

Chapter 2

US AIR FORCE OCCUPATIONAL AND ENVIRONMENTAL HEALTH PROGRAM

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INTRODUCTION

This chapter provides an overview of the US Air Force occupational and environmental health (OEH) program's structure and function. The Air Force OEH program protects the health of airmen and civilian employees, ensures the readiness of personnel, and enhances combat and operational capabilities.¹ The Air

Force OEH program assesses and manages health risks through the application of OEH risk-reduction strategies. OEH program personnel participate in life cycle acquisition, sustainment, weapons systems, munitions, and materiel systems development to ensure that health threats are identified and appropriately managed.¹

PROGRAM OVERVIEW

The secretary of the Air Force for environment, safety, and occupational health (ESOH) directs the OEH program, which is mandated by the Occupational Safety and Health Administration (OSHA) Act of 1970,² Executive Order 12196,³ 29 CFR 1960,⁴ Department of Defense (DoD) instruction (DoDI) 6055.01,⁵ and DoDI 6055.05.⁶ The OSHA and DoD regulations are implemented by Air Force policy directives (AFPDs) 90-8⁷ and 91-2⁸ and Air Force instructions (AFIs) 48-145¹ and 91-202,⁹ which require that airmen and employees be provided a place of employment free of hazards that cause injury or illness, and that OEH hazards be identified, evaluated, and controlled in order to enhance mission capabilities and protect personnel.

Aerospace medicine and OEH personnel must work closely with bioenvironmental engineering (BE) and public health (PH) personnel to ensure hazards are adequately identified, control measures are put in place, and health surveillance is conducted to ensure controls are working adequately.¹ OEH personnel review new and existing weapon system modifications as part of the acquisition process to ensure that health threats are eliminated and systems designs do not pose a threat. If problems with the design are detected, concerns must be communicated to the team leader so that corrections can be made to minimize health risks.¹ OEH providers must also educate workers on avoiding health risks related to workplace hazards to reduce the incidence of workplace injuries and illnesses.¹ Commanders, civilian leaders, and supervisors must take the lead in supporting OEH control efforts by enforcing regulations and ensuring compliance with safety and health guidelines.¹ However, all airmen and civilian employees share responsibility to actively participate in the process to help ensure the success of the organization's OEH program.

The Air Force has adopted the use of a management information system (MIS) designed to standardize data entry and enhance data management and health outcomes reporting.¹ With a defined set of roles and responsibilities, the MIS facilitates OEH quality improvement by providing access to program execution data and program management reviews. The Air Force OEH MIS approach involves a "plan-do-check-act" process (Figure 2-1) as a tool for managers to assess program effectiveness as a measure of program quality. The plan-do-check-act cycle goals are to improve quality through improving operations, mission effectiveness, health and safety, and workforce availability while reducing OEH health hazards, risks, costs, and lost work time. The Defense Occupational and Environmental Health Readiness System (DOEHRS) is a key component of the Air Force OEH MIS. DOEHRS is used to capture and archive OEH exposure, enabling the Air Force to meet the long-term recordkeeping requirements.¹

Installation leadership must be engaged in the risk management process (Figure 2-2) to ensure OEH risks are identified and resources are committed to eliminate the OEH threats. The comprehensive risk assessment process involves identifying hazards, assessing risks, evaluating control options, implementing control measures, and evaluating the control efforts.¹ Air Force aerospace and occupational medicine personnel make significant contributions to organizational risk management by identifying health hazards, characterizing the level of health risk, determining necessary control measures, communicating the risk to affected personnel and their managers, and ensuring medical surveillance is conducted to identify adverse health outcomes.

ROLES AND RESPONSIBILITIES

Headquarters Level

The assistant secretary of the Air Force for installations, environment, and logistics develops policy and provides oversight for the entire Air Force ESOH program.¹ He or she is the designated agency safety

and health officer who represents the Air Force when dealing with the Office of the Secretary of Defense, other federal agencies, and Congress. He or she chairs the Headquarters Air Force ESOH council and conducts headquarters-level reviews of the OEH program in accordance with AFI 90-801.¹⁰

