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***Aerospace Medicine***



**OCCUPATIONAL AND ENVIRONMENTAL  
HEALTH SITE ASSESSMENT**

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This manual standardizes procedures for developing and executing occupational and environmental health site assessments (OEHSA). This manual also provides guidance for occupational and environmental health (OEH) surveillance activities in both home station (i.e., garrison) and expeditionary (i.e., deployed) settings. This AFMAN, in concert with AFMAN 48-153, *Health Risk Assessment*, satisfies requirements and procedures for executing OEH surveillance. AFMOA/SGPB Field Manual, *Bioenvironmental Engineering OEHSA*, is the companion document for this AFMAN and provides the details to execute comprehensive OEH site assessments and develop associated sampling strategies. Current OEH programs are required to transition to the requirements identified in this AFMAN, and tools in the field manual should be used to execute the OEHSA.

This AFMAN applies to all Air Force (AF) personnel (active and reserve components) and the Air National Guard (ANG) in both home station and expeditionary settings. This manual does not apply to employees and private contractors performing work under government contracts, or state workers. Contractors and States are solely responsible for compliance with OSHA standards and the protection of their employees. This does not prohibit providing sampling and survey information to side-by-side contractors and State employees based on local arrangements. Send comments and suggested improvements on AF Form 847, **Recommendations for Change of Publication**, through major commands to AFMOA/SGPB, 110 Luke Avenue, Room 405, Bolling AFB, DC 20032-7050.

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## Chapter 1

### INTRODUCTION

#### 1.1. Overview.

1.1.1. The OEHSA is the key operational health tool for producing data or information used for health risk assessments (HRA) and to satisfy OEH surveillance requirements. OEHSAs focus on collecting site-specific data to identify potential or actual exposure pathways during bed down, employ, and sustainment of air and space forces. OEHSAs are also the mechanism for providing OEH inputs into the development of base support and expeditionary site plans. As a result, the inputs identify and quantify OEH threats impacting mission and operational success. The primary objectives of an OEHSA are to:

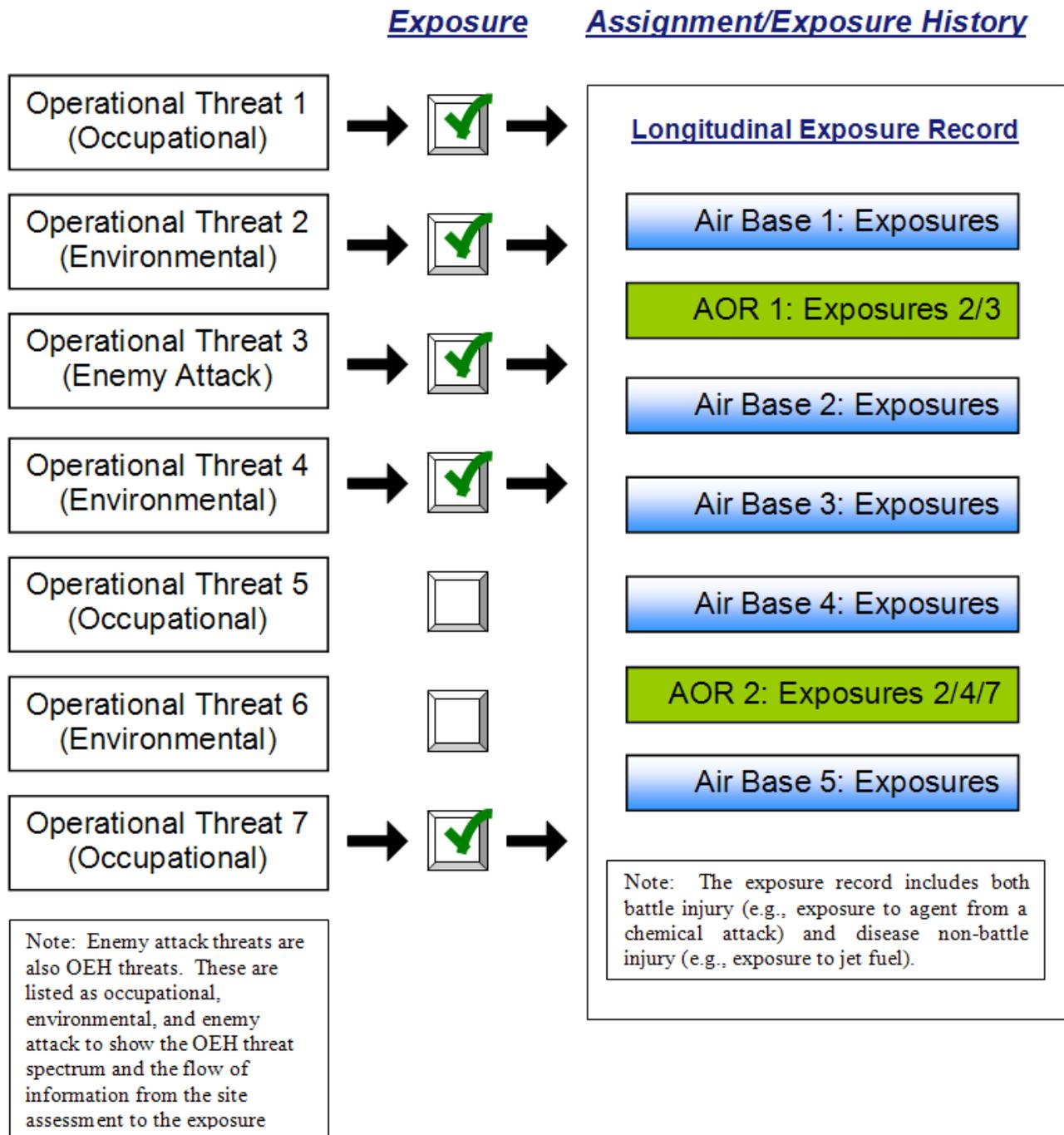
- 1.1.1.1. Identify OEH threats or hazards and potential adverse health effects and impacts
- 1.1.1.2. Collect and document OEH exposure data (including demographic and occupational data) for the service member's longitudinal exposure record (LER)
- 1.1.1.3. Inform commanders of health threats and risk mitigation options through HRA
- 1.1.1.4. Reduce or eliminate health risks and maximize operations
- 1.1.1.5. Mitigate encroachment on mission capability
- 1.1.1.6. Support health surveillance

