health Risk Estimate[4]	Control Measures Implemented	Residual Health Risk Estimate[4]
HEAT/COLD STRESS			
Heat	Short-term: Variable; risk of heat injury is Extremely High (for June – August), High for May and September and Low for all other months.	Work-rest cycles, proper hydration and nutrition, and Wet Bulb Globe Temperature (WBGT) monitoring.	Short-term: Variable; risk of heat injury is Extremely High (for June – August), High for May and September and Low for all other months.
	Long-term: Low; however, the risk may be greater to certain susceptible persons–those older (i.e., greater than 45 years), in lesser physical shape, or with underlying medical/health conditions.		Long-term: Low; however, the risk may be greater to certain susceptible persons–those older (i.e., greater than 45 years), in lesser physical shape, or with underlying medical/health conditions.
Cold	Short-term: Low risk of cold stress/injury.	Risks from cold stress could have been reduced with protective measures such as use of the buddy system, limiting exposure during cold weather, proper hydration and nutrition, and proper wear of issued protective clothing.	Short-term: Low risk of cold stress/injury.
	Long-term: Low; long-term health implications from cold injuries are rare but could have occurred, especially from more serious injuries such as frostbite.		Long-term: Low; long-term health implications from cold injuries are rare but could have occurred, especially from more serious injuries such as frostbite.
NOISE			
Continuous (airfield)	Short-term: High to Low; High risk to individuals working near major noise sources without proper hearing protection.	Hearing protection was used by personnel in higher risk areas.	Short-term: Low risk to the majority of personnel and to individuals working near major noise sources who use proper hearing protection.
	Long-term: High to Low; High risk to individuals working near major noise sources without proper hearing protection.		Long-term: Low risk to the majority of personnel and to individuals working near major noise sources who use proper hearing protection.
Unique Incidents/ Concerns			
Waste sites/waste disposal	Short-term: Low, incinerators were operated by a contractor.	Stacks elevated above breathing zone.	Short-term: Low, incinerators were operated by a contractor.
	Long-term: Low, incinerators were operated by a contractor		Long-term: Low, incinerators were operated by a contractor
Airburner fire box/incinerators	Four incinerators and an Airburner fire box were present at FOB Fenty. See Section 10.7. No specific data is available to assess risk.	Control measures included stack heights of 30 feet for the incinerators.	Four incinerators and an Airburner fire box were present at FOB Fenty. See Section 10.7. No specific data is available to assess risk.

[1]This Summary Table provides a qualitative estimate of population-based short- and long-term health risks associated with the occupational environment conditions at FOB Fenty and vicinity. It does not represent an individual exposure profile. Actual individual exposures and health effects depend on many variables. For example, while a chemical may have been present in the environment, if a person did not inhale, ingest, or contact a specific dose of the chemical for adequate duration and frequency, then there may have been no health risk. Alternatively, a person at a specific location may have experienced a unique exposure which could result in a significant individual exposure. Any such person seeking medical care should have their specific exposure documented in an SF600.

[2]This assessment is based on specific environmental sampling data and reports obtained from 01 January 2019 through 31 December 2021. Sampling locations are assumed to be representative of exposure points for the FOB population but may not reflect all the fluctuations in environmental quality or capture unique exposure incidents.

[3]This Summary Table is organized by major categories of identified sources of health risk. It only lists those sub-categories specifically identified and addressed at FOB Fenty and vicinity. The health risks are presented as Low, Moderate, High or Extremely High for both acute and chronic health effects. The health risk level is based on an assessment of both the potential severity of the health effects that could be

caused and probability of the exposure that would produce such health effects. Details can be obtained from the Army Public Health Center (APHC). Where applicable, “None Identified” is used when a potential exposure is identified, and no health risks of either a specific acute or chronic health effect is determined. More detailed descriptions of OEH exposures that are evaluated but determined to pose no health risk are discussed in the following sections of this report.

[4]Health risks in this Summary Table are based on quantitative surveillance thresholds (e.g., endemic disease rates; host/vector/pathogen surveillance) or screening levels, e.g., Military Exposure Guidelines (MEGs) for chemicals. Some previous assessment reports may provide slightly inconsistent health risk estimates because quantitative criteria such as MEGs may have changed since the samples were originally evaluated and/or because this assessment makes use of all historic site data while previous reports may have only been based on a select few samples.

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1 Discussion of Health Risks at FOB Fenty and Vicinity by Source

The following sections provide additional information about the deployment OEH conditions summarized above. All risk assessments were performed using the methodology described in the U.S. Army Public Health Command Technical Guide 230, *Environmental Health Risk Assessment and Chemical Exposure Guidelines for Deployed Military Personnel* (Reference 4). All OEH risk estimates represent residual risk after accounting for preventive controls in place. Occupational exposures and exposures to endemic diseases are greatly reduced by preventive measures. For environmental exposures related to airborne dust, there are limited preventive measures available, and available measures have little efficacy in reducing exposure to ambient conditions.

2 Air

2.1 Site-Specific Sources Identified

FOB Fenty and vicinity was situated in a dusty semi-arid desert environment. Inhalational exposure to high levels of dust and particulate matter, such as during high winds or dust storms, may have resulted in mild to more serious short-term health effects (e.g., eye, nose or throat and lung irritation) in some personnel. Additionally, certain subgroups of the deployed forces (e.g., those with pre-existing asthma/cardio pulmonary conditions) were at greater risk of developing notable health effects.

