

Department of the Army  
Pamphlet 40-503

Medical Services

# The Army Industrial Hygiene Program

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Washington, DC  
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**UNCLASSIFIED**

# ***SUMMARY of CHANGE***

DA PAM 40-503

The Army Industrial Hygiene Program

This major revision, dated 2 April 2013--

- Updates the authority documents to include Public Law 105-85, Subtitle F, Section 765 (para 1-4).
- Clarifies the definition of industrial hygiene (para 1-5).
- Updates the mission and objectives of the industrial hygiene program (paras 1-6 and 1-7).
- Updates the standards applicable to the industrial hygiene program to include authoritative occupational exposure limits, host nation occupational exposure levels, and military-unique standards (para 1-8).
- Distinguishes between industrial hygiene program manager functions and industrial hygiene staff functions (para 2-1).
- Prescribes new DA Form 7693 (Industrial Hygiene Program Evaluation) (para 2-1).
- Establishes the Department of Defense Industrial Hygiene Exposure Assessment Model as a guidance document for the Defense Occupational and Environmental Health Readiness System-Industrial Hygiene and the model for industrial hygiene program implementation throughout the Department of Defense (para 2-2).
- Provides an overview of the Industrial Hygiene Exposure Assessment Model (para 2-3).
- Replaces the industrial hygiene document with the industrial hygiene program action plan (para 2-7).
- Replaces the industrial hygiene implementation plan with the industrial hygiene master schedule (para 2-8).
- Updates the guidance for industrial hygiene laboratories (para 3-5).
- Removes the requirement for hard copy recordkeeping (formerly para 3-7).
- Removes the sample industrial hygiene budget plan (formerly chap 3).
- Updates all industrial hygiene program relationships (chap 4).
- Removes the industrial hygiene program flow diagram (formerly chap 4).
- Replaces the Childhood Lead Poisoning Prevention Program with lead hazard management guidance (para 4-10).

- o Replaces the civilian resource conservation program with the Federal Employees Compensation Act program (para 4-14).
- o Describes the role of the industrial hygiene program in laboratory biosafety (para 4-17).
- o Updates the code of ethics for industrial hygiene certificants and candidates (para 5-4).
- o Provides information on Career Program 12 (para 5-5).
- o Provides a model of the Department of Defense Industrial Hygiene Exposure Assessment Model (app B).
- o Relocates support for industrial hygiene services and updates contact information for supporting activities (app C).
- o Establishes guidance for setting shop priorities in Defense Occupational and Environmental Health Readiness System-Industrial Hygiene (app D).
- o Adds a sample of an industrial hygiene program action plan (app F).
- o Replaces minimum sampling equipment requirements with a suggested list of sampling equipment (app G).
- o Updates information on ethical principles and the code of ethics (app H).
- o Makes additional administrative revisions (throughout).



## Medical Services

# The Army Industrial Hygiene Program

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By Order of the Secretary of the Army:

RAYMOND T. ODIERNO  
*General, United States Army*  
*Chief of Staff*

Official:

  
JOYCE E. MORROW  
*Administrative Assistant to the*  
*Secretary of the Army*

the industrial hygienist in other Army programs.

**Applicability.** This pamphlet applies to the Active Army, the Army National Guard/Army National Guard of the United States, and the U.S. Army Reserve, unless otherwise stated. This publication is applicable during mobilization.

**Proponent and exception authority.** The proponent of this pamphlet is The Surgeon General. The proponent has the authority to approve exceptions or waivers to this pamphlet that are consistent with controlling law and regulations. The proponent may delegate this approval authority, in writing, to a division chief within the proponent agency or its direct reporting unit or field operating agency, in the grade of colonel or the civilian equivalent. Activities may request a waiver to this pamphlet by providing justification that includes a full analysis of the expected benefits and must include formal review by the activity's senior legal officer. All waiver requests will be endorsed by the

commander or senior leader of the requesting activity and forwarded through their higher headquarters to the policy proponent. Refer to AR 25–30 for specific guidance.

**Suggested improvements.** Users are invited to send comments and suggested improvements on DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly to Headquarters, Department of the Army (DASG–HS), 5109 Leesburg Pike, Falls Church, VA 22041–3258.

**Distribution.** This publication is available in electronic media only and is intended for command levels A, B, C, D and/or E for the Active Army, Army National Guard/Army National Guard of the United States, and the U.S. Army Reserve.

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**History.** This publication is a major revision.

**Summary.** This pamphlet describes the industrial hygiene mission required by law, policy, and professional practice, updates guidance for implementing the essential elements of the Army Industrial Hygiene Program, and defines the role of

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\*This pamphlet supersedes DA Pam 40–503, dated 30 October 2000.

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### **Glossary**



## **Chapter 1 Introduction**

### **1-1. Purpose**

This pamphlet describes the industrial hygiene (IH) mission required by law, policy, and professional practice. It provides guidance for implementing the essential elements of the Army Industrial Hygiene Program (IHP) and defines the role of the industrial hygienist in other Army programs.

### **1-2. References**

Required and related publications are listed in appendix A.

### **1-3. Explanation of abbreviations and terms**

Abbreviations and special terms used in this regulation are explained in the glossary.

### **1-4. Summary of authority**

The following documents summarize the line of authority that establishes the IHP.

*a.* Executive Order 12196, Title 3, Code of Federal Regulations (CFR) requires the head of each Federal agency to establish an occupational safety and health (OSH) program for Federal employees. The EO further provides that the Federal agency OSH programs will comply with standards established by the U.S. Department of Labor (USDOL) under Section 6 of the Occupational Safety and Health Act of 1970. These standards are found in Part 1960, Title 29, CFR. The EO excludes military personnel and uniquely military equipment, systems, and operations.

(1) These documents implement Public Law 91-596, which requires the executive branches of Government to establish OSH programs that are consistent with standards promulgated by the USDOL.

(2) These documents also implement Section 765, Public Law 105-85, Subtitle F, which calls for improved medical tracking for members of the Armed Forces deployed overseas in contingency or combat operations. In support of this law, the Defense Occupational and Environmental Health Readiness System-Industrial Hygiene (DOEHRS-IH) maintains longitudinal exposure records for military members and civilian employees throughout the Department of Defense (DOD).