1.1.2. The OEHSA process provides a standardized OEH framework for developing sampling strategies, selecting monitoring equipment, and collecting samples. This process is used to implement the requirements outlined in AFI 48-145, *Occupational and Environmental Health Program*, and AFMAN 48-146, *Occupational and Environmental Health Program and Information Management*. The OEHSA process does not generate new reports outside of the aforementioned guidance and Bioenvironmental Engineering (BE) management information systems (i.e., Command Core System and Global Expeditionary Medical System) are the repository for OEHSA data collected. OEHSAs supply data for the Occupational and Environmental Health Exposure Data (OEHED) and is the form or report used for communicating exposures, establishing medical monitoring requirements, and are the inputs into the LER. The OEHSA via the HRA provides the information that enables the commander's operational risk management (ORM) decision-making.

#### 1.2. Scope and Application.

1.2.1. Scope. OEHSAs are required for both home station and expeditionary operations. OEH exposure data should correlate with each Airman's assignment history regardless of geographic location; therefore, data and information for both occupational and environmental exposures must be associated with the individual. **Figure 1.1.** reflects the connection between the health threat and the assessed exposure history captured in the LER. In addition, AFI 10-404, *Base Support and Expeditionary Site Planning*, identifies requirements for producing In-Garrison Expeditionary Site Plans (IGESP) and Expeditionary Site Plans (ESP). The OEHSA provides valuable preventive medicine and exposure input for those plans.

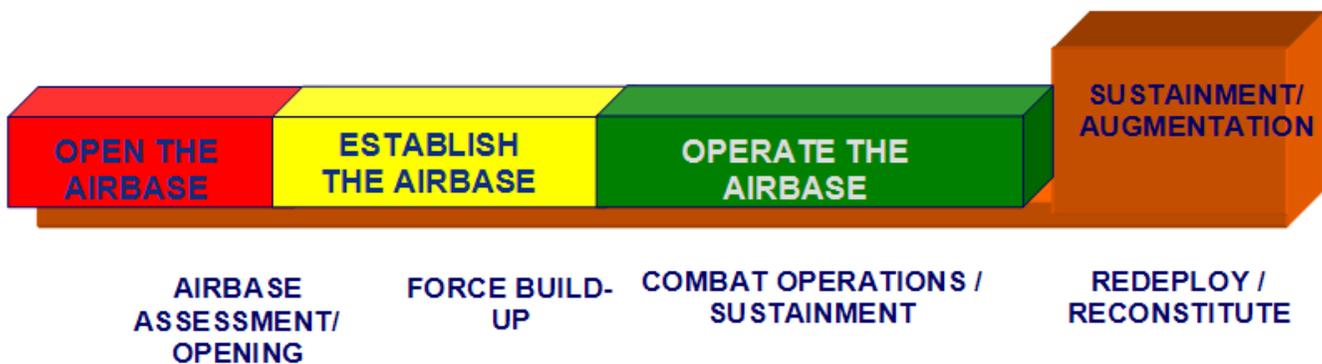
Figure 1.1. OEH Threats and Longitudinal Exposure Record



1.2.2. Application. Agile Combat Support (ACS) and Expeditionary Combat Support (ECS) creates, sustains, and protects air and space capabilities required to execute missions across the full spectrum of conflict. The Air Force Medical Service (AFMS) provides critical support through its preventive medicine expertise and is a critical component in delivering ACS and ECS.

1.2.2.1. OEHSAs will be executed at home station and during expeditionary operations to collect the necessary data and determine potential and actual health risks. In support of the IGESP, ESP, and expeditionary operations, OEHSA execution is straightforward since the site assessment is part of preliminary data collection and the “Open the Base” capability under the force module concept.

**Figure 1.2. Force Module Basics**



1.2.2.1.1. For home station operations, transition to the OEHSA model will require realignment of existing OEH data and exposure information, and reassessment of potential health threats (e.g., potential community-related exposures) not captured or assessed by the base medical treatment facility (MTF). Current occupational health (OH) exposure data is generally robust at established bases; however, environmental health data is not completely integrated into the OEH surveillance program and health risk assessment decision-making process. The same tactics and procedures used during traditional home station OH surveillance (e.g., field screening and compliance sampling) will apply to environmental or community health threats. The workplace, as defined by AFI 48-145, now requires categorization to include OEH threats versus the categorization of only OH hazards.