The city of Jalalabad was in close proximity to FOB Fenty and contained several unknown industrial operations, which may have contributed to environmental contaminants in the air. This was especially true in the winter months when burning for heat was significant. According to the most recent OEHSA survey report in 2020 air pollution sources identified on FOB Fenty included an airfield, refueling operations, four incinerators, generators and dust from unpaved roads. The OEHSA identified no active burn pits. An Airburner fire box which burned construction materials and brush/vegetation was identified at FOB Fenty.

2.2 Particulate Matter

Particulate matter (PM) is a complex mixture of extremely small particles suspended in the air. PM includes solid particles and liquid droplets emitted directly into the air by sources such as: power plants, motor vehicles, aircraft, generators, construction activities, fires, and natural windblown dust. PM can include sand, soil, metals, volatile organic compounds (VOC), allergens, and other compounds such as nitrates or sulfates that are formed by condensation or transformation of combustion exhaust. PM composition and particle size vary considerably depending on the source. PM of health concern is divided into two fractions: PM_{10}, which includes coarse particles with a diameter of 10 micrometers or less, and fine particles less than 2.5 micron ($PM_{2.5}$), which can reach the deepest regions of the lungs when inhaled. Exposure to excessive PM is linked to a variety of potential health effects (Reference 5).

2.3 Particulate Matter, Less Than 10 Microns (PM_{10})

2.3.1 Exposure guidelines:

Short-term (24-hour) PM_{10} ($\mu g/m^3$): Long-term PM_{10} MEG ($\mu g/m^3$):

Reviewed by USCENTCOM CCSG (24 May 2022)
Final Approval Date (12 August 2022)

- Negligible MEG = 250
- Marginal MEG = 420
- Critical MEG = 600
- Not defined and not available

2.3.2 Sample data/notes:

No PM_{10} air samples for any of the locations were available in CYs 2019-2021.

2.3.3 Short-term and long-term health risk:

Data was not available to evaluate a short or long-term health risk.

2.4 Particulate Matter, Less Than 2.5 Microns ($PM_{2.5}$)

2.4.1 Exposure guidelines:

Short-term (24-hour) $PM_{2.5}$ ($\mu g/m^3$):
- Negligible MEG = 65
- Marginal MEG = 250
- Critical MEG = 500

Long-term $PM_{2.5}$ MEG ($\mu g/m^3$):
- Negligible MEG = 15
- Marginal MEG = 65

2.4.2 Sample data/notes:

A total of seven valid $PM_{2.5}$ air samples were collected in 2019 and two valid $PM_{2.5}$ air samples were collected in 2020 at FOB Fenty. Three invalid samples were collected. All samples were collected in locations frequented by the general FOB population and therefore represented the ambient air exposure pathway. The range of 24-hour $PM_{2.5}$ concentrations was 52 $\mu g/m^3$ – 212 $\mu g/m^3$ in 2019 and 43. $\mu g/m^3$ – 156 $\mu g/m^3$ in 2020 with an arithmetic mean concentration of 102 $\mu g/m^3$ for the entire sampling period.

2.4.3 Short-term health risk:

Low: The following health risk determinations were made for typical (estimated using the arithmetic mean) and peak $PM_{2.5}$ sample concentrations. The reported risk levels were determined using the hazard severity (estimated from the possible health effects resulting from exposure at those concentrations) and the hazard probability (or likelihood of those health effects occurring). After determining both of these variables, the risk level was selected using Table 3-1 in Reference 4.

The short-term health risk was estimated to be Low for exposure at typical concentrations (102 $\mu g/m^3$). For exposures near the typical concentration, the hazard severity was Negligible because the arithmetic mean concentration was between 65 $\mu g/m^3$ and 250 $\mu g/m^3$. For exposures at this severity level, a few personnel may have experienced notable eye, nose, and throat irritation but most personnel will have experienced only mild effects. Those with a history of pre-existing health conditions such as asthma or cardiopulmonary diseases may have experienced increased symptoms (Reference 4,Table 3-5). At typical concentrations, these effects may have occurred and the hazard probability chosen was Unlikely (Reference 4, Table 3-5). The resulting risk level was estimated to be Low. Confidence in the short-term $PM_{2.5}$ health risk assessment was Medium based on the number and distribution of samples collected (Reference 4, Table 3-6).

The short-term health risk was estimated to be Low for exposure at peak concentrations (212 µg/m^3 collected 23 April 2019). For exposures near the peak concentration, the hazard severity was Negligible because the concentration was between 65 µg/m^3 and 250 µg/m^3. For exposures at this severity level, a few personnel may have experienced notable eye, nose, and throat irritation but most personnel will have experienced only mild effects. Those with a history of pre-existing health conditions such as asthma or cardiopulmonary diseases may have experienced increased symptoms (Reference 4, Table 3-5). At peak concentrations, these effects may have occurred and the hazard probability chosen was Occasional (Reference 4, Table 3-5). The resulting risk level was estimated to be Low. Confidence in the short-term $PM_{2.5}$ health risk assessment was Medium based on the number and distribution of samples collected (Reference 4, Table 3-6).