(3) Private employers, including contractors on Army installations, may be subject to state OSH laws, depending on jurisdiction. For further information regarding specific jurisdictional relationships and authority, contact the installation or major command staff judge advocate.

*b.* Department of Defense Instruction (DODI) 6055.1 and DODI 6055.05 provide general guidance and policies for implementation of the OSH program and are applicable to military and civilian personnel.

*c.* Army Regulation (AR) 40-5 directs, establishes, and defines the Preventive Medicine Program for the Department of the Army (DA).

*d.* AR 385-10 directs, establishes, and defines the Army Safety Program.

*e.* This DA pamphlet describes the IH element of the OSH program.

### **1-5. Definition of industrial hygiene**

According to the American Industrial Hygiene Association (AIHA<sup>®</sup>), industrial hygiene is the science and art devoted to the anticipation, recognition, evaluation, prevention, and control of those environmental factors or stresses arising in or from the workplace which may cause sickness, impaired health and well being, or significant discomfort among workers or among citizens of the community. (AIHA<sup>®</sup> is a registered trademark of the American Industrial Hygiene Association, Fairfax, VA. Use of trademarked names does not imply endorsement by the U.S. Army, but is intended only to assist in identification of a specific product.)

### **1-6. Program mission**

Provide support to the Warfighter, conserve resources, enhance readiness, and preserve health by anticipating, recognizing, evaluating, and controlling health hazards where military and civilian personnel work and serve.

### **1-7. Program objectives**

The IHP works cooperatively with other Army programs to—

*a.* Ensure regulatory compliance with applicable Federal, state, and local laws and DA regulations pertaining to occupational health (OH) (see app A).

*b.* Accurately identify, characterize, and assess potential workplace health hazards.

*c.* Recommend appropriate engineering and administrative controls and/or personal protective equipment (PPE) to prevent occupational related illnesses, injuries, or deaths to Soldiers and civilian workers.

*d.* Recommend personnel for exposure-based medical surveillance.

*e.* Integrate established IH principles, concepts, and functions in support of related programs, such as safety,

occupational medicine, biosurety, chemical surety, hearing, vision conservation and readiness, respiratory protection, indoor air quality (IAQ), asbestos control, lead abatement, and environmental compliance.

## 1–8. Standards

Army industrial hygienists refer to many standards to implement the best worker protection practices.

*a. Federal regulations.* Part 1910, Title 29, CFR; Part 1926, Title 29, CFR; and 29 CFR 1960 apply to DA workplaces that are comparable to that of the private sector. Title 29 CFR 1910 contains specific provisions for many elements of OSH programs such as hearing, lead, asbestos, and respiratory protection as well as a list of permissible exposure limits (PELs). Action levels are generally set at one half of the PEL and indicate the level at which additional requirements, such as exposure monitoring and medical surveillance, apply.

*b. Authoritative occupational exposure limits.*

(1) Authoritative occupational exposure limits (OELs) are those set by organizations such as the American Conference of Governmental Industrial Hygienists (ACGIH<sup>®</sup>), the AIHA<sup>®</sup>, or the National Institute for Occupational Safety and Health (NIOSH). The ACGIH<sup>®</sup> values are known as threshold limit values (TLVs<sup>®</sup>) and biological exposure indices (BEIs<sup>®</sup>) to manage health and physical hazard exposures. The AIHA<sup>®</sup> values are known as workplace environmental exposure levels (WEELs<sup>™</sup>) and the NIOSH values as recommended exposure limits (RELs<sup>™</sup>). (ACGIH<sup>®</sup>, TLV<sup>®</sup>, and BEI<sup>®</sup> are registered trademarks of the American Conference of Governmental Industrial Hygienists, Cincinnati, OH; WEEL<sup>™</sup> is a trademark of the American Industrial Hygiene Association, Fairfax, VA; REL<sup>™</sup> is a trademark of the National Institute for Occupational Safety and Health, Washington, DC.)

(2) Authoritative OELs should be applied to DA workplaces that are comparable to the private sector; however, they are not enforceable by law.

(3) Because authoritative OELs do not have to undergo the full public comment and response process before use, they are more current and reflect the state-of-the-art in the scientific or medical application of health-based exposure standards. The DA mandates the use of ACGIH<sup>®</sup> TLVs<sup>®</sup> when they are more stringent than the Occupational Safety and Health Administration (OSHA) regulations or when there is no PEL (see DA Pam 40–11). The NIOSH RELs<sup>™</sup> and AIHA<sup>®</sup> WEELs<sup>™</sup> are to be used when no other OEL exists or is mandated by other Army regulations or guidance (for example, Technical Bulletin, Medical (TB MED) 510).

*c. Host nation occupational exposure levels.* In workplaces outside the continental United States (OCONUS) where local nationals are monitored for health hazards and the host nation OELs are more stringent than the OSHA regulations, the host nation OELs are to be followed.

*d. Military-unique standards.* The DA has many unique operations in research, munitions, chemical demilitarization, and deployment. The DA develops military-unique standards as described in DODI 6055.1. Military-unique standards can be found in DA Pam 385–61, DA Pam 385–64 and DA Pam 385–24, and U.S. Army Public Health Command (USAPHC) Technical Guide (TG) 230. When other alternate or supplemental criteria are necessitated by military uniqueness, existing standards and regulations are followed until justification is forwarded through command channels and Office of The Surgeon General (OTSG) approval is obtained.

*e. Alternate standards.* In those rare instances when neither OSHA, authoritative OELs, nor military-unique standards exist, DA endorses appropriate professional IH use of alternate standards such as those developed by the—

- (1) U.S. Environmental Protection Agency (USEPA).
- (2) U.S. Department of Transportation.
- (3) Chemical or substance manufacturer.
- (4) American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE).
- (5) American National Standards Institute (ANSI).
- (6) Department of Housing and Urban Development for lead dust levels.

## Chapter 2 Program Implementation

### 2–1. Functions

*a. Industrial hygiene program manager.* The installation Army Medical Department (AMEDD) industrial hygiene program manager (IHPM) or equivalent staff member—

(1) Develops and implements an IHP that meets the goals and objectives outlined in DA Pam 40–11 and this document.

(2) Defines IHP responsibilities as related to OSH programs and functions at the local level.