1.2.2.2. In addition to AFI 48-145 and AFMAN 48-146 setting the foundation for OEHSAs, the American Society for Testing and Materials (ASTM) E 2318-03, Standard Guide for Environmental Health Site Assessment Process for Military Deployments, describes the scientific methodology for conducting environmental health site assessments (EHSA). The integration of OH exposures completes this methodology for the AFMS and addresses a wide range of health threats that affect mission capability and personnel operating at sites and installations. [Table 2.1.](#) provides a comparison of steps between this AFMAN and the ASTM standard.

1.2.2.3. OEHSAs are updated as new information becomes available, especially after military rotations or missions change at a site. After the initial assessment is completed, routine and specialized assessment activities will be started in accordance with AFI 48-145. Routine and special-

ized assessments continue to include environmental or community health threats to ensure risks are assessed across the full spectrum of health threats.

1.2.2.4. Numerous information-related resources are required to plan and execute OEHSAs. Links to organizations and websites referenced in this document can be accessed via the Bioenvironmental Engineering, “Dash Board”, which will be maintained through the AFMS Knowledge Exchange.

### 1.3. Roles.

1.3.1. Bioenvironmental engineering (BE) will lead OEHSA execution with assistance from medical functional subject matter experts (SME) (e.g., public health and flight medicine). The degree of participation from SMEs is dependent on the organization of the MTF at home station or the medical unit type codes (UTC) deployed in the area of responsibility (AOR). Additional assistance will be required from other ACS and ECS SMEs (e.g., civil engineering readiness, environmental officers, security forces).

1.3.1.1. In the current force module construct, the Medical Global Reach Laydown UTC (FFGRL) may be the first to arrive at the bed down location and has the capability to assess OEH conditions. The FFGRL initiates the OEHSA and provides input to commanders to enable decisions on site selections (reference the FFGRL CONOPS, Mission Capability (MISCAP) statement, and allowance standard (AS) for further information). BE personnel need to ensure commanders understand the nature of this OEH data for decision making (i.e., use of direct reading instruments to accomplish the assessment and related limitations (e.g., sensitivity, specificity, accuracy).

1.3.1.2. The Prevention and Aerospace Medicine UTCs (FFPM1/2/3) will deploy and be capable of interpreting the FFGRL collected data and continue to collect data in order to complete the OEHSA. If FFPM arrives at a location without a FFGRL present prior to arrival, then the FFPM is responsible for initiating the OEHSA. FFPM equipment is more sophisticated and has the capability to identify and quantify OEH threats at lower concentration thresholds (reference the FFPM CONOPS or MISCAP statement and AS for further information). In addition, the FFPMs rely on reach back laboratories (i.e., United States Army Center for Health Promotion and Preventive Medicine (USACHPPM)-Europe or Air Force Institute for Operational Health) to better quantify potential exposures.

1.3.1.3. BE is generally organized within the MTF as either a flight or element under an Aerospace Medicine squadron or flight, respectively. This alignment facilitates OEHSA execution and integration of occupational and environmental exposures into the OEH program in accordance with AFI 48-145.

1.3.2. The AF Institute for Operational Health provides reach back expertise on OEHSA processes.

## Chapter 2

## OEHSA STRUCTURE

**2.1. Structure.** **Table 2.1.** links the OEHSA process (fourth column) with the ORM steps, the AFMS HRA procedure (to include health risk management as detailed in AFMAN 48-153, Health Risk Assessment) and the process identified in ASTM E 2318-03. **Chapter 3** articulates the details of each step in the OEHSA process. These steps, although listed sequentially, may be executed in different orders according to the tactical situation at the site.

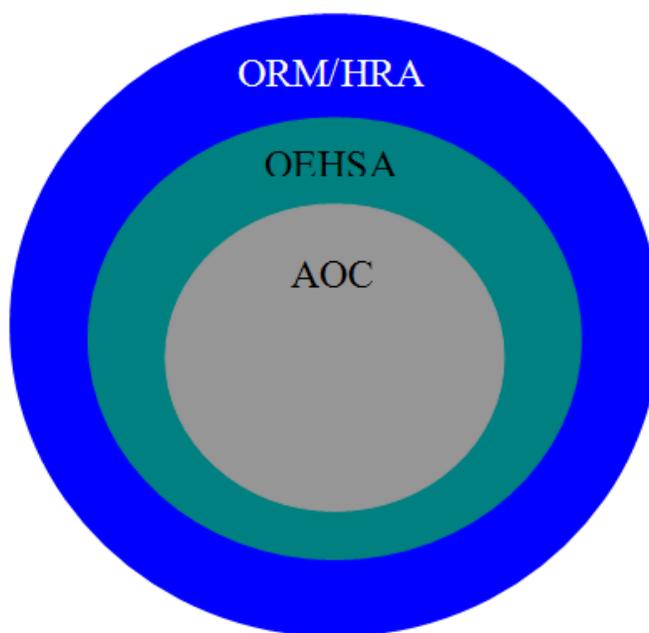
Table 2.1. Steps.