2.4.4 Long-term health risk:

Low: Prior to performing the long-term health risk assessment, the quantity and quality of the data was analyzed to determine if sufficient data was available to perform the assessment. It was determined that there was fairly good representation in the data when CYs 2019 and 2020 were combined for the ambient air exposure pathway as samples were collected during each season from March 2019 through March 2020. The long-term health risk from continuous exposure to $PM_{2.5}$ was Low based on this data. The hazard severity was determined to be Marginal because the arithmetic mean concentration of 102 µg/m^3 was above the Marginal MEG (65 µg/m^3) and although no Critical MEG is available, all detected concentrations were below the Marginal 24-hour MEG. At the Marginal severity level, it is plausible that development of chronic health conditions such as reduced lung function or exacerbated chronic bronchitis, chronic obstructive pulmonary disease (COPD), asthma, atherosclerosis, or other cardiopulmonary diseases could occur in generally healthy troops. Those with a history of asthma or cardiopulmonary disease are considered to be at particular risk. This guideline is an uncertain screening value and is not a known health effects concentration (Reference 4, Table 3-12). The effects resulting from this level of exposure are expected to occur infrequently and the likelihood chosen was Seldom (Reference 4, Table 3-5). The resulting risk level was estimated to be Low. Confidence in the risk estimate is Medium based on the amount of data and the distribution of data throughout the assessment period (Reference 4, Table 3-6).

2.5 Airborne Metals

2.5.1 Sample data/notes:

Seven valid $PM_{2.5}$ air samples were collected in 2019 and two valid $PM_{2.5}$ air samples were collected in 2020 for metals analysis at FOB Fenty. Three samples were invalid. Of all the valid samples, lead and zinc were each detected in four of the samples. The detected concentrations were all below their respective 1-year negligible MEG and therefore no risk from metals inhalation were identified on the days sampled.

2.5.2 Short- and long-term health risk:

None identified based on the available sampling data. No parameters exceeded its respective 1-year Negligible MEG.

2.6 Volatile Organic Compounds (VOC)

2.6.1 Sample data/notes:

No VOC air samples were available for FOB Fenty and vicinity in CYs 2019-2021.

2.6.2 Short-term and long-term health risk:

Data was not available to evaluate a short or long-term health risk.

3 Soil

3.1 Sample Data/Notes

One surface soil sample was collected on 20 July 2020, to assess OEH health risk to deployed personnel at FOB Fenty. The primary soil contamination exposure pathways are dermal contact and dust inhalation. Typical parameters analyzed for included semi volatile organic compounds (SVOCs), heavy metals, polychlorinated biphenyls (PCBs), pesticides, and herbicides. If the contaminant was known or suspected, other parameters may have been analyzed (i.e., total petroleum hydrocarbons (TPH) and polycyclic aromatic hydrocarbons (PAH) near fuel spills). For the risk assessment, personnel are assumed to remain at this location for 6 months to 1 year.

3.2 Short-Term Health Risk

Not an identified source of health risk. Currently, sampling data for soil are not evaluated for short-term (acute) health risks**.**

3.3 Long-Term Health Risk

None identified based on available sample data. No parameters exceeded its 1-year negligible MEG.

4 Water

In order to assess the health risk to U.S. personnel from exposure to water in theater, the Army Public Health Center (APHC) identified the most probable exposure pathways. These are based on the administrative information provided on the field data sheets submitted with the samples taken over the time period being evaluated. The exposure pathways identified were untreated water from wells 2100, 4019 and 7000, and treated water from Reverse Osmosis Water Purification Units (ROWPU) 16490 and 4162235. There was some confusion in categorizing the well water as the well water is chlorinated at the well. One of the well water samples (from well 7000) was therefore categorized as a treated water source but was evaluated as an untreated source. There were four untreated water samples taken between 15 May 2019 and 20 July 2020. Based on the FDSs all samples for untreated water were associated with source water for treatment purposes and were not used for consumption. Therefore, untreated samples are not assessed as potential ingestion health hazards. None of the samples had concentrations above the non-drinking water MEGs. Field data sheets indicated that bottled water was the primary source of drinking water.

4.1 Drinking Water: Bottled and Packaged Water

4.1.1 Site-specific sources identified:

The OEHSAs for FOB Fenty indicated that there were three bottled water brands; Aria®, Cristal® and Dasani® used at FOB Fenty. There were no bottled water samples available to evaluate. Identification of a trademarked product does not imply endorsement by the Army.

4.1.2 Short-term and long-term health risk:

No available sample data to determine a health risk.

4.2 Non-Drinking Water: Disinfected/Treated

4.2.1 Site-specific sources identified:

Although the primary route of exposure for most microorganisms is ingestion of contaminated water, dermal exposure to some microorganisms, chemicals, and biologicals may also cause adverse health effects. Complete exposure pathways would include drinking, brushing teeth, personal hygiene, cooking, providing medical and dental care using a contaminated water supply or during dermal contact at vehicle, aircraft wash racks or swimming.

4.2.2 Sample data/notes:

To assess the potential for adverse health effects to troops several assumptions were made about dose and duration: All U.S. personnel at this location were expected to remain at this site for approximately 1 year although OEHSA information indicates a shorter deployment than 1 year. A conservative (protective) assumption is that personnel routinely consumed less than 5L/day of non-drinking water for up to 365 days (1-year). It is further assumed that control measures were not used. Two non-drinking treated water samples were collected at FOB Fenty. One sample was collected from the older ROWPU 16490 on 15 May 2019 and one was collected from the new ROWPU 4162235 on 20 July 2020.

4.2.3 Short and long-term health risk:

None identified based on available sample data. No health risks from treated water exposures were identified based on the available data. No short- or long-term negligible MEGs were exceeded for either ROWPU sample.