(3) Reviews, approves, and evaluates IH staff individual development plans (IDPs) based on the Army Civilian Training, Education and Development System (ACTEDS) guidance, to ensure IH staff can fulfill assigned duties and responsibilities.

- (4) Uses the Department of Defense Industrial Hygiene Exposure Assessment Model (DOD IH EAM) as the business practice for IH (see app B).
- (5) Develops, reviews, and updates standing operating procedures (SOPs) for IH practices (for example, IH equipment, design reviews, IAQ, and so forth.).
- (6) Uses the master schedule in DOEHRS–IH to schedule IH survey and workplace monitoring tasks to reflect IH priorities and resources.
- (7) Develops a system for tracking and documenting DA-required activities and IHP support activities not available in DOEHRS–IH (for example, mandatory training, meetings, design reviews, and command requests).
- (8) Prepares a prioritized annual budget plan to include staffing, equipment, supplies, training, travel, and reference material requirements and costs.
- (9) Provides written reports of sampling results, survey information, and recommendations to customers and applicable installation program managers (for example, safety, OH, and installation management program managers).
- (10) Uses DA Form 7693 (Industrial Hygiene Program Evaluation) to perform annual assessment of the IHP and participates in external audits to document program effectiveness and make improvements to the IHP.
- (11) Reviews and revises an IHP action plan and submits the plan to the chief of preventive medicine, or his or her equivalent, for review as defined in paragraph 2–7.
- (12) Provides requests for technical and managerial assistance from the supporting region when needed (see app C).
- (13) Collaborates with the civilian personnel office regarding internal staffing, health hazard evaluation information relative to job descriptions, claims for compensation under 30 CFR 10 (Federal Employees Compensation Act), and claims for environmental differential pay or hazard differential pay.
- (14) Performs quality assurance (QA) measures such as to—
  - (a) Verifying equipment calibration to ensure the accurate quantitative measurement of health hazards.
  - (b) Using AIHA<sup>®</sup>-accredited IH laboratories or laboratories that meet the International Organization for Standardization/International Electrotechnical Commission (ISO/IEC) 17025 international standard to ensure the results reported have been generated by a laboratory with a known and certified quality system.
  - (c) Performing design reviews to ensure compliance with codes and standards produced by Government agencies (for example, OSHA) and nationally recognized consensus organizations (for example, ASHRAE, ANSI, and so forth) as well as guidance provided in Unified Facilities Criteria (UFC).
  - (d) Verifying survey data in DOEHRS–IH.
- (15) Upholds the standards of conduct and code of ethics, and maintains qualified IH personnel as defined in paragraph 5–4, below.
- (16) Ensures DOEHRS–IH data is fully and correctly entered in DOEHRS–IH. This is necessary for quality and completeness of the IH metric data extracted from DOEHRS–IH in support of the Assistant Chief of Staff for Installation Management (ACSIM) Installation Status Report (ISR) and the AMEDD Command Management System (CMS).
  - (a) The AMEDD CMS provides feedback on performance of U.S. Army Medical Command (USAMEDCOM) operations and helps USAMEDCOM leadership address “non-green” stop light (red, amber, green) operational issues.
  - (b) The Army ISR is required by AR 210–14 and has the same end purpose as the AMEDD CMS, but includes all operations within an installation.
    - b. *Industrial hygiene staff.* Industrial hygiene staff—
      - (1) Use the DOD IH EAM (see app B) as the business practice for IH.
      - (2) Perform workplace surveys as scheduled through the master schedule (and other emergency or urgent situations as necessary) to ensure IH hazards are recognized and evaluated using sampling protocols and equipment calibration practices according to regulatory and/or authoritative standards.
      - (3) Document and make recommendations for engineering and administrative controls and PPE.
      - (4) Perform qualitative and/or quantitative IH and ergonomic assessments.
      - (5) Notify OH program personnel when workers are recommended for medical surveillance; recommendations for medical surveillance should be based on IH assessments.
      - (6) Enter survey and IH hazard data in the DOEHRS–IH.
      - (7) Provide written reports of sampling results and survey information to include recommendations to the IHPM for review and appropriate distribution.
      - (8) Submit an IDP, based on ACTEDS guidance, to the IHPM for review and approval; update the IDP annually.
      - (9) Assist the IHPM in reviewing and updating the IHP action plan.

## 2–2. Business practice

The DA uses the DOD IH EAM (see app B) as the model for implementation of the IHP throughout the DOD. The eight-step model describes the IH process of anticipation, recognition, evaluation, and control of OH hazards. The model provides details on how industrial hygienists collect and evaluate exposure data throughout the DOD. This

includes exposures occurring at any workplace and process where DOD personnel are employed, whether at fixed installation operations or deployed environments. The DOD IH EAM is the guidance document for the DOEHRS-IH.

### **2-3. Overview of the Industrial Hygiene Exposure Assessment Model**

*a.* This model describes the IH exposure assessment process used by industrial hygienists to collect and evaluate IH exposure data throughout the DOD. Exposure assessments are conducted wherever DOD personnel work, whether at fixed installations or deployed settings. The DOD IH EAM is the basis for the DOEHRS-IH.

*b.* The DOD IH EAM applies to IH risk assessments performed on DOD operations ranging from repetitive industrial maintenance operations to one-time exposures to ambient chemical, biological, and physical stresses. The IH risk assessment process is cyclical. Each new cycle in the process includes reviewing previous assessments, collecting additional information to improve upon the previous assessments, and making new decisions based on the accumulated information. This process characterizes the potential exposure and risks of each operation over time and continuously reduces the risks of illness or injury as controls are implemented or refined.

*c.* Industrial hygienists also provide exposure information to occupational medicine personnel to support medical surveillance. This exposure information becomes part of lifelong medical records for future medical or legal investigations.

### **2-4. Survey and assessment frequency**

*a.* Section 25, Part 1960, Title 29 CFR, paragraph (c) states that “all areas and operations of each workplace, including office operations, shall be inspected at least annually. More frequent inspections shall be conducted in all workplaces where there is an increased risk of accident, injury, or illness due to the nature of the work performed.” In addition, DODI 6055.1, paragraph E3.5.3.1, and AR 385-10 also require annual workplace inspections conducted by qualified safety and occupational health personnel. The industrial hygienist is included in the definition of “qualified safety and health personnel” from all three references cited. However, this does not imply that all of the annual installation workplace inspections be accomplished by the industrial hygienist alone. It has to be a collaborative effort among other safety and health professionals on the installation (safety, OH, IH, fire department, environmental health, and so forth).