ORM	HRA	ASTM	OEHSA
Identify Hazard <i>Step 1</i>	Identify Health Threats / Hazards	Predeployment Activities	Predeployment/Baseline Activities (Paragraph 3.2.)
Identify Hazard <i>Step 1</i>	Identify Health Threats / Risks	Site Reconnaissance / Interviews	Site Identification/ Sectoring (Paragraph 3.3.)
Assess Risks <i>Step 2</i>	Identify / Analyze Health Threats / Risks	NA	Site Reconnaissance (Paragraph 3.4.)
Assess Risks <i>Step 2</i>	Analyze Health Threats / Risks	Conceptual Site Model	Conceptual Site Model (Paragraph 3.5.)
Assess Risk <i>Step 2</i>	Analyze Health Threats / Risks	Sampling	Initial/Specialized Surveillance (Paragraph 3.6. / 3.7.)
Analyze Risk Controls <i>Step 3</i>	Identify Engineering / Administrative Controls and Protective Equipment	NA	Initial/Specialized Surveillance (Paragraph 3.6. / 3.7.)
Make Control Decisions <i>Step 4</i>	Make Health Control Decisions	NA	NA
Implement Risk Controls <i>Step 5</i>	Implement Health Risk Controls	Review	Reassessment (Paragraph 3.8.)
Supervise and Review <i>Step 6</i>	Supervise and Review	Review	Reassessment (Paragraph 3.8.)

## 2.2. Structure Elements

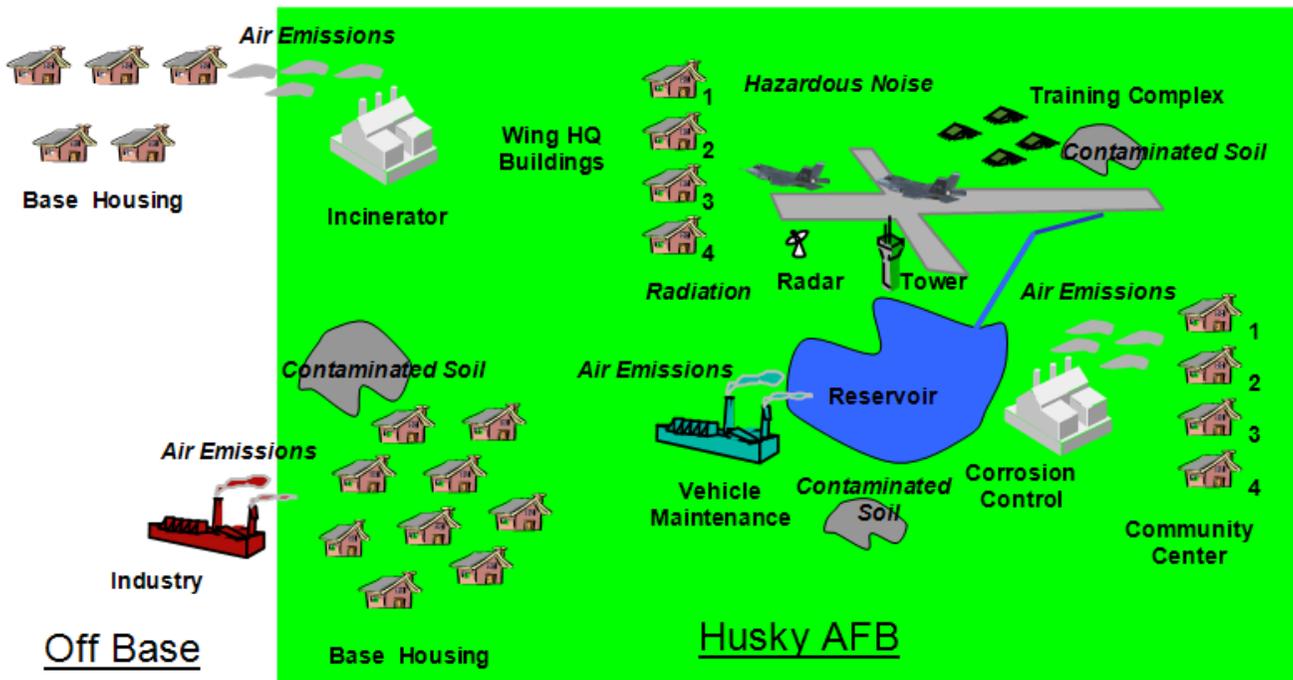
2.2.1. Workplace. A workplace's boundaries are determined by the missions or operations to be executed and possibly by potential health threats which may exist. The workplace is equivalent to an area of concern (AOC) (the term used in previous EHSA guidance and the Global Expeditionary Medicine System). **Figure 2.1.** represents the relationship. The AOC can be defined as a large area (e.g., area of operations, base, or site) or subdivided into smaller "sectors" where specific operational tasks (i.e., processes) are performed. The workplace may include other areas of the base not traditionally considered as a part of the site (e.g., home station base housing). Additionally, potential exposures may originate on base and affect personnel/resources off base (e.g., dependent children exposed to volatile organic compounds from the waste water treatment plant at an off base child care center) or limit mission capability by restricting operational space. If the source of a health threat affecting personnel originates outside the defined workplace (i.e., off-base smoke plume), then the source will be included in the workplace assessment. Health threats from one workplace should also be evaluated as to how they affect other workplaces.