5 Military Unique

5.1 Chemical Biological, Radiological Nuclear (CBRN) Weapons

No specific hazard sources were documented in the DOEHRS for CYs 2019-2021 (Reference 3).

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5.2 Depleted Uranium (DU)

No specific hazard sources were documented in DOEHRS for CYs 2019-2021 (Reference 3).

5.3 Ionizing Radiation

A Vehicle and Cargo Inspection System (VACIS) and a mobile gamma-ray imaging system for inspecting vehicles and cargo at entry checkpoints utilizes Cobalt-60 and is present at the vehicle entry control point on FOB Fenty (Reference 3). There was no specific information available on the amount of radiation emitted from these systems. A study performed by APHC determined that the average radiation dose from a VACIS system ranged from 0.0 – 0.004 mrem per scan (USACHPPM Report No 26-MF-CO60-07, 2 October 2007). The public dose limit is 100 mrem per year meaning an individual would need to perform 250,000 scans to meet that limit.

5.4 Non-Ionizing Radiation

Satellite communication systems, tactical vehicle radio jammers and communication antennas were used at FOB Fenty (Reference 3).

6 Endemic Diseases

This document lists the endemic diseases reported in the region found on the Centers for Disease Control and Prevention (CDC) website (Reference 6). This information was obtained in November 2021 and may not reflect the endemic diseases during the time frame of this POEMS as it was not possible to obtain information from CYs 2019-2021 from the CDC website. CENTCOM Modification (MOD) 13, 14 and 15 (References 7-9) lists deployment requirements, to include immunizations and chemoprophylaxis, in effect during the timeframe of this POEMS. Additionally, some information was provided under the disease threats section in the OEHSAs for FOB Fenty. Information from the OEHSA is summarized in Table 3 below (Reference 3).

Table 3. Disease Threat Assessment in FOB Fenty OEHSA

Disease Threat	Hazard Severity	Hazard Probability	Risk Estimate
Leishmaniasis (Cutaneous)	Marginal	Seldom	Low
Leishmaniasis (Visceral)	Marginal	Seldom	Low
Malaria (Unspecified)	Marginal	Occasional	Moderate
Sand Fly Fever	Marginal	Occasional	Moderate
Typhus (Scrub)	Marginal	Unlikely	Low
Q Fever	Marginal	Unlikely	Low
Leptospirosis	Marginal	Unlikely	Low
Diarrheal Diseases (Enteric, Filth Fly)	Marginal	Seldom	Low
Crimean-Congo Hemorrhagic Fever (CCHF)	Catastrophic	Unlikely	Moderate
West Nile Fever (WN)	Marginal	Unlikely	Low
Rabies	Catastrophic	Unlikely	Moderate
Plague	Marginal	Unlikely	Low

6.1 Foodborne and Waterborne Diseases

Foodborne and waterborne diseases in the area could have been transmitted through the consumption of local food and water. Local unapproved food and water sources (including ice) can be heavily contaminated with pathogenic bacteria, parasites, and viruses to which most U.S. Service Members have little or no natural immunity. Ingesting local food and water can temporarily incapacitate personnel (diarrhea) or result in prolonged illness (hepatitis A, typhoid/paratyphoid fever). Risks from food/waterborne diseases may have been reduced with preventive medicine controls and mitigation, which includes vaccinations and only drinking from approved water sources in accordance with standing CENTCOM policy.

6.1.1 Diarrheal diseases (bacteriological):

Diarrheal diseases could temporarily incapacitate a very high percentage of personnel within days if local food, water, or ice is consumed. Field conditions (including lack of hand washing and primitive sanitation) may facilitate person-to-person spread and epidemics. Typically a mild disease that can be treated in an outpatient setting; with recovery and return to duty in less than 72 hours. A small proportion of infections may require greater than 72 hours limited duty, or hospitalization.

6.1.2 Hepatitis A virus (HAV), typhoid/paratyphoid fever, and diarrhea-protozoal:

HAV, typhoid/paratyphoid fever, and diarrhea-protozoal disease may cause prolonged illness in a small percentage of unvaccinated personnel. HAV is transmitted through direct person to person contact or through ingestion of contaminated food or water. HAV can survive in the environment for prolonged periods of time and it can be transmitted through ice and frozen foods. Individuals are most infectious 1-2 weeks before the onset of clinical signs and symptoms. Typhoid and paratyphoid fever are acquired through consumption of water or food contaminated by feces of an acutely infected person. The incubation period of typhoid and paratyphoid infections is 6-30 days. Untreated disease can last for a month and reported case-fatality rates are 10-30%. HAV and typhoid/paratyphoid fever can be prevented through immunization (Reference 6).

6.1.3 Polio:

In spite of progress made in eradicating Polio globally, according to the CDC Afghanistan remains at high risk for polio outbreaks due to low immunization rates. Polio is a crippling and potentially deadly disease that invades the nervous system. Polio is mainly spread from person-to-person contact but can also be spread by eating raw or undercooked food or drinking contaminated beverages. Many people with Polio may not feel sick or may have minor symptoms. In rare cases, infection can cause permanent loss of muscle function and death. Polio may be prevented through immunization and the CDC recommends that those traveling to Afghanistan be up to date on a Polio booster (Reference 6).