*b.* As described in the DOD IH EAM, IH worksite visits must be prioritized based on risk. Industrial hygiene survey frequency is determined by the shop priority. High priority (1) shops should be surveyed at least annually or more frequently; medium priority (2) shops should be surveyed every 2 years; and low priority (3) shops should be surveyed every 3 years. The industrial hygienist should base the shop priority code on the most hazardous processes identified in the shop. The shop priority guidance can be found in appendix D. Recognizing existing and potential hazards is a step towards improving health and safety in the workplace.

*c.* All survey data is entered into DOEHRS-IH.

### **2-5. The industrial hygiene management information system: Defense Occupational and Environmental Health Readiness System-Industrial Hygiene**

The DOEHRS-IH is a Web-based, comprehensive management information system for assembling, comparing, evaluating, storing, and extracting occupational personnel exposure information. Data such as workplace environmental monitoring, engineering and administrative controls, PPE, observation of work practices, and employee health hazard education and training are collected in DOEHRS-IH.

*a.* The DOEHRS-IH is based on the DOD IH EAM, which is the IH business practice used throughout the DOD. Workplace data can be extracted and used to—

- (1) Identify workers, hazards, equipment, and controls associated with workplace processes.
- (2) Prioritize and monitor the evaluation and control of health hazards.
- (3) Support the Standard Army Safety and Occupational Health Inspection (SASOHI) requirements according to AR 385-10 and DA Pam 385-10.
- (4) Provide a cross-reference for the installation environmental or safety office to locate potentially hazardous chemicals and products.
- (5) Provide risk assessment information to The Surgeon General (TSG) and other command and staff elements—such as the safety office—to be included in the installation hazard abatement plan or its equivalent.
- (6) Defend and justify resource requirements (personnel, equipment, training, and so forth).
- (7) Report IHP management elements such as workplace history, noise hazard inventory, equipment calibration, and so forth.
- (8) Assist OH personnel in determining medical surveillance requirements.
- (9) Calculate the metrics for the ACSIM ISR and the AMEDD CMS.

*b.* Initial and sustainment training for DOEHRS-IH is coordinated through the Army Institute of Public Health (AIPH) at USAPHC (formerly known as the U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM)). The DOEHRS-IH is a dynamic system, and other IHP elements will be integrated into the system as

they evolve based on end-user input. End users are encouraged to submit ideas for improvement to mhssc@timpo.osd.mil or <http://www.mhs-helpdesk.com/>.

## **2-6. Assigning risk assessment codes in Defense Occupational and Environmental Health Readiness System-Industrial Hygiene**

a. After completing a worksite visit, the industrial hygienist records the information in DOEHRS-IH. Any deficiency identified in a shop during a worksite visit is evaluated in terms of compliance with Federal standards, Service-specific regulations, authoritative standards and recommended practices. In the DOEHRS-IH, each deficiency is assigned a risk assessment code (RAC) based on the type of risk: health, noise, safety or ergonomic (see app E). Once a RAC is assigned for each deficiency, recommendations are made for corrective actions and included in the installation hazard abatement plan or its equivalent.

(1) *Health risk assessment code.* In calculating a health RAC, four criteria are used: exposure conditions, medical conditions, exposure duration, and number of personnel exposed (or specified similar exposure group (SEG)).

(2) *Noise risk assessment code.* A noise RAC can be determined for either steady-state or impulse noise exposures. The exposure level, long-term frequency (consistency), and number of personnel exposed (or specified SEG) are the criteria used to calculate the RAC.

(3) *Safety and ergonomic risk assessment code.* A hazard severity and accident probability matrix is used to determine these types of RACs.

b. Each type of RAC uses slightly different matrices to determine the overall severity: RAC 1 = critical; RAC 2 = serious; RAC 3 = moderate; RAC 4 = minor; RAC 5 = negligible. The RAC can be applied to associated processes and SEGs within a given shop. For more information on RACs and how they are derived, see appendix E.

## **2-7. Army Industrial Hygiene Program action plan**

a. The IHP action plan is a formal document that—

(1) Broadly defines the mission of the IHP in relation to the missions of the installation, the area of responsibility (AOR), the local commander, USAMEDCOM or equivalent, and OTSG.

(2) Defines the IHP goals and objectives and describes how they will be implemented within the installation, or AOR, with available resources.

(a) The DOEHRS-IH master schedule is used to manage and prioritize IH sampling and survey tasks.

(b) The IHPM is responsible for developing a system for tracking and documenting DA-required and IHP support activities not available in DOEHRS-IH (for example, mandatory training, meetings, design reviews, and command requests).

b. As part of the annual program assessment, the IHPM will review and update the IHP action plan.

c. The IHPM submits the IHP action plan to the chief of preventive medicine, or his or her equivalent, for review and inclusion in the overall preventive medicine program document. See appendix F, below, for a sample of an IHP action plan.

## **2-8. Industrial hygiene master schedule**

a. To implement the IHP action plan, the IHPM must develop a master schedule. The DOEHRS-IH master schedule is a living document used to create and schedule sampling and survey tasks required by the IHP office. The IHPM uses the master schedule to manage the IHP sampling and survey workload by assessing the mission of customers, obtaining the commander's OH and safety emphasis, and reviewing relevant regulations. Tasks can be scheduled on a one-time-only basis or on a recurring basis.

b. At a minimum, the master schedule should include—

(1) A prioritized list of IH surveys (for example, baseline or initial, periodic, and so forth) and/or ergonomic evaluations based on shop priority code, shop deficiencies, and exposure assessment priority (EAP). Details for setting shop priorities are in appendix D.

(2) Shops scheduled for surveys.

(3) The amount of time and personnel needed to complete surveys.

(4) Resources and costs required for each survey (for example, consumables, equipment rentals, analysis, and travel).