**Figure 2.1. OEHSA and AOC Relationship.**



2.2.1.1. In [Figure 2.2.](#), the fictitious base (Husky AFB) has numerous AOCs and the potential threats identified (*in italics*) stress the importance of assessing the OEH threat spectrum at home station. Specific threats and potential pathways are provided as examples and listed in [Table 2.2.](#)

**Figure 2.2. Husky AFB Site Assessment Model**



**Table 2.2. Husky AFB Site Assessment Data**

<b>AOC</b>	<b>Threat</b>	<b>Pathway</b>
Base Housing (Off)	Toxic Industrial Material (Incinerator)	Air (Inhalation)
Base Housing (On)	Toxic Industrial Material (Local Industry)	Air (Inhalation)
Base Housing (On)	Toxic Industrial Material (Restoration Site)	Soil (Contact)
Wing HQ	Noise (Aircraft)	Air
Wing HQ	Nonionizing Radiation (Radar)	Air
Wing HQ	Toxic Industrial Material (Jet Engine Emissions)	Air (Inhalation)
Community Center	Toxic Industrial Material (Corrosion Control)	Air (Inhalation)
Training Complex	Toxic Industrial Material (Jet Engine Emissions) Noise (Aircraft) Toxic Industrial Material (Dump Site)	Air (Inhalation) Air Soil (Contact)
Husky AFB	Toxic Industrial Materials (Industrial Activities)  Noise (Aircraft)  Vectors (Reservoir)	Air (Inhalation) Soil (Contact) Water (Ingestion)  Air  Water (Contact)

**NOTE:** These AOCs are not all inclusive and do not include specific processes performed in the vehicle maintenance or corrosion control facility--these processes may become an AOC based on the threats identified.

2.2.1.2. In **Figure 2.3.**, numerous AOCs exist in the deployed setting. The potential threats identified in the figure and **Table 2.3.** are the same types provided in **Figure 2.2.** The OEHSA approach does not differ; however, the determination of AOCs will be based on the threats that exist at the site.

Figure 2.3. Camp Falcon Site Assessment Model

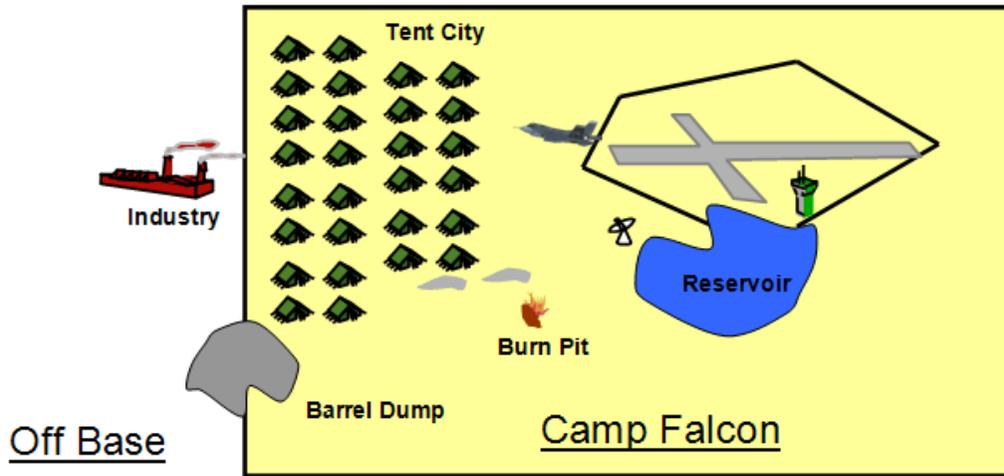


Table 2.3. Camp Falcon Site Assessment Data

AOC	Threat	Pathway
Tent City	Toxic Industrial Material (Local Industry)	Air (Inhalation)
Tent City	Toxic Industrial Material (Burn Pit)	Air (Inhalation)
Tent City	Noise	Air
Tent City	Radiation	Air
Tent City	Toxic Industrial Material (Barrel Dump)	Air (Inhalation) Soil (Contact)
Camp Falcon	Sand	Air (Inhalation)
Camp Falcon	Unknown	Water (Contact)

**NOTE:** These AOCs are not inclusive and do not include specific processes performed as a part ECS. These processes will become AOCs based on the threats identified.

2.2.2. Similar Exposure Groups. Typically similar exposure groups (SEGs) (as referenced in AFMAN 48-146) will either be an AOC or located within the AOC. Examples of SEGs, using [Figure 2.2.](#), follow:

**Table 2.4. Husky AFB SEGs**

<b>AOC</b>	<b>Threat</b>	<b>SEG</b>
Base Housing (Off)	Toxic Industrial Material (Incinerator)	Base Housing Occupants
Base Housing (On)	Toxic Industrial Material (Local Industry)	Base Housing Occupants
Base Housing (On)	Toxic Industrial Material (Restoration Site)	Base Housing Occupants
Wing	Noise (Aircraft)	Buildings 1-4 Occupants
Wing	Nonionizing Radiation (Radar)	Building 4 Occupants
Community Center	Toxic Industrial Material (Corrosion Control)	Buildings 1-2 Occupants
Woodward AFB	Toxic Industrial Materials (Industrial Activities around Reservoir)	Base-wide Personnel

**NOTE:** These SEGs are not all inclusive and do not consider the industrial processes performed. The specific process identified will dictate what SEGs are required to enable accurate surveillance and medical monitoring if applicable.