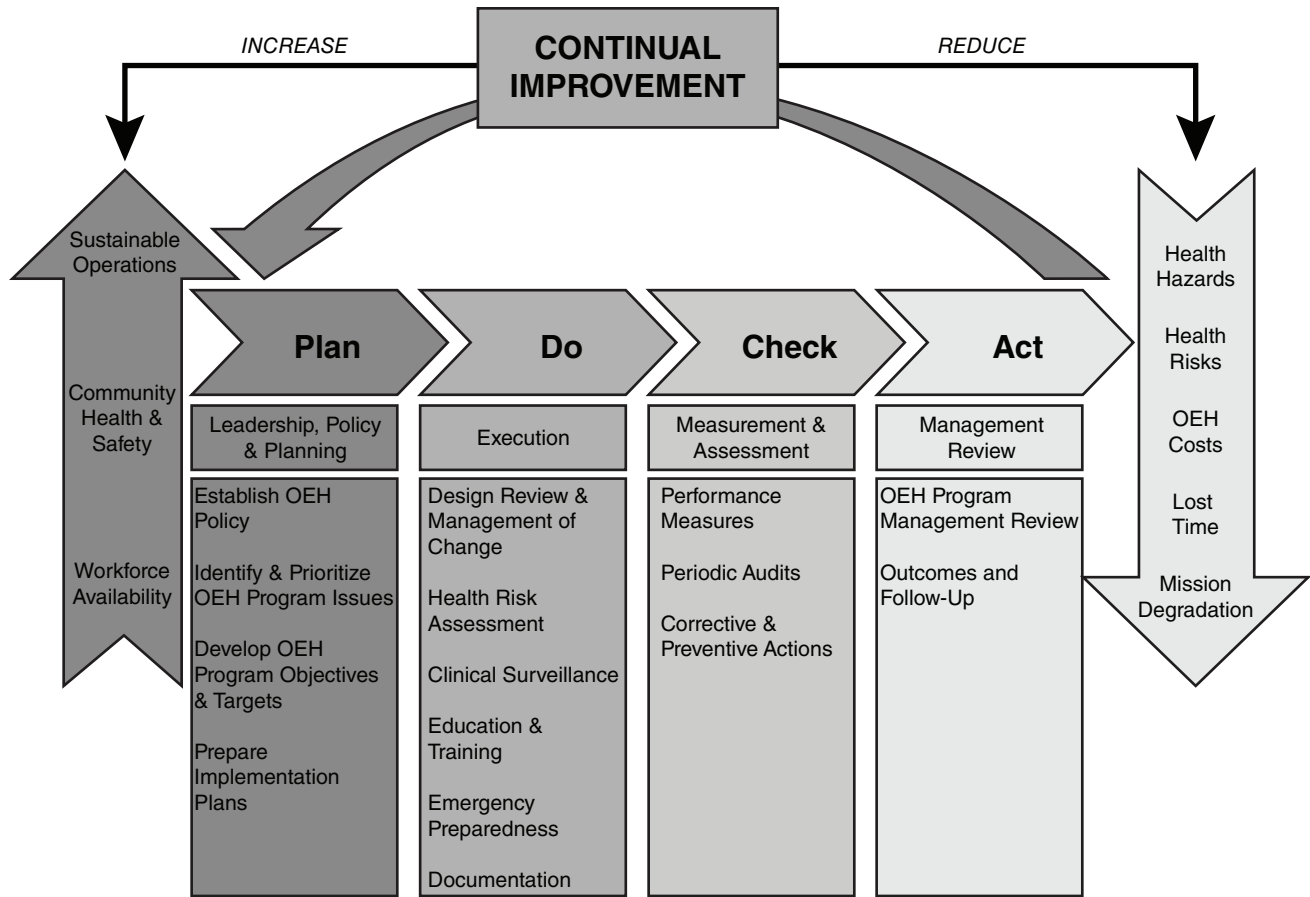


Figure 2-1. US Air Force occupational and environmental health (OEH) management information system process tool. Reproduced from: US Department of the Air Force. *Occupational and Environmental Health Program*. Washington, DC: DAF; July 22, 2014. AF Instruction 48-145: Figure 1.1; p 7.

The Air Force surgeon general provides strategic direction and reports on the status of the program annually. The Air Force Medical Support Agency (AFMSA) Aerospace Operations Division supports the Air Force surgeon general by planning, programing, budgeting, and distributing funds to conduct environmental health surveillance and OEH risk assessments, developing medical policy, and overseeing OEH program execution.¹ This includes working with acquisition program managers to ensure new procurements get reviewed and undergo ESOH evaluation as required by AFI 63-101,¹¹ as well as reviewing OEH risk reduction efforts to ensure that resources are prioritized appropriately and submitted for inclusion in the appropriate budget and funding request. Additionally, AFMSA monitors performance measures to assess OEH program effectiveness.