(5) A workplace monitoring plan (WMP). The WMP is a subset of the master schedule and lists details (such as sampling type and method, regulation, SEG, shop and shop process, and hazards) related to scheduled sampling activities.

(6) A status of each survey.

## **Chapter 3 Program Resources**

### **Section I Industrial Hygiene Program Offices**

#### **3-1. Staffing**

*a. Personnel requirements.* The quality and number of professionals charged with managing and implementing DOD OSH policy ultimately determines the success of the IHP. The IHPM strives to operate with qualified IH staff by—

- (1) Using the master schedule to estimate personnel requirements.
- (2) Recruiting, training, and maintaining industrial hygienists to fill all authorized professional positions.
- (3) Tracking staff members' professional development, certifications, and maintenance of certifications.

*b. Qualifications of program personnel.*

(1) Selection criteria for civilians. The Office of Personnel Management (OPM) Qualification Standards document contains the position classification standard for the industrial hygiene series (general schedule (GS)-0690) and the position classification fly sheet for the health aid and technician series (GS-0640). The industrial hygienist is classified as civilian job series 0690, and the industrial hygiene technician is classified as civilian job series 0640.

(2) Selection criteria for military personnel. The DA Pam 611-21 describes the commissioned officer's qualifications according to the specialty skill identifier and the qualifications of enlisted personnel according to military occupational specialty codes.

(3) Training.

(a) Industrial hygienists and industrial hygiene technicians are in career program (CP)-12, Safety and Occupational Health. Limited funding is available through CP-12. See paragraph 5-5, for information on CP-12.

(b) As a minimum, the medical or installation commander will support sufficient training as defined in the ACTEDS for civilian and military officers acting as industrial hygienists and industrial hygiene technicians to acquire and maintain competency.

(c) Supervisors and employees will use the IDP (para 5-5, below) to identify and schedule annual training to fulfill career requirements (see AR 690-400).

(d) When regulatory standards require specific training (for example, asbestos or lead), the IHPM will ensure IH personnel receive appropriate training before performing duties.

(e) The IHPM ensures that all IH staff training is documented and verification of training is provided upon request.

#### **3-2. Funding**

The IHPM will—

*a.* Prepare an annual prioritized budget based on IHP personnel and programmed services. The budget should cover all appropriate areas including personnel costs, training, travel costs, equipment and supply needs, contracts (for example, laboratory analysis, calibration, and/or maintenance), and office supplies.

*b.* Submit the budget plan through command channels and participate in the budgeting process.

*c.* Secure supplemental means of funding for the program budget. Installation commanders and tenant activities may fund IH efforts for travel duty, specialized training, specialized equipment, personnel costs (temporary or authorized), or laboratory costs.

#### **3-3. Survey equipment**

The specific missions and work processes at an installation determine the type of survey equipment required. For guidance on selecting survey equipment, contact the Commander, USAPHC (MCHB-IP-OFS), 5158 Blackhawk Road, Aberdeen Proving Ground, MD 21010-5403. Appendix G, below, lists suggested sampling equipment requirements. The IHPM may find buyer's guides and manufacturer's guidance helpful in selecting and ordering survey equipment.

#### **3-4. Equipment calibration verification**

*a.* To obtain reliable quantitative data, equipment requires operational and periodic calibration. Operational calibration should be performed before and after survey use. Periodic calibration is performed on stable types of equipment according to frequency of equipment use and manufacturer recommendations.

*b.* The IHPM—

(1) Ensures the Army calibration system is practiced according to AR 750-43.

(2) Ensures calibrations are based on a method traceable to a recognized authority, such as the National Institute of Standards and Technology.

(3) Allows manufacturer and/or contract calibration facilities to calibrate equipment only if their methods meet traceability and calibration standards.

(4) Ensures complete records of calibrations are maintained according to AR 25-400-2.

(5) Ensures documented data and cross-reference values conform to nationally and internationally accepted QA practices.

(6) Ensures a calibration SOP for all instrumentation is developed, incorporating manufacturer's instructions.

### **3-5. Industrial hygiene laboratories**

The IHP should use only AIHA<sup>®</sup>-accredited IH laboratories or laboratories that meet the ISO/IEC 17025 international standard. For bulk sample analysis for asbestos and lead-based paint, the IHP should use USEPA-accredited laboratories. All IH and laboratory personnel must follow chain-of-custody (COC) procedures to ensure sample integrity as IH data are potentially subject to legal proceedings. See USAPHC TG 141 for an example of a COC record.

### **3-6. Facilities**

The medical or installation commander, or equivalent, will provide adequate office, storage, laboratory space, and transportation for the IHP. Facilities must be of adequate quality and size and must be suitably located to allow the performance of IH functions. Laboratory space is necessary primarily for user-performed maintenance, function testing, calibration, and equipment storage. Laboratory requirements depend on the amount and type of equipment used and procedures performed.

## **Section II**

### **Recordkeeping**

#### **3-7. Introduction**

Industrial hygiene records, including DOEHRS-IH data, are required to meet legal and professional requirements. IHP personnel ensure the preservation and retention of records. Electronic format is acceptable; however, hard copies, if required, must be made available upon request (printed from electronic format).

#### **3-8. Records**

The IHP personnel need to comply with applicable laws and regulations, including—

- a.* Section 1020, Part 1910, Title 29, CFR.
- b.* Part 1960, Title 29, CFR.
- c.* AR 25-400-2.
- d.* PL 104-191.
- e.* Part 160, Title 45, CFR.
- f.* Part 164, Title 45, CFR.
- g.* DOD 6025.18-R.
- h.* DOD 8580.02-R.

## **Chapter 4**

### **Industrial Hygiene Program Relationships**

#### **Section I**

#### **The Role of the Industrial Hygiene Program in the Programs of the Medical Commander**

##### **4-1. Occupational medicine**

The role of the IHP in occupational medicine (under DA Pam 40-11) includes to—

- a.* Conduct joint worksite visits with occupational medicine personnel to address worksite causes of elevated exposures.
- b.* Identify appropriate medical surveillance recommendations from worksite evaluations and provide a list of recommendations to OH.