## Chapter 3

### OEHSA STEPS

**3.1. Overview.** An OEHSA is executed as soon as operationally feasible and is dependent on whether the location is in a permissible or non-permissible environment. However, a preliminary assessment should be made during the planning phase or prior to deployments to identify any unique resource requirements. Execution in a non-permissible environment will be dictated by the chain-of-command. Note: Differences between home station and expeditionary settings are highlighted if differences exist.

**3.2. Predeployment and Baseline Activities.** These activities are designed to collect and document pertinent site information (potential hazards). The objective is to identify present and past external factors that could have adverse health effects on personnel. Information must identify operations (e.g., industrial, commercial, and institutional facilities) and commodities that currently pose health risks (to include if destroyed, damaged, released, or held hostage by the enemy). Data and information sources and types include:

Home Station Documentation (e.g., Installation Restoration Program)

Intelligence Sources (Medical, Counterproliferation, Facilities, and Regional)

Armed Forces Medical Intelligence Center (AFMIC)

Defense Intelligence Agency (DIA)

National Ground Intelligence Center (NGIC)

USACHPPM

Medical Environmental Disease Intelligence and Countermeasure (MEDIC) CD

Air Field Surveys

Vulnerability Assessments (VA)

Previous After Action Reports (AAR)

Department of State (DOS)

US Environmental Protection Agency (EPA)

Department of Energy (DOE)

3.2.1. Home Station Documentation. Established CONUS/OCONUS bases have substantial documentation regarding OEH threats, hazards, and exposures in relation to weapon systems and base operations. This data is critical in determining potential exposures and forwarding to UTCs for use in deployed settings.

3.2.2. Intelligence Sources. Health information can be found in various intelligence products. Several intelligence agencies provide excellent, actionable information for an OEHSA (primary use is prior to deployments and for establishing baselines). The use of intelligence can assist in identifying unique threats to the deployed area. In addition, intelligence updates should be requested on a periodic basis to determine whether the threats have decreased, increased, or remained the same. If specific intelligence is not available, then BE should consult the base or local intelligence officer and submit a "Request for Information" (i.e., input into the *Community On Line Intelligence System for End Users*

*and Managers (COLISEUM)*). Allow sufficient time for this system to work (e.g., 2-3 weeks). Do not limit the request to a specific agency since this may reduce opportunities for broader information to meet operational health requirements. Also, request the proper classification level for your intelligence needs.

3.2.2.1. Medical Intelligence. DIA provides medical intelligence through AFMIC. AFMIC produces finished, all-source, medical intelligence in support of the Department of Defense and its components, national policy officials, and other federal agencies. AFMIC assesses health risks and medical capabilities of foreign countries. Assessments, forecasts, and databases are prepared on and are broken down into four areas of responsibility: 1) infectious disease and environmental health; 2) epidemiology; 3) medical capabilities (global health systems and medical infrastructure); and 4) foreign life science technology. Specific products to assist include an Environmental Health Risk Assessment, Infectious Disease Risk Assessment, and Industrial Facility Health Risk Assessment. AFMIC provides current medical intelligence focusing on environmental risks that can degrade force health or effectiveness including: industrial toxic chemical/radiation accidents; environmental warfare/terrorism; and hazardous waste. AFMIC's goal is to identify any potential hazardous sources, describe the health implications of specific agents of concern, characterize the risks to potentially exposed personnel, and translate the human health risk into operational impact. The Epidemiology section provides current medical intelligence focusing on those infectious diseases that could degrade mission effectiveness of deployed forces. This section also assesses: 1) the impact of worldwide infectious diseases/trends on national security and policy formulation and 2) endemic disease baselines to support arms control. In summary, the following information necessary to initiate an OEHSA includes:

Historical and current property use of the site such as the type of agricultural, industrial, institutional, commercial and/or residential uses.

Known hazardous waste sites.

Known contamination and pollution in air, water and soil media.

Typical climate conditions including normal and extreme temperatures, seasonal precipitation, and seasonal prevalent wind directions and velocities.

Known property use including type of infrastructure such as existing buildings, transportation networks, water treatment and distribution systems, wastewater collection and treatment systems, and known power generation and transmission systems.

Maps, topographic and geological information relevant to the deployment area.

The MEDIC CD, another AFMIC product, is an important intelligence product that forms the cornerstone of the deploying unit's intelligence assessment. It provides worldwide disease and environmental health risks hyperlinked to the Joint Service-approved countermeasure recommendations. Additionally, the MEDIC CD furnishes: 1) military and civilian health care delivery capabilities; 2) operational information; and 3) disease vector ecology information.

3.2.2.2. DIA. DIA also provides other pertinent operational intelligence to include counterproliferation, facilities, and regional information. DIA information provides chemical, biological, radiological, and nuclear-related current and emerging threat information and regional politics. This intelligence will provide a better understanding on the chemical and biological threats specific to

countries of interest. Obtain this information from the installation intelligence officer or Office of Special Investigation.

3.2.2.3. NGIC. NGIC information will provide a better understanding of ground and operational threats. In addition, NGIC provides information on protective and defensive measures specific to countries of interest.

3.2.2.4. USACHPPM. USACHPPM has specific information for industrial bases, possibly near deployed force locations, to include types of industry and hazard assessments.