Major Commands

Major command (MAJCOM) surgeons serve as medical advisors to commanders and are responsible for establishing OEH medical support priorities. They

support geographically separated units with military medical treatment facilities in their area of responsibility. MAJCOM surgeons oversee mission execution by supporting OEH hazard identification, control, mitigation, and elimination.¹ The MAJCOM surgeon monitors OEH program performance across all bases within the command. He or she distributes information on new policies and legislation and works to resolve OEH programmatic issues with the AFMSA.¹

Installation Level

Installation commanders are responsible for ensuring that all military and civilian employees are provided a safe and healthful worksite. The installation commander directs the installation ESOH council, which is a senior leadership group, and oversees the execution of the ESOH program on the installation per AFPD 90-8.⁷

Each Air Force installation also has an OEH working group that includes representatives from the BE, PH, and flight and operational medicine (FOM) as

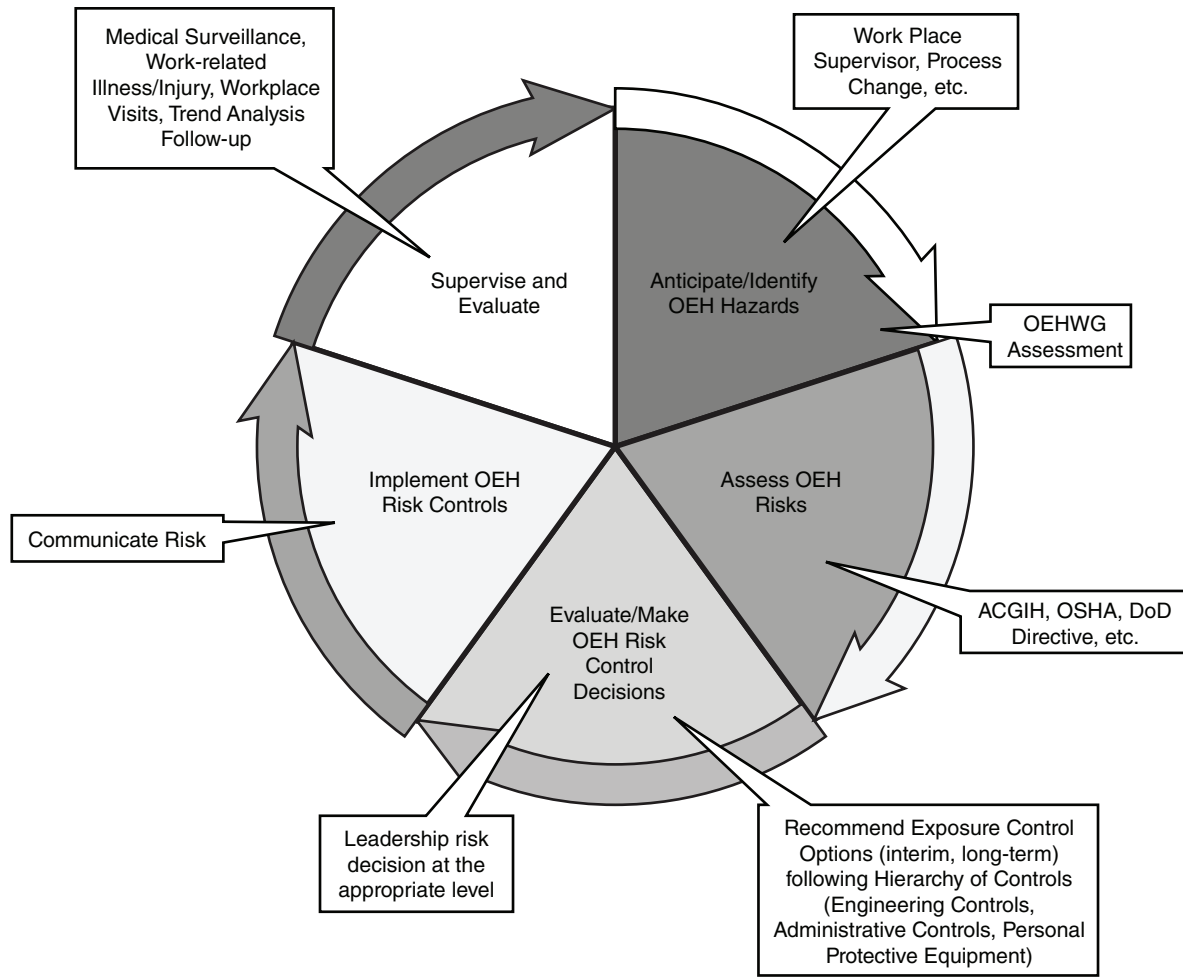


Figure 2-2. US Air Force occupational and environmental health (OEH) risk management process.