##### **4-2. Army Hearing Program**

The IHP is represented in the Army Hearing Program (see DA Pam 40-501). The role of the IHP in Army hearing includes to—

- a.* Survey all known and suspected noise-hazardous areas, with approved and calibrated equipment at least once and within 30 days of any change in operation.
- b.* Conduct noise sampling and determine the time-weighted average (TWA) for noise-exposed workers.
- c.* Identify all SEGs where workers can be exposed to occupational noise above the noise levels in DA Pam 40-501.
- d.* Recommend engineering controls, administrative controls, and PPE to eliminate or control steady-state noise and/or impulse noise hazards.

- e.* Enter noise hazard information and recommended controls for each worksite in DOEHRS–IH.
- f.* Provide, upon request, the names and work locations of noise-exposed and ototoxic-exposed personnel to—
  - (1) The local hearing program manager.
  - (2) The unit commander or supervisor of the individual.
  - (3) The OH program manager.
- g.* Document hearing program deficiencies in DOEHRS–IH. A noise RAC is calculated for each deficiency, and recommendations are made for corrective actions and included in the installation hazard abatement plan or its equivalent.
- h.* Establish noise contours where appropriate and feasible and advise unit commanders and supervisors about how to properly post these contours.
- i.* Notify the civilian personnel office of noise-hazardous and ototoxic areas for inclusion in job descriptions.
- j.* Provide training information and support to the Army Hearing Program as requested.

#### **4-3. Army Vision Conservation and Readiness Program**

The IHP is represented on the vision conservation and readiness team (see DA Pam 40–506). The role of the IHP in vision conservation and readiness includes to—

- a.* Assess and document eye hazards, eye protection required and used, and proper illumination levels during workplace evaluations.
- b.* Recommend engineering controls (to include illumination levels), administrative controls, and eye protection to eliminate or control eye hazards.
- c.* Enter eye hazard information and recommended controls for each worksite in DOEHRS–IH.
- d.* Provide, upon request, the names and work locations of personnel exposed to eye hazards to—
  - (1) The local vision conservation and readiness officer.
  - (2) The unit commander or supervisor of the individual.
  - (3) The OH program manager.

#### **4-4. Ergonomics**

- a.* Ergonomics is the science of designing the job and the workplace to fit the worker for purposes of reducing the risk in developing work-related musculoskeletal disorders (WMSDs) due to repetitive motion or forceful exertion, thereby maintaining health and increasing productivity.
- b.* Illness due to repetitive motion or repetitive stress may include, but is not limited to, back strain, chronic low back pain, Raynaud’s Syndrome, and carpal tunnel syndrome.
- c.* The role of IHP personnel in ergonomics includes to—
  - (1) Identify ergonomic risk factors during IH surveys.
  - (2) Perform or assist with in-depth ergonomic evaluations and assessments as needed.
  - (3) Participate with OH and safety personnel and physical or occupational therapists (if available) in the evaluation of operations where ergonomic health hazards may exist.
  - (4) Serve on the installation ergonomics subcommittee to ensure—
    - (a)* Workers are included in the process of identifying ergonomic hazards and in the development of control recommendations.
    - (b)* Ergonomic training and education are provided for military and civilian personnel. Personnel tasked to provide training should obtain ergonomic refresher training to maintain expertise.
    - (c)* Ergonomic recommendations for workstations, tasks, and tools are implemented.
  - (5) Keep accurate records of identified WMSDs and high-risk work areas and solutions. The IHP personnel should provide these records to the ergonomics subcommittee for review and tracking. The records will be entered in the DOEHRS–IH.
  - (6) Work with medical personnel in the identification of potential WMSDs and advise medical personnel on ergonomic changes related to the workstation, tasks, and tools.
- d.* For more information on the Army Ergonomics Program, see DA Pam 40–21.

#### **4-5. Medical treatment facility industrial hygiene**

The role of the IHP in medical treatment facility (MTF) IH includes—

- a.* Evaluating hospital-unique exposures (for example, tuberculosis, methicillin-resistant staphylococcus aureus (MRSA), hepatitis, and healthcare-associated infections), bloodborne pathogens (see USACHPPM TG 190), hazardous drugs, waste anesthetic gases (TB MED 510), and chemicals in clinical areas.
- b.* Participating in the environment of care and safety committees to ensure compliance with Joint Commission regulations. Compliance requirements may include—
  - (1) Conducting ventilation system assessments in specialty areas (operating rooms, isolation rooms, laboratories, pharmacy, and so forth).



- (2) Participating in preconstruction risk assessments by participating in design reviews.
- (3) Participating in MTF hazard vulnerability analyses.

## **Section II**

### **The Role of the Industrial Hygiene Program in the Programs of the Installation Commander**

#### **4-6. Hazard communication program**

*a.* The hazard communication (HAZCOM) program ensures all relevant information on hazardous chemicals in the workplace is transmitted to all affected employees. Policies and procedures for this program are established according to Section 1200, Part 1910, Title 29, CFR; DODI 6050.05; AR 700-141; and the local HAZCOM program.

*b.* The role of the IHP in the HAZCOM program includes to—

- (1) Identify training requirements by reviewing workplace evaluations.
- (2) Assist in developing and providing HAZCOM training.
- (3) Ensure chemical inventories comply with HAZCOM requirements.
- (4) Review and interpret material safety data sheets (MSDSs).

#### **4-7. Respiratory protection program**

The role of the IHP in respiratory protection programs (AR 11-34) on an installation includes—

*a.* Evaluating workplaces to determine respiratory protection requirements.

*b.* Assisting the installation respiratory protection specialist by training the installation respirator specialist or technicians in the—

- (1) Capabilities and limitations of respirators.
- (2) Criteria for selecting the proper respirator.
- (3) Use, care and storage of respirators.

*c.* Entering PPE requirements, surveys, and recommendations in DOEHS-IH.

*d.* Providing periodic technical reviews of worker respiratory protection training material through the installation respiratory protection program manager.

*e.* Providing the installation safety office and OH with DOEHS-IH data that identifies workers in the respiratory protection program.

*f.* Ensuring the program complies with the applicable provisions of 29 CFR 1910.134(c) and AR 11-34.

#### **4-8. Personal protective equipment, other than respiratory protection**

*a.* Personal protective equipment is used to reduce employee exposure to hazards when engineering and administrative controls are not feasible or effective to reduce injury or illness risks to acceptable levels. Note: Insufficient funding is not a valid reason for not implementing engineering controls.