6.2 Anthropod Vector-Borne Diseases

During the warmer months, the climate and ecological habitat support populations of arthropod vectors, including mosquitoes, ticks, mites, and sandflies. Significant disease transmission is sustained countrywide, including urban areas. Mitigation strategies include a self-service station for

dispensing of insect repellents. Personnel are also prescribed chemoprophylaxis. When infestation is high weekly ultra low volume fogging is performed under contract (Reference 3).

6.2.1 Malaria:

Malaria incidents are often associated with the presence of agriculture activity, including irrigation systems and standing water, which provide breeding habitats for vectors. Malaria is caused by protozoan parasites of the genus plasmodium. Malaria is transmitted by the bite of an infected female mosquito. Occasionally, transmission can occur from blood transfusion, organ transplantation, needle sharing, or from mother to fetus. Malaria is characterized by fever and influenza like symptoms, including chills, headache, myalgia, and malaise. In severe disease, seizures, metal confusion, kidney failure, acute respiratory distress syndrome, coma, and death may occur. Malaria symptoms can develop as early as 7 days after being bitten by an infected mosquito. Anyone with symptoms of malaria should seek immediate medical attention (Reference 6)

6.2.2 Leishmaniasis/sand fly fever:

Leishmaniasis and fly fever is transmitted by sand flies. There was not much information provided for sand fly fever provided by the CDC. There are two forms of the disease leishmaniasis; cutaneous (acute form) and visceral (a more latent form of the disease). The most common symptom of cutaneous leishmaniasis is skin sores that can change in size and appearance over time. The symptoms of visceral leishmaniosis are fever, weight loss, enlarged spleen and liver, low red blood cell count, platelet count and white blood cell count. Some people may have no symptoms. There is no vaccine for leishmaniosis so personnel must protect themselves using permethrin-treated clothing an insect repellent (Reference 6).

6.2.3 Crimean-congo hemorrhagic fever (CCHF):

CCHF is transmitted by lxodid tick bites. The onset of the disease typically requires intensive care with fatality rates from 5% to 50%. The onset of CCHF is sudden, with initial signs and symptoms to include headache, high fever, back pain, joint pain, stomach pain and vomiting. Treatment for CCHF is supportive care as there is no effective medication to combat it. Recovery is slow and long-term effect are unknown. There is no safe and effective vaccine currently available for human use so preventive measures include tick repellant and screening for ticks (Reference 6).

6.2.4 Dengue:

The dengue virus is spread to people through the bite of an infected mosquito. Dengue symptoms typically start within a few days of being bitten. Symptoms can be mild or severe and can include fever, nausea, vomiting, rash, headache, eye pain, joint and muscle pain and minor bleeding. There is no immunization for dengue at this time so preventive measure including insect repellent and clothing treated with permethrin are necessary to prevent Dengue (Reference 6).

6.2.5 Plague:

The plague is a rare bacterial disease that affects animals and humans and is spread by fleas. Humans are infected when they are bitten by infected fleas. Wild and domestic carnivore animals (especially cats) can also become infected by eating flees or infected rodents. Bubonic plague is the most common form of plague and includes sudden onset of fever, chills, headache, malaise and swollen glands. No vaccine exists for plague so it must be prevented by keeping flees away by applying insect repellent with DEET (Reference 6).

6.2.6 Typhus-mite borne (scrub typhus**):**

Mite-borne typhus is a significant cause of febrile illness in local populations with rural exposures in areas where the disease is endemic. The most common symptom of infection is a fever, headache, body ache and rash at the site of the bite. Typhus is treated with the antibiotic doxycycline. No vaccine is available to prevent typhus but risk can be reduced by application of insect repellents containing DEET and avoiding contact with mites (Reference 6).

6.2.7 West nile:

West nile fever disease is maintained by the bird population and transmitted to humans via mosquitos. Typically, infections in young, healthy adults were asymptomatic although fever, headache, tiredness, body aches (occasionally with a skin rash on trunk of body), and swollen lymph glands can occur. There is no vaccine or treatment for west nile virus so the best prevention is to protection from mosquito bites by utilizing insect repellent and uniforms treated with Picaridin (Reference 6).

6.3 Water Contact Diseases

Operations or activities that involve extensive water contact may result in personnel being temporarily debilitated with leptospirosis in some locations. Leptospirosis is a disease caused by bacteria that infected animals spread through their urine. Some people with leptospirosis will not have symptoms. When symptoms do occur, they can include fever, headache, chills, muscle aches, vomiting, jaundice, red eyes, stomach pain, diarrhea, and sometimes a rash. Without antibiotic treatment kidney and liver damage may occur. There is no vaccine approved in the United States (U.S.) to prevent leptospirosis. Prevention includes avoiding touching water or soil that has the potential to be contaminated and wearing footwear and other protective clothing (Reference 6).

6.4 Respiratory Diseases

Deployed U.S. Forces may be exposed to a wide variety of common respiratory infections in the local population. These include influenza, pertussis, viral upper respiratory infections, viral and bacterial pneumonia, measles, COVID-19, and others. The U.S. military populations living in close-quarter conditions are at risk for substantial person-to-person spread of respiratory pathogens. COVID-19 and influenza are of particular concern because of their ability to debilitate large numbers of unvaccinated personnel for several days. Mitigation strategies included routine medical screenings, vaccination, enforcing minimum space allocation in housing units, implementing head-to-toe sleeping in crowded housing units, and implementation of proper personal protective equipment (PPE) when necessary for healthcare providers and detention facility personnel. Respiratory infections identified by the CDC to be of particular concern in Afghanistan are discussed below.