ACGIH: American Conference of Governmental Industrial Hygienists

DoD: Department of Defense

OEHWG: OEH working group

OSHA: Occupational Safety and Health Administration

Reproduced from: US Department of the Air Force. Occupational and Environmental Health Program. Washington, DC: DAF; July 22, 2014. AF Instruction 48-145: Figure 1.2, p 8.

principal members (the working group is also referred to as “Team Aerospace”). Representatives from the installation safety department also frequently attend. Workplace supervisors are invited to attend when their workplace requirements are under review. The OEH working group is charged with assigning medical surveillance exam requirements based on worksite hazard assessments per DoDI 6055.05M,¹² National Fire Protection Association Guide 1582,¹³ AFI 48-145,¹ AFI 44-102,¹⁴ and AFI 48-123.¹⁵ The OEH working group alerts supervisors to OEH-related training requirements and tracks OEH performance measures to assess program effectiveness. The OEH working group participates in a collaborative process to assess, plan, and advocate for OEH services needed to meet an ill

or injured worker’s health needs and coordinate care in order to minimize delays in diagnosis, treatment, and return to work.¹ The OEH working group additionally tracks injury and illness trends and medical surveillance completion rates, which are reported to the installation ESOH council.

Team Aerospace: Bioenvironmental Engineering

BE personnel perform typical industrial hygiene functions and assist the local commander and supervisors by integrating OEH input into resource management decisions. BE staff evaluate the adequacy of existing administrative and engineering controls and personal protective equipment use to protect against

OEH hazards.¹ They assess the need for and recommend OEH hazard controls for new work processes or changes to existing systems.

BE staff conduct investigations of new operations and proposed changes to existing equipment and facilities to identify and reduce potential OEH hazards. They perform health risk assessments for sites containing hazardous chemicals and low-level radioactive materials that threaten Air Force communities. Once the risk assessment is complete, a risk categorization is assigned to each workplace, as detailed in Table 2-1, and the complete list is provided to members of the OEH working group.¹ BE staff utilize the health risk assessment data to design sampling strategies to quantify the risk of exposure to the hazards and communicate health and safety risks to commanders and affected individuals.¹ Similarly exposed military and civilian employees are grouped into the same risk category using the “similar exposure group” concept.¹

BE staff also identify and assess environmental exposure pathways on military installations and in deployed locations and ensure personnel who are potentially exposed are included in population medical surveillance for the specific hazards of concern. They support limited-scope medical treatment facilities and medical aid stations as well as geographically separated units. This support may include overseeing activities and performing in-depth OEH site assessments,

including exposure sampling, in accordance with AF Tactics, Techniques, and Procedures 3-2.82, *Occupational and Environmental Health Site Assessment*.¹⁶

Annually, BE personnel prepare an area of responsibility consolidated conceptual site model, which identifies a prioritized list of surveillance activities¹ that need to be completed in the year ahead, and present the results to the OEH working group. BE personnel also use DOEHRS to capture incident response and deployment-specific OEH exposure data in accordance with policy.¹ They provide technical consultation and expertise on OEH hazards, training, regulatory requirements, and workplace-specific OEH exposure data.

Team Aerospace: Public Health

PH personnel provide input on OEH medical surveillance exams, training, and risk communication efforts. PH staff coordinates with supervisors to maximize surveillance examination completion rates and minimize the impact on the mission while surveillance examinations are performed. Staff conducts OEH surveillance and epidemiological analysis of the surveillance data, examining trends in injuries and illnesses. This analysis includes injuries and illnesses related to hearing loss, exposure incidents, and clinic visits by type, job, workplace, and health outcomes, including pregnancies among military and civilian employees.