*b.* The role of the IHP in PPE programs on an installation includes—

(1) Evaluating workplaces to determine if workers require PPE, other than respiratory protection, and recommending types of PPE based on assessment of the workplace hazards.

(2) Assisting installation safety personnel with—

*(a)* Designating areas that require the use of PPE.

*(b)* Reviewing worksite-specific SOPs related to PPE use, care, and storage.

*(c)* Providing training to PPE specialists, supervisors, and employees concerning the capabilities and limitations of PPE; the criteria for selecting proper PPE; and the use, care, and storage of PPE.

(3) Entering PPE requirements and recommendations in DOEHS-IH.

*c.* When selecting and recommending PPE other than respiratory protection, IHP personnel should consider, at a minimum—

- (1) Work process hazards (for example, chemical, physical, biological) and associated risks.
- (2) The physical state of the hazard (for example, gas, vapor, liquid, bulk solid, aerosol, electromagnetic).
- (3) The employee's potential for exposure (for example, continuous, intermittent, or potential accidental).
- (4) The effectiveness of the PPE against the hazard(s) (PPE durability, chemical permeation breakthrough time, penetration, degradation, and so forth).
- (5) Heat and cold stress (see TB MED 507/AFPAM 48-152(I) and TB MED 508).
- (6) Practicality.
- (7) Worker acceptance.
- (8) Regulatory requirements, when applicable.

#### **4-9. Asbestos management**

The role of IHP personnel in asbestos management on an installation (under TB MED 513, AR 200-1, Public Works Technical Bulletin 420-70-8) includes to—

*a.* Serve as the principal advisor and consultant (competent person) (Section 1101, Part 1926, Title 29, CFR) to the asbestos control manager on asbestos abatement projects. Responsibilities may include to—

(1) Participate on a multidisciplinary installation asbestos team to develop an overall program of asbestos risk reduction.

(2) Provide technical advice concerning asbestos abatement methods.

(3) Review contract specifications and proposals for asbestos abatement projects.

*b.* Complete and maintaining USEPA, OSHA, State, and/or local training, certification, and licensing as required to advise and consult on asbestos hazard management activities.

*c.* Document noncontract worker exposure to asbestos (for example, during abatement projects) in DOEHS-IH (see para 4-28c).

*d.* Provide worker exposure information to OH program personnel for inclusion in medical surveillance.

*e.* Provide recommendations for appropriate PPE.

#### **4-10. Lead hazard management**

*a.* The purpose of lead hazard management is to prevent lead exposure to children under 6 years of age, pregnant women, and workers. Lead hazard management includes several elements: identifying lead hazards in child-occupied facilities by performing risk assessments, controlling or eliminating lead hazards through interim control or abatement, and ongoing monitoring of painted surfaces known to contain or suspected of containing lead.

*b.* The role of IHP personnel in lead management on an installation (under AR 200-1, AR 420-1, PWTB 420-70-2) includes—

(1) Participating in a multidisciplinary installation lead team to develop an overall program of lead risk reduction. Actions may include—

(*a*) Assisting in providing policy and guidance to installations to develop and implement lead hazard management programs.

(*b*) Identifying and managing in-place lead hazards or lead-contaminated areas of concern (for example, indoor firing ranges, homes built prior to 1978).

(*c*) Addressing childhood lead poisoning issues by participating in the installation Childhood Lead Poisoning Prevention (CLPP) Program (see <http://www.cdc.gov/nceh/lead/about/program.htm>).

(2) Completing and maintaining USEPA, OSHA, State, and/or local training, certification, and licensing as required to advise and consult on lead hazard management activities.

(3) Documenting noncontract worker exposure to lead (for example, during abatement projects) in DOEHS-IH (see para 4-28c, below).

(4) Providing worker exposure information to OH program personnel for inclusion in medical surveillance.

(5) Providing recommendations for appropriate PPE.

#### **4-11. Occupational radiation protection**

The role of the IHP in occupational radiation protection (in conjunction with the local radiation safety officer) includes—

*a.* Identifying ionizing and nonionizing radiation health hazards during worksite evaluations and entering the data in DOEHS-IH. Note: The personnel dosimetry program that monitors personnel exposure to ionizing radiation is a separate entity, and such information should not be duplicated in DOEHS-IH.

*b.* Providing, upon request, the names and work location of personnel working with radioactive materials, radioactive commodities, or radiation-producing devices to—

(1) The local radiation safety officer.

(2) The unit commander or supervisor of the individual.

(3) The OH program manager.

#### **4-12. Hazardous and medical wastes**

*a.* The IHP can assist in ensuring the safe handling, transportation, and storage of hazardous and medical wastes generated at an installation. Specific hazardous and medical waste procedures are found in DA Pam 40-11.

*b.* The role of the IHP includes—

(1) Identifying locations (shops), processes, and personnel involved in the handling and storage of hazardous, pharmaceutical, and medical wastes.

(2) Recommending appropriate engineering and administrative controls and PPE to reduce exposures to hazardous and medical wastes.

- (3) Providing training to employees in proper work practices and PPE needed to reduce potential exposure to hazardous and medical wastes.
- (4) Reviewing site safety and health plans for hazardous waste remediation projects.
- (5) Assisting the environmental safety officer, or equivalent, by reviewing SOPs pertaining to safe handling and storage practices in deployment operations.
- (6) Providing proper disinfection guidance for spills (for example, blood) that occur outside of an MTF (crime scenes).
- (7) Entering hazard information into DOEHS–IH.
- (8) Preparing for spill response by participating in contingency exercises and emergency operations.

#### **4–13. Indoor air quality and indoor environmental quality**

*a.* Indoor environmental quality (IEQ) encompasses IAQ, which focuses on airborne contaminants and ventilation requirements to achieve acceptable IAQ, as well as other health, safety, and comfort issues such as thermal conditions, water surveillance, ergonomics, acoustics, and lighting. There are health risks associated with both acute and chronic exposures to indoor environmental contaminants such as radon, environmental tobacco smoke, particulates, combustion by-products, asbestos, lead-based paint, formaldehyde, other volatile compounds, and biological pollutants such as bacteria and mold.