6.4.1 Tuberculosis (TB):

TB is a disease caused by bacteria that is spread in the air to others when coughing, speaking or singing. TB bacteria in the lungs can move through the blood to infect other parts of the body, such as the kidney, spine, and brain. Symptoms of TB disease in the lungs include a cough, pain, weakness, weight loss, chills, fever, and night sweats. Although a TB vaccine does exist, it is not always recommended due to its variable effectiveness (Reference 6).

6.4.2 Coronavirus disease 2019 (COVID-19):

According to the CDC website COVID-19 has a high level of infection in Afghanistan. The incubation period for COVID-19 is 3-14 days from exposure. Symptoms can include fever, cough, shortness of breath, fatigue, muscle and body aches, headache, loss of taste or smell, nausea and diarrhea. Several effective vaccines are currently approved or authorized in the U.S. to help prevent COVID-19 (Reference 6).

6.4.3 Hantavirus:

Hantavirus is spread through the air or by eating food contaminated with urine or droppings from rodents. Hantavirus can cause organ damage, especially to the kidneys and blood vessels. Complete recovery can take weeks to months. Symptoms of hantavirus usually develop 3 to 4 weeks after infection but can occur as early as 1 week. Symptoms can include fatigue, fever, muscle aches, headaches, dizziness, chills, nausea, vomiting, diarrhea, and abdominal pain. There are no vaccines to prevent hantavirus disease but personnel can protect themselves by avoiding rodents while in Afghanistan (Reference 6).

6.5 Animal-Contact Diseases

6.5.1 Rabies:

Rabies is transmitted by exposure to the virus-laden saliva of an infected animal, typically through bites, but could occur from scratches contaminated with the saliva. In the U.S. rabies mainly occurs in wild animals however, in Afghanistan bites from dogs are the main source of rabies. Rabies affects the central nervous system. Without appropriate medical care, rabies causes brain disease and death. Symptoms include weakness or discomfort, fever, and headache. As time progresses an infected person may become delirious, hallucinate and become unable to swallow. A vaccine is available in the U.S. to prevent rabies (Reference 6).

6.5.3 Q-fever:

Q-fever is caused by infection with the bacteria Coxiella burnetii. Cattle, sheep, and goats can be infected and people become exposed by breathing in dust contaminated with infected animal body fluids. About half of people infected with Q-fever will develop symptoms. Symptoms develop 2-3 weeks after exposure and include fever, fatigue, headache, chest pain, vomiting, weight loss and cough. Treatment can include doxycycline antibiotics. Vaccines for Q-fever are not available in the U.S. but risk of infection can be reduced by avoiding contact with animals and avoiding consumption of raw milk (Reference 6).

6.6 Soil-Transmitted Helminths (ascaris, whipworm, hookworm)

Although not specific to Afghanistan, soil-transmitted helminths (ascaris, whipworm, and hookworm) refer to the intestinal worms infecting humans that are transmitted through contaminated soil. Helminths live in the intestine and their eggs are passed in the feces of infected persons. Ascaris and whipworm can also be transmitted by hand to mouth when hands are infected with contaminated dirt or by consuming vegetables or fruits that have not been cooked or washed. Heavy infections cause abdominal pain, diarrhea, blood and protein loss, and rectal prolapse. Soil-transmitted helminth infections are treatable with medication prescribed by a health care provider (Reference 6)

7 Venomous Animal/Insect

All information was taken directly from the Clinical Toxicology Resources web site from the University of Adelaide, Australia (Reference 10). This information was obtained in November 2021 and may not reflect the venomous animals/insects during the time frame of this POEMS as it was not possible to obtain information from CYs 2019-2021.The species listed below have home ranges that overlap the location of FOB Fenty and vicinity, and may present a health risk if personnel encounter them. See Section 10.5 for more information about pesticides and pest control measures.

7.1 Spiders

- *Latrodectus dahlia* (Widow spider): Severe envenoming possible, potentially lethal. However, venom effects are mostly minor and unlikely to be lethal.

7.2 Scorpions

- *Androctonus afghanus, Androctonus amoreuxi,* and *Androctonus baluchicus*: Severe envenoming possible, potentially lethal. Severe envenoming may produce direct or indirect cardio toxicity, with cardiac arrhythmias and cardiac failure. Hypovolemic hypotension possible in severe cases due to fluid loss through vomiting and sweating.

- *Afghanobuthus nuamanni, Buthacus striffleri*, *Compsobuthus afghanus*, *Compsobuthus rugosulus, Compsobuthus tofti*, *Mesobuthus caucasicus, Mesobuthus eupeus, Mesobuthus macmahoni, Orthochirus afghanus*, *Orthochirus bicolor, Orthochirus danielleae, Orthochirus erardi*, *Orthochirus heratensis, Orthochirus jalalabadensis, Orthochirus monodi, Orthochirus pallidus, Orthochirus samrchelsis*, *Orthochirus scrobiculosus,* and *Sassanidotus gracilis*: There are a number of dangerous Buthid scorpions, but there are also some known to cause minimal effects only. Without clinical data it is unclear where these species fit within that spectrum.

- *Hottentotta alticola* and *Hottentotta saulcyi*: Moderate envenoming possible but unlikely to prove lethal. Stings by these scorpions may cause only short lived local effects, such as pain.