**TABLE 2-1
WORKPLACE CATEGORIZATION AND REQUIRED ROUTINE ASSESSMENT FREQUENCY**

Workplace Priority	Considerations	Required Assessment Frequency (Months)
High	Hazards poorly defined or poorly controlled; work environment or processes unstable Inherent OEH risk present with medium to high hazard potential Routine OSHA expanded standard requirements (eg, 29 CFR 1910.1026, Chromium VI) Requirement for special purpose occupational exams, other than audiograms Potential for significant OEH regulatory noncompliance	Every 12
Medium	Hazards well defined and controlled; work environment and processes stable Inherent OEH risk present with relatively low hazard potential Minimal potential for hazards to go out of control or create significant risk Requirement for annual audiograms Potential for OEH regulatory noncompliance	Every 30
Low	No hazards; work environment and processes stable Nonexistent or negligible sources of OEH risk present Full OEH regulatory compliance	Locally determined

OEH: occupational and environmental health
 OSHA: Occupational Safety and Health Administration

PH personnel educate supervisors and workers about communicable and chronic disease risk and the potential for adverse health outcomes. They conduct routine annual shop visits, along with BE staff, to all workplaces that have a high risk of exposure to hazards that may cause adverse health outcomes. PH staff conduct population health surveillance to detect OEH illnesses and ensure any cases are reported and promptly investigated and documented. Staff also monitor and track OEH illnesses and injuries and investigate their causes, ensuring internal and external consistency in the quality of the data collected. OEH illness and injury data is presented to installation's ESOH council.

PH personnel also manage the installation reproductive hazards and fetal protection program. All pregnant workers are interviewed, and potential OEH threats and health risks in the workplace are documented. PH staff also serve as consultants to workplace supervisors and employees regarding the scheduling and delivery of OEH-specific training, making training materials available and offering training assistance.

Team Aerospace: Flight and Operational Medicine

A FOM representative is the chair of the OEH working group. FOM personnel conduct medical surveillance exams, ensuring exams are followed through to completion, as well as a number of other examinations such as preplacement, termination, return-to-work, and disability evaluations, as well as initial and periodic flying physicals. The medical surveillance examination completion rates are tracked, as are cancellation rates, both of which get reported to the OEH working group per AFI 48-101.¹⁷ FOM staff also deliver work-related injury and illness care for those who fly and civilian employees. Other military members get their OEH services through their primary care provider; however, FOM providers review any work, fitness, or deployment restrictions resulting from this care. FOM staff are also involved in workplace evaluations, conducting annual shop visits to those worksites assessed as high-risk by BE personnel.¹

Supervisor

The workplace supervisor is responsible for ensuring workers a safe and healthy work environment that complies with all OEH program requirements. Super-

visors support installation-level and organizational-level objectives and targets and implement corrective actions for identified OEH discrepancies. They appoint a unit health monitor to support coordination of medical surveillance exam requirements and notify unit personnel of due and overdue medical surveillance exam requirements.

Workplace supervisors must ensure that all OEH hazards are identified and abated to the maximum extent possible. They are responsible for implementing required OEH hazard controls and making sure the controls are functioning correctly. Supervisors must ensure all workers comply with OEH requirements including the proper use of personal protective equipment. Supervisors must make personal protective equipment available for personnel to use when required, ensure it is used correctly in the workplace, and ensure personnel are properly instructed on the proper care and cleaning of their personal protective equipment. Supervisors must also see that employees have received training on workplace-specific OEH hazards, and that the training is documented in accordance with AFI 91-301.¹⁸ Supervisors must also ensure that the preplacement health assessments are completed for all employees before they begin working in hazardous areas. Supervisors must notify PH staff when military and civilian employees are separating or retiring so a termination examination can be conducted. Supervisors must also notify installation safety, PH, and BE staff promptly when an employee sustains a work-related injury or illness and when someone becomes pregnant.

Employee

Employees are responsible for understanding the work processes and hazards associated with the job. This includes knowing about OEH risks and planned strategies to control the threat, including use, maintenance, and storage of personal protective equipment. Employees must actively participate in workplace health hazard identification and health risk assessments and agree to wear hazard monitoring equipment. Employees must notify their supervisor if they are advised they have been occupationally exposed above safe levels, or if they have developed work-related health conditions.