3.2.3. Airfield Surveys. These survey reports can provide orientation to the site location and help identify areas of concern, geographic features, hazards, and other pertinent information.

3.2.4. VAs. AFI 10-245, *AF Antiterrorism Standards*, requires the collection of threat information and VAs at all installations at least annually. AFI 41-106, *Medical Readiness Planning and Training*, and AFI 48-144, *Safe Drinking Water Surveillance Program*, directs BE to conduct toxic industrial chemical/toxic industrial material and water VAs. These assessments collect valuable information regarding health threats and complement the HRA process. Ensure VA data and information are integrated into the OEHSA, as applicable.

3.2.5. Previous AARs. AARs can identify issues with a location and lessons learned during past deployments. These reports provide information regarding industry types and problems identified. In a sustained operation, it gives the deploying unit continuity on past practices, issues, and problems.

3.2.6. DOS. DOS is responsible for US diplomats abroad. Additionally, the DOS provides advisories to US travelers abroad. This may be useful information for OCONUS locations, in particular, regarding contact information for embassies and consulates. Embassies and consulates can provide local information that may be useful to units, such as: exchange rate policies; medical capabilities; host nation sources; state and local agencies; foreign intelligence threats; local threats; etc. Since each embassy has a military attachè, it is important to establish contact and derive current intelligence from this source. Additionally, the embassy may be the conduit by which units expedite requests to the host nation. The above contact may be facilitated through an intelligence officer.

3.2.7. US EPA Industry Information. EPA has compiled information regarding major industries and the typical chemicals used, materials produced as waste, and most common emissions. Other countries (e.g., European Union members, Japan, etc.) provide similar industry information and can be used for overseas bases and deployed locations if available.

3.2.8. DOE. DOE has developed extensive information regarding radiological contaminated areas to include overseas.

**3.3. Site Identification and Sectoring.** This step defines the overarching boundaries the OEHSA covers, starting with the area of responsibility (AOR), area of operations (AO), missions, and includes personnel and equipment executing those missions. Within this step, delineation and segregation of workplaces takes place. Similar mission activities are associated to each other as well as with geographical proximity. At a later point, SEGs may be determined based on proximity of activity or similarity of tasks. For home station, delineation of the AO (i.e., the base) is complete and association of processes into workplaces is an administrative exercise. Sectoring in accordance with counter-chemical, biological, radiological, nuclear, and high-yield explosive zones needs to be completed--contact Civil Engineer Readiness for the current grid and further guidance. This is the initial grid breakout for sampling and analysis and may be sufficient pending potential threat identification.

**3.4. Site Reconnaissance.** Validation of information collected during the predeployment and baseline step is required--the optimal validation method is visual observation around the perimeter and through the camp or base. Interviews with military, host nation, and local personnel may also reveal important information. Data and information collected needs to clearly define potential and actual threats or hazards (reference ASTM E 2318-03, chapter 7, for specific guidance). Visual clues also help identify potential hazards within workplaces (e.g., industries in the area, stained soils, debris piles, lagoons, pits, ponds, unnatural topography, stressed vegetation, sick animals, drums, local resident information, etc.). Potential hazardous facilities (e.g., industrial, manufacturing, waste reclamation and disposal, medical facilities) within a twenty-mile radius of the site should be considered in the vulnerability analysis. Consider a greater radius for extremely hazardous operations (e.g., weapons storage facilities and nuclear power plants).

**3.5. Conceptual Site Model (CSM).** The CSM, as described in ASTM E 2318-03, articulates the health threats and exposure pathways and begins when data or information is gathered during predeployment and baseline activities. Routine (i.e., initial screening) and specialized assessments provide the qualitative and quantitative data required to assess the health risks and complete the CSMs. Site information must be evaluated to determine the type and degree of risk associated with the identified threats. As described in AFMAN 48-153, *Health Risk Assessment*, a completed exposure pathway must exist for a threat or hazard to be a risk. As a part of this step, the process described in AFMAN 48-146 is used to recognize potential exposure routes to personnel in contaminated environments.

**NOTE:** Reference AFMOA/SGPB Field Manual, *Bioenvironmental Engineering OEHSAs*, to assist with developing sampling strategies and collecting OEH data to complete both initial and specialized assessments.

**3.6. Initial (Routine) Assessment.** The initial surveillance, or screening, is to detect or identify ambient threats or hazards that pose potential health risks. This screening covers the ambient environment. BE will perform sampling and analysis for contaminants of concern (COC) and potential hazards using equipment that is portable and reliable for field screening at levels determined to be "short-term safe" for populations at risk. Analyses must be quick, accurate and provide suitable data for decision-making. If COCs are identified, additional sampling through specialized assessment may be required to better quantify the COC(s) and assess the health risk. If initial screening adequately quantifies or qualifies the COC(s), no further assessment is required for that set of COCs.

3.6.1. Air and Soil Sampling. This occupational and environmental sampling is critical to assist with bed down decisions in the expeditionary setting. Air and soil sampling will also be the focus at established bases in completing the OEHSAs and determining OEH risks in the workplace. Ensure physical hazards (e.g., noise, radiation, heat stress) generated from industrial-type operations, or due to geographic location, are immediately assessed to determine potential and actual pathways and exposures. These threats exist immediately upon bed down and increase in scope as sites develop and transition into sustained operations.