- *Scorpiops afghanus* and *Scorpiops lindbergi*: Mild envenoming only, not likely to prove lethal. Stings by these scorpions are likely to cause only short lived local effects, such as pain, without systemic effects.

Reviewed by USCENTCOM CCSG (24 May 2022)
Final Approval Date (12 August 2022)

7.3 Snakes

- *Echis multisquamatus* (central Asian saw-scaled viper), *Echis sochureki* (Sochurek's saw-scaled viper), and *Gloydius halys* (Haly's pit viper): Severe envenoming possible, potentially lethal. Bites may cause moderate to severe coagulopathy, local necrosis, renal damage, systemic myolysis, shock and hemorrhaging causing extensive bleeding.

- *Eryx johnii* (Brown sand boa), *Eryx miliaris* (Dwarf sand boa), and Eryx tataricus (Tartar sand boa): Bite unlikely to cause fatality, but death from constriction possible.

- *Hemorrhois ravergieri* (Mountain racer), *Lycodon straiatus* (Northern wolf snake), *Oligodon taeniolatus* (Sreaked kukri snake), *Platyceps karelini* (Spotted snake), *Platyceps rhodorachis* (Jan's desert racer), *Platyceps ventromaculatus* (Hand snake): Non-lethal and insufficient clinical reports on other effects.

- *Macrovipera lebetina obtuse* (Levantine viper), and *Macrovipera lebetina turanica* (Levantine viper): Severe envenoming possible, potentially lethal. Common, moderate to severe coagulopathy and hemorrhaging causing extensive bleeding is common. Shock is also possible.

- *Naja oxiana* (Oxus cobra): Severe envenoming possible, potentially lethal. Bites can cause systemic effects, principally flaccid paralysis.

- *Pseudocerastes persicus* (Persian dwarf snake): Unlikely to cause significant envenoming; limited clinical data suggest bites result in local effects only.

- *Gloydius halys* (Halys pit viper): Potentially lethal envenoming, though unlikely, cannot be excluded. Bites can cause systemic effects including necrosis, coagulopathy, renal failure and shock.

7.4 Short-Term Health Risk

Low: If encountered, effects of venom vary with species from mild localized swelling (e.g. widow spider) to potentially lethal effects (e.g., Haly's pit viper). See effects of venom above. Mitigation strategies included avoiding contact, proper wear of uniform (especially footwear), and timely medical treatment.

7.5 Long-Term Health Risk

No long-term health effects were identified with proper treatment.

8 Heat/Cold Stress

Summer (May - September) monthly mean daily maximum temperatures range from 96 degrees Fahrenheit (°F) to 104 °F with an average temperature of about 88 °F based on historical climatological data from the U.S. Air Force Combat Climatology Center, 14th Weather Squadron for Jalalabad. However, work intensity and clothing/equipment worn pose greater health risk of heat stress/injury than environmental factors alone. Managing risk of hot weather operations likely included

monitoring work/rest periods, proper hydration, and taking individual risk factors (e.g., acclimation, weight, and physical conditioning) into consideration. Risk of heat stress/injury was likely reduced with preventive measures (Reference 11).

8.1 Heat

8.1.1 Short-term health risk:

High, mitigated to Low: Based on standard Army policy the risk of heat injury should have been reduced to low through preventive measures such as work/rest cycles, proper hydration and nutrition, and monitoring Wet Bulb Globe Temperature (WBGT). Risk of heat injury in unacclimatized or susceptible populations (older, previous history of heat injury, poor physical condition, underlying medical/health conditions), and those under operational constraints (equipment, PPE, vehicles) was Extremely High June - August (≥ 88°F), High for May and September (82-87.9 °F), and Low from October – April (< 78 °F).

8.1.2 Long-term health risk:

Low: The long-term risk is Low. However, the risk may be greater for certain susceptible persons– those older (i.e., greater than 45 years), in lesser physical shape, or with underlying medical/health conditions. Long-term health implications from heat injuries are rare but may occur, especially from more serious injuries such as heat stroke. It is possible that high heat in conjunction with various chemical exposures may increase long-term health risks, though specific scientific evidence is not conclusive.

8.2 Cold

Winter (October - April) mean daily minimum temperatures ranged from 36°F to 47 °F with an average daily minimum temperature of 50 °F based on historic climatological data from the U.S. Air Force Combat Climatology Center, 14th Weather Squadron for Jalalabad, Afghanistan.

8.2.1 Short-term and long-term health risk:

Low: The short and long-term health risk of cold injury was Low as temperatures significantly below freezing rarely occur.

9 Noise

9.1 Continuous

The OEHSAs identified aircraft noise as a noise sources on FOB Fenty (Reference 3).

9.1.1 Short-term and long-term health risk:

High to Low: High to moderate risk for personnel not wearing hearing protection (dependent on magnitude, frequency and duration of exposures). Low risk for personnel working near major noise sources who wear proper hearing protection.

9.2 Impulse

No specific hazard sources were documented in DOEHRS from the 01 January 2019 to 31 August 2021 timeframe.