*b.* The role of the IHP in assessing IEQ includes—

- (1) Prioritizing the evaluation of operations where there is the potential for nonindustrial indoor environmental concerns following the DOD IH EAM in DOEHS–IH.
- (2) Verifying the source (for example, moisture) and determining if there are feasible solutions to resolve IEQ concerns and prevent recurrence.
- (3) Coordinating with the engineering division to conduct design reviews to evaluate existing ventilation systems and recommend improvements.
- (4) Coordinating with the Directorate of Public Works (DPW), the Directorate of Installation Operations (DIO), or the building facility management offices to correct any building or ventilation deficiencies.
- (5) Consulting ANSI/ASHRAE Standard 62 and ANSI/ASHRAE Standard 55 for specific assessment guidance.
- (6) Consulting ANSI/ASHRAE/American Society for Healthcare Engineering (ASHE) Standard 170 and DOD UFC 4–510–01 for guidance specific to healthcare facilities.
- (7) Consulting USACHPPM TG 277, USACHPPM TG 278, ANSI/Institute of Inspection, Cleaning and Restoration Certification (IICRC) S500, and ANSI/IICRC S520 for guidance specific to water damage restoration and mold assessment and remediation.
- (8) Completing and maintaining USEPA, OSHA, State, and/or local training, certification, and licensing as required to advise and consult on lead hazard management activities.
- (9) Completing and maintaining required State and local training, certification, and licensing when conducting mold assessment activities. Many states have specific training and certification/licensing requirements to conduct mold assessment activities.

#### **4–14. Federal Employees Compensation Act Program**

The IHP may be represented in the installation FECA working group. The role of the IHP includes—

- a.* Providing current or additional sampling data or information from IH surveys, as needed, to support or controvert workers' compensation claims.
- b.* Identifying areas or workplaces that require additional IH support to prevent future accidents and illnesses.
- c.* Assisting in the analysis of injury and illness data to determine causes and trends.
- d.* Assisting in the development of initiatives to reduce FECA claims and costs to the installation commander.
- e.* Assisting with workplace assessments to evaluate FECA claims and to facilitate safe return-to-work initiatives.

#### **4–15. Confined space entry**

The role of IHP personnel in confined space entry on an installation (Section 146, Part 1910, Title 29, CFR and ANSI/American Society of Safety Engineers (ASSE) Z117.1) includes—

- a.* Assisting in identifying confined spaces and maintaining a list of confined spaces.
- b.* Reviewing the confined space program annually to ensure that it includes necessary safeguards to protect against health hazards.
- c.* Assisting in selection of respiratory protection equipment and other PPE for operations in confined spaces.
- d.* Evaluating confined spaces to establish entry criteria and to document conditions on the entry permit.
- e.* Establishing a professional collaboration among safety, DPW, supervisors, and the fire department to ensure a local confined space regulation meets OSHA requirements.

#### **4-16. Chemical surety program**

The role of the IHP in support of the chemical surety program on installations is broad and should be tailored according to chemical agent operations performed at each site. The IHP works with the installation chemical officer to conduct health hazard inventories and hazard exposure assessments involving chemical operations. Results of monitoring are recorded in DOEHRS-IH; worker exposure information is provided to OH program personnel for inclusion in medical surveillance. For further guidance, see AR 385-10, AR 50-6, and DA Pam 385-61.

#### **4-17. Laboratory biosafety**

*a.* Laboratory biosafety involves the safe handling of biological materials in a laboratory environment. The Centers for Disease Control and Prevention (CDC) has designated four biosafety levels (BSLs) representing the degree of protection provided to personnel, the environment, and the community. The least amount of protection is represented by BSL 1, and BSL 4 represents the highest level. Each BSL consists of combinations of work practices, safety equipment, and facilities specifically designed for the operations performed, the infectious agents used, and their routes of disease transmission. For further guidance, see AR 385-10 and DA Pam 385-69.

*b.* The role of the IHP in laboratory biosafety depends upon the facility and the specific work performed within each laboratory. The role of the industrial hygienist in laboratory biosafety may include—

- (1) Serving on the biosafety committee.
- (2) Assisting with the risk assessment process.
- (3) Identifying and evaluating laboratory hazards.
- (4) Performing IH surveys of laboratories.

### **Section III**

#### **Coordination for Industrial Hygiene Program Effectiveness**

#### **4-18. Introduction**

A successful IHP works cooperatively with other installation and medical commander programs. Local memoranda of understanding (MOUs) or interservice support agreements (ISSAs) define relationships and responsibilities among programs. The IHP should coordinate (defining MOUs, ISSAs, and industrial hygienist roles and responsibilities within related installation regulations/activities) with appropriate installation and tenant resources. These resources can include—

- a.* Commanders.
- b.* The safety office.
- c.* The OH manager.
- d.* The Safety and Occupational Health Advisory Council (SOHAC).
- e.* The public affairs office.
- f.* The directorate of public works or U.S. Army Installation Management Command (USAIMCOM).
- g.* The environmental coordinator.
- h.* The installation integrated pest management coordinator.
- i.* The civilian personnel office.
- j.* The contracting office.
- k.* Others.

#### **4-19. Commanders**

*a.* Command support is essential for the success of the IHP. Therefore, IHP personnel should—

(1) Keep the medical or installation commander informed of the IHP staff's duties, abilities, and accomplishments via the IH action plan and annual review.

(2) Inform the commander of the value and cost effectiveness of the IHP.

*b.* Implementing an effective IHP depends on the cooperation of unit commanders and supervisors. The IHPM should provide support and guidance to these individuals to ensure that health hazard control measures are implemented.

#### **4-20. Safety office**

The IHP partners with the installation or supporting safety office to provide a comprehensive safety program. The IHP can provide the safety office with IH survey, monitoring, and assessment data. The installation safety office uses information provided by the IHP to ensure—

- a.* All worksites are inspected according to the SASOHI program.
- b.* Regulatory requirements, including employee training, are met.

c. Implementation of IH recommendations for abatement or control of health hazards or inclusion of the recommendations in the formal installation hazard abatement plan or its equivalent.

#### **4-21. Occupational health manager**

The IHP partners with the installation or supporting OH manager to provide a comprehensive OH program. The IHP personnel ensure exposure information is in DOEHRs-IH and readily available to