PLANNING

OEH personnel use the planning process to identify and prioritize OEH hazards, program deficiencies, and opportunities for improvement. The goal of plan-

ning is to establish program objectives, identify risk reduction opportunities, and ensure OEH program improvement. AFMSA Aerospace Operations Division

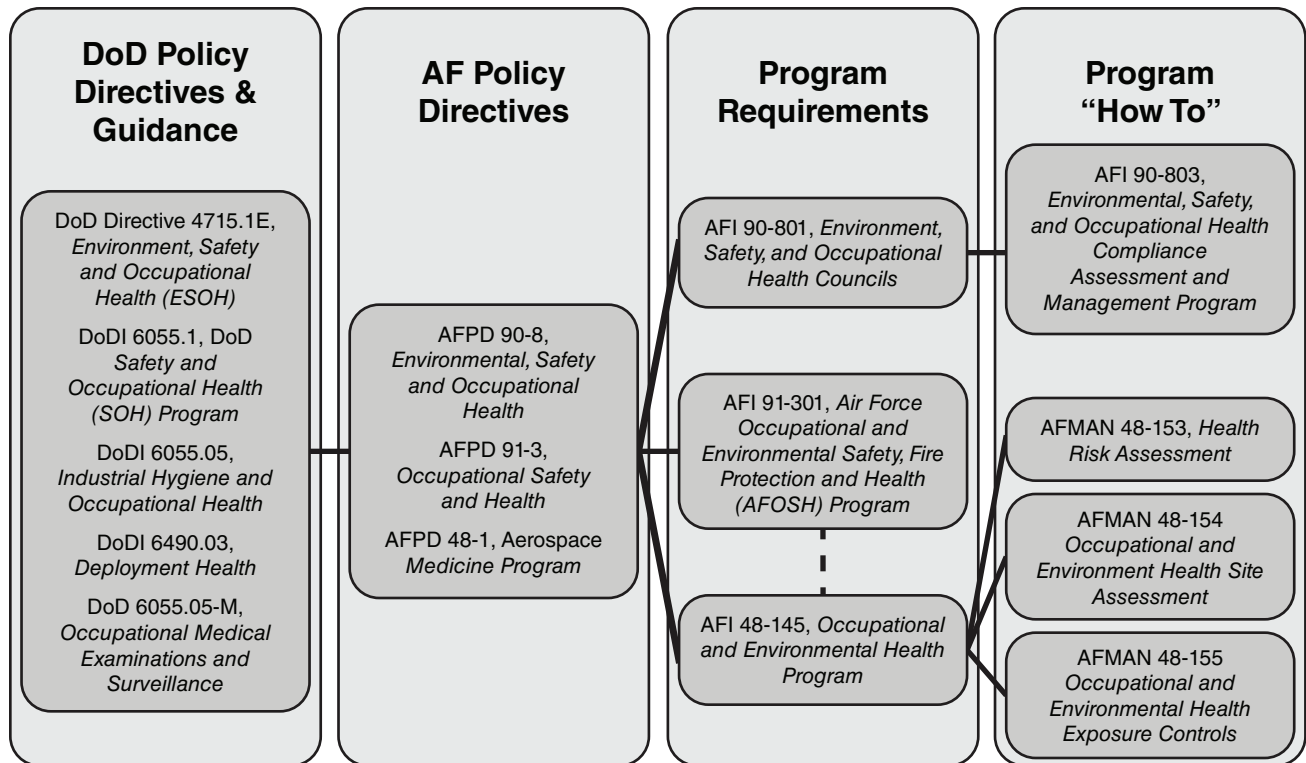


Figure 2-3. Critical elements of the Air Force occupational and environmental health program.

AFI: Air Force instruction

AFMAN: Air Force manual

AFPD: Air Force policy directive

DoD: Department of Defense

DoDI: DoD instruction

Reproduced from: US Department of the Air Force. Occupational and Environmental Health Program. Washington, DC: DAF; July 22, 2014. AF Instruction 48-145: Figure 3.1, p 26.

establishes and communicates OEH program priorities to major commands, including specific objectives, and develops procedures for:

- establishment or review of legal and other requirements;
- objectives and targets;
- communications and data gathering;
- assessments;
- management reviews; and
- reports.

The Headquarters Air Force ESOH council annually reviews and approves OEH program priorities, objectives, and targets, which are then communicated down to installation-level OEH staffs. The installation commander, as director of the installation ESOH council, reviews and approves installation-specific OEH program priorities, objectives, and targets. The most critical elements of the Air Force OEH program are contained in Air Force 90-series and 48-series publications, as illustrated in Figure 2-3. MAJCOM and installation-level supplements to these documents are published as needed to address organization-specific needs.