3.6.2. Surface Water Sampling. Initial surface water sampling starts with sampling of waters located within the perimeter of the site or base. Sampling then proceeds to other surface waters, streams, ditches, etc. that personnel or equipment may come into contact with during operations. Surface water sampling should be conducted as environmental and weather conditions change or as the size of the AO changes. Another reason for sampling is that the surface water may be used as a drinking water source.

3.6.3. **Drinking Water Sampling.** Drinking water quality will be evaluated on both the source water and product water (i.e., after treatment). Bottled water plants will need to be sampled and inspected if the plant is not currently approved for use by the US Army Veterinary Command. Quality standards for potable water vary depending on force structure and duration of use. Identification of all drinking water sources should be documented and evaluated prior to use and at regular intervals throughout the operation to ensure the hazard profiles have not changed. All water sources should be assessed prior to their use regardless of the source to determine if the water is potable or can be made potable by purification. Data collected during initial assessment will be used to establish the long-term monitoring plan to maintain force health protection. In addition to the traditional sampling methods, field analysis of the source water can be conducted to determine whether the source is treatable. Drinking water sampling conducted at established bases will continue as currently conducted.

3.6.4. **Hazardous Waste Sampling.** Unknown hazardous materials or waste residues remaining from industrial operations or other operations may exist at the site. If wastes creating potential health risks are encountered, collect samples and analyze or send to the laboratory for further analysis.

**3.7. Specialized Assessment.** This sampling is conducted if data or information collected from pre-deployment and baseline activities, or initial screening, has identified a COC or potential OEH risk. Specialized assessments may also be conducted when health effects are suspected due to an OEH threat. Specialized assessments are conducted when initial screening detects or identifies a COC, screening is inconclusive, or another trigger (e.g., exposure-induced illness) drives BE to perform additional sampling.

**3.8. Reassessment.** Reassessment of health risks is the process of validating that previous data and assumptions remain true or have changed. If changed, the data may need to be recollected and assessed. The reassessments should be done intermittently and whenever changes have occurred in the AOC. A part of the reassessment includes communication. Communication of health risks to commanders, mission planners, functional work centers, and affected personnel is critical to timely intervention and mitigation as appropriate. The communication should be done frequently and after each reassessment. A proactive approach to provide the right information at the right time is critical to the mission and operator performance.

JAMES G. ROUDEBUSH, Lieutenant General, USAF, MC, CFS  
Surgeon General

**Attachment 1****GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION*****References***

Presidential Review Directive 5, *Planning for Health Preparedness and Readjustment of the Military, Veterans, and Their Families After Future Deployments*, August 1998

Department of Defense Directive 6490.2, *Comprehensive Medical Surveillance*, October 2004

Department of Defense Instruction 6490.3, *Implementation And Application Of Joint Medical Surveillance For Deployments*, 1997

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AFI 10-404, *Base Support and Expeditionary Site Planning*, 9 March 2004

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AFI 48-145, *Occupational Health Program*, 1 April 1999

AFI 90-901, *Operational Risk Management*, 1 April 2000

American Society for Testing and Materials (ASTM), *Standard Guide for Environmental Health Site Assessment Process for Military Deployments Designation*, E 2318 – 03

***Abbreviations and Acronyms***

**ACS**—Agile Combat Support

**AF**—Air Force

**AFI**—Air Force Instruction

**AFMAN**—Air Force Manual

**AFMIC**—Armed Forces Medical Intelligence Center

**AFMS**—Air Force Medical Service

**AFMOA**—Air Force Medical Operations Agency

**AFRMIS**—Air Force Records Information Management System

**AOC**—Area of Concern

**AOR**—Area of Responsibility

**AO**—Area of Operations

**AS**—Allowance Standard

**ASTM**—American Society for Testing and Materials

**BE**—Bioenvironmental Engineering

**COC**—Constituent of Concern

**COLISEUM**—Community On Line Intelligence System for End Users and Managers

**CSM**—Conceptual Site Model

**DIA**—Defense Intelligence Agency

**DOD**—Department of Defense

**DOS**—Department of State

**ECS**—Expeditionary Combat Support

**EHSA**—Environmental Health Site Assessment

**ESP**—Expeditionary Site Plan

**HRA**—Health Risk Assessment

**IGESP**—In-Garrison Expeditionary Site Plans

**LER**—Longitudinal Exposure Record

**MEDIC**—Medical Environmental Disease Intelligence and Countermeasure

**MGRL**—Medical Global Reach Laydown Team

**MISCAP**—Mission Capability (Statement)

**MTF**—Medical Treatment Facility

**NGIC**—National Ground Intelligence Center

**OEH**—Occupational and Environmental Health

**OEHED**—Occupational and Environmental Health Exposure Data

**OEHSA**—Occupational and Environmental Health Site Assessments

**OH**—Occupational Health

**ORM**—Operational Risk Management

**PAM**—Prevention and Aerospace Medicine Team

**RDS**—Records Disposition Schedule

**SEG**—Similar Exposure Group

**SME**—Subject Matter Expert

**USACHPPM**—United States Army Center for Health Promotion and Preventive Medicine

**USEPA**—US Environmental Protection Agency

**UTC**—Unit Type Code

**VA**—Vulnerability Assessment