10 Unique Incidents/Concerns

10.1 Potential Environmental Contamination Sources

DoD personnel are exposed to various chemical, physical, ergonomic, and biological hazards in the course of performing their mission. These types of hazards depend on the mission of the unit and the operations and tasks which the personnel are required to perform to complete their mission. The health risk associated with these hazards depends on a number of elements including what materials are used, how long the exposure last, what is done to the material, the environment where the task or operation is performed, and what controls are used. The hazards can include exposures to heavy metal particulates (e.g., lead, cadmium, manganese, chromium, and iron oxide), solvents, fuels, oils, and gases (e.g., carbon monoxide, carbon dioxide, oxides of nitrogen, and oxides of sulfur). Most of these exposures occur when performing maintenance tasks such as painting, grinding, welding, engine repair, or movement through contaminated areas. Exposures to these occupational hazards can occur through inhalation (air), skin contact, or ingestion; however, exposures through air are generally associated with the highest health risk.

10.2 Waste Sites/Waste Disposal

FOB Fenty had a hazardous materials (HAZMAT) yard that was operated by the contractor FLUOR. FLUOR collects, segregates and ships the HAZMAT to Bagram for final disposal. FOB Fenty also had an incinerator yard that managed four solid waste incinerators: two six ton CS225 incinerators, and two Mediburn 220 incinerators. DoD contractors were responsible for solid waste transportation to the incinerator yard and operation of the incinerators. Incinerator stacks were about 30 feet high to help in diverting emissions from the breathing zone (Reference 3).

10.2.1 Short-term and long-term health risk:

Low: Short-term and long-term health risk is low as incinerators were operated and maintained under contract and no issues or complaints have been reported in regards to the incinerators.

10.3 Fuel/Petroleum Products/Industrial Chemical Spills

There was one 5,000 gallon fuel tank for gasoline, four 210,000 gallon JP-8 fuel tanks and one 50,000 gallon JP-8 fuel tank at FOB Fenty. There are two fueling operation points, one general vehicle fueling station and one for aircraft fueling (Reference 3). No spills were documented in the OEHSAs or basecamp assessments.

10.3.1 Short-term and long-term health risk:

None identified: There were no spills identified during the time-frame of this POEMS.

10.4 Lead Based Paint

No specific hazard sources were documented in the DOEHRS from the 01 January 2019 to 31 August 2021 timeframe (Reference 3).

10.5 Pesticides/Pest Control

The health risk of exposure to pesticide residues is considered within the framework of typical residential exposure scenarios, based on the types of equipment, techniques, and pesticide products that have been employed, such as enclosed bait stations for rodenticides, various handheld equipment for spot treatments of insecticides and herbicides, and a number of ready-to-use (RTU) methods such as aerosol cans and baits. The control of rodents required the majority of pest management inputs, with the acutely toxic rodenticides staged as solid formulation lethal baits placed in tamper-resistant bait stations indoors and outdoors throughout cantonment areas. Nuisance insects, including biting and stinging insects such as bees, wasps, and ants, also required significant pest management inputs. Use of pesticides targeting against these pests generally involved selection of compounds with low mammalian toxicity and short-term residual using pinpoint rather than broadcast application techniques.

Mosquitos were an issue at FOB Fenty and vicinity. Specifically the Culex and Anopheles species. The main concern from mosquitos in the FOB Fenty area is malaria. Mosquitos were mitigated primarily by fogging and trapping which is performed under contract either weekly or bi-weekly depending on counts. There was also an available self service station for all personnel to obtain insect repellents whenever needed. Stray cats, snakes and hornets/bees were also concerns (Reference 3)

10.5.1 Short-term and long-term health risk:

None identified: No specific hazards due to pesticide use was identified in the DOEHRS as application is handled by a contractor and contained bait packs and pellets were the predominant method of pest control.

10.6 Asbestos

No specific hazard sources were documented in the Defense Occupational and Environmental Health Readiness System (DOEHRS) from 01 January 2019 to 31 August 2021 timeframe (Reference 3).

10.7 Burn Pits/Incinerators

FOB Fenty had four incinerators, two Regulated Medical Waste incinerators (Mediburn 220) and two six ton Residential incinertors(CS225). Incinerator stacks are about 30 feet high to divert emissions out of the breathing zone. There was also an Airburner fire box which was used for burning construction materials and tree limbs and various brush/vegetation. The fire box is operated by a contractor and not military personnel (Reference 3). No specific information was available on the burn box or incinerators to assess risk.

11 References

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2. DoDI 6055.05, Occupational and Environmental Health, 2008.
3. Defense Occupational and Environmental Health Readiness System (referred to as the DOEHRS-EH database) at https://doehrs-ih.csd.disa.mil/Doehrs/.
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12. IOM (Institute of Medicine). 2011. Long-term health consequences of exposure to burn pits in Iraq and Afghanistan. Washington, DC: The National Academies Press.

12 Where Do I Get More Information?

If a provider feels that the Service member's or Veteran's current medical condition may be attributed to specific OEH exposures at this deployment location, he/she can contact the Service-specific organization below. Organizations external to DoD should contact Deputy Assistant Secretary of Defense for Health Readiness Policy and Oversight (HRP&O).
U.S. Army Public Health Center (USAPHC) Phone: (800) 222-9698. https://phc.amedd.army.mil/Pages/default.aspx
Navy and Marine Corps Public Health Center (NMCPHC) (formerly NEHC) Phone: (757) 953-0700. http://www.med.navy.mil/sites/nmcphc/Pages/Home.aspx
U.S. Air Force School of Aerospace Medicine (USAFSAM) (formerly AFIOH) Phone: (888) 232-3764. http://www.wpafb.af.mil/afrl/711hpw/usafsam/
DoD Health Readiness Policy and Oversight (HRP & O) Phone: (800) 497-6261. https://health.mil/Military-Health-Topics/Health-Readiness

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