EXECUTION

Central to the execution of the Air Force OEH program is exposure assessment, which is used to identify and characterize OEH hazards associated with worksite operations, determine the effective-

ness of exposure controls, and collect and archive exposure data.¹ The Air Force exposure assessment process incorporates eight elements of the DoD industrial hygiene exposure assessment,⁶ as

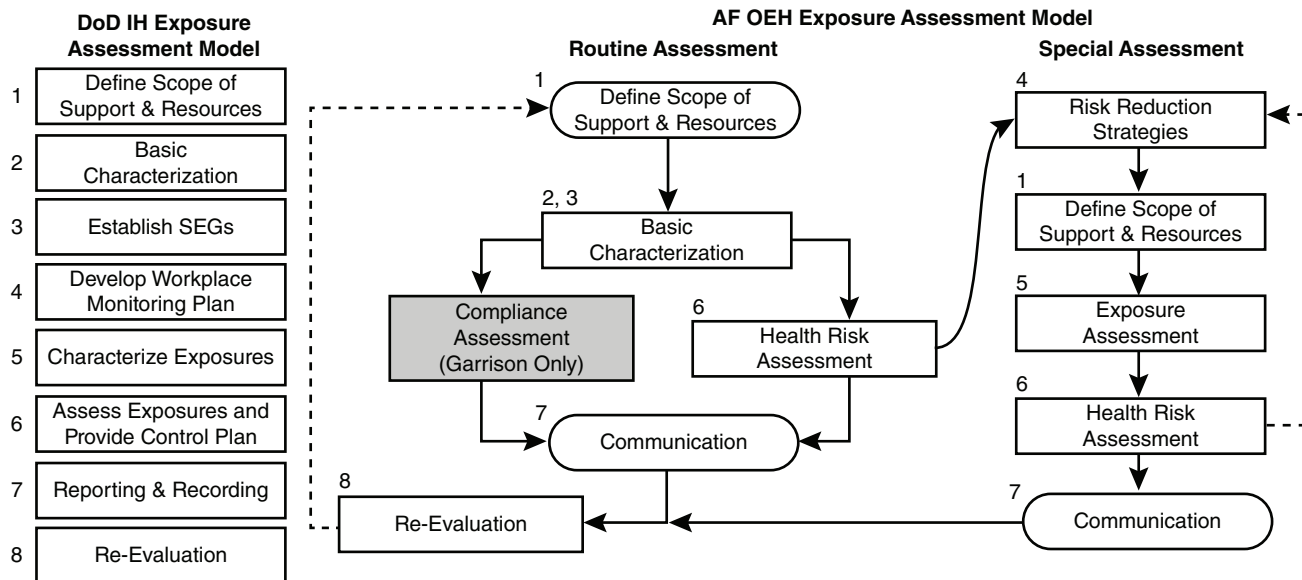


Figure 2-4. Air Force occupational and environmental health exposure assessment model.

DoD: Department of Defense

IH: industrial hygiene

SEG: similar exposure group

Reproduced from: US Department of the Air Force. Occupational and Environmental Health Program. Washington, DC: DAF; July 22, 2014. AF Instruction 48-145: Figure 4.1, p 28.

illustrated in Figure 2-4. The assessment is conducted to identify and determine the extent of workplace hazards that exist during mission execution. Air Force Manual 48-146¹⁹ and School of Aerospace Medicine technical guides provide detailed information on conducting an assessment¹ (see Table 2-1 for the recommended frequency of these assessments). The timetable may be adjusted by the OEH working group based on recommendations from BE staff regarding the need to identify, assess, and control specific hazards.¹

As previously mentioned, BE personnel annually provide the OEH working group a planned schedule for conducting worksite assessments. The schedule sets off a cascade of events that include shop visit scheduling and data gathering, as well as reviewing and analyzing data from the previous year. For each worksite, these events are completed in the month before the worksite is discussed during the OEH working group meeting (usually a monthly meeting). During the meeting, the reviewed worksite’s medical surveillance exam requirements are determined and plans made to address any trends noted. Following the meeting, medical surveillance exams for the employees of that worksite are scheduled. This cyclical flow is repeated throughout the year for each worksite and is described in detail in Air Force Manual 48-146.¹⁹

FOM providers perform OEH clinical surveillance to detect breakdowns in exposure controls and biomarkers related to exposure, ideally at or before the time clinical disease develops. Generally, installations have developed individual risk assessments and clinical surveillance guidelines; however, emphasis is shifting toward the use of headquarters-developed assessments that will standardize the process and provide for greater confidence in hazard characterizations. Medical surveillance data for exposures will become more uniform as the capability to broadly assess and analyze OEH risks improves.

Team Aerospace supports Air Force mission objectives by keeping personnel healthy and at work through injury and illness prevention efforts that target high risk processes and operations. An effective monitoring and assessment program can identify significant deviations from baseline OEH program performance. This may alert senior leaders that the OEH program needs improvement. Installation commanders must track operational performance using established and accepted Air Force OEH metrics. Installation commanders may develop and use unique objectives and targets to assess program success, incorporating monitoring, measurements, assessments, audits, incident investigations, and corrective actions.

MANAGEMENT REVIEW

Program management reviews allow leaders at all levels to critically evaluate OEH program performance and implement improvements. Senior leaders at all levels provide appropriate direction for correcting deficiencies, which may include investment, policy changes, and adjustments to goals and objectives. Performance measures are reviewed by the ESOH council for appropriateness and adjusted as necessary to drive performance toward established OEH program objectives and targets.

The effectiveness of the Air Force OEH program is assessed at the headquarters level, MAJCOM level, and installation level based on input from the installation ESOH council, which identifies unmet needs and prioritizes requirements for funding that will optimize mission performance and minimize risk and cost. This collaborative process of assessment, planning, facilitation, and advocacy for options and services protects the health and welfare of airmen and civilian employees. The collaborative process facilitates communication and coordination of care, which minimizes delays in diagnosis, treatment, and return to work.

Program management reviews are done to critically evaluate OEH program performance and help to identify needed improvements annually.¹ Headquarters

reviews Air Force personnel, MAJCOM personnel, and the installation ESOH council members participate in these reviews. The program management review evaluates:

- effectiveness of the OEH program,
- whether OEH objectives and targets were met,
- success of risk-reduction efforts,
- changes in OEH program requirements,
- any needed improvements,
- whether root cause analyses are done when indicated, and
- whether corrective actions were taken to improve the program.

Senior leaders are critical to the management review process because they can direct personnel and financial resources to ensure identified deficiencies are corrected, needed policy changes are put in place, and the OEH program action plan is prioritized appropriately.¹ OEH program performance targets at all levels get reviewed and are adjusted to drive performance toward established OEH program goals and objectives. The review is documented in ESOH council minutes to meet regulatory requirements.¹

EMERGING DEVELOPMENTS IN AIR FORCE OCCUPATIONAL MEDICINE

Recognizing that much OEH work is completed within primary care clinics, the Air Force has begun a multiyear restructuring with the end goal of creating an independent clinic known as the base operational medicine clinic (BOMC). The BOMC will be a centralized location for all OEH clinical services needed for an installation. It will be staffed by individuals who have been specifically trained in the principles of occupational medicine. This will enable both flight and primary care providers to focus on traditional medical care functions, while BOMC providers develop streamlined, standardized workflows to improve the quality and reliability of the exams.

The Air Force is also exploring ideas to improve the central component of the OEH program—the exposure assessment. Total Exposure Health (TEH) is an initiative to expand the scope of exposure assessment from just the workplace or deployed setting to the environment and lifestyle. The development and utilization of advanced exposure collection sensors and devices such as wearables and smart devices, and the use of advanced informatics technologies such as exposomics, epigenetics, genomics, and bioinformatics are instrumental in TEH development. Such precision health is expected to extend readiness and performance, reduce illness and injury, and encourage healthy lifestyle choices, which are the ultimate goals of the Air Force OEH program.

SUMMARY

The Air Force OEH program establishes guidance for installations to protect the health of airmen and civilian employees to maximize combat and operational capabilities. Utilizing the Air Force OEH MIS standardizes data entry, management, and reporting. A key component of future data mining efforts, the MIS relies on systems such as DOEHRs to provide

exposure information and link to health records so that personnel can be related to health outcomes. Health risk assessments provide commanders and other decision-makers information on workplace risks as well as the means to control these hazards and evaluate the efficacy of mitigation measures. Medical surveillance can be targeted to people working in areas where the

level of exposure exceeds safe levels. Responsibility to keep the workplace safe involves active participation from all Air Force personnel. Specific roles are outlined by federal regulations and Air Force and DoD instruc-

tions, but safety is everyone's responsibility. From the Air Force surgeon general to the worker on the production line, anyone can make a significant difference in keeping the workplace a healthy and safe environment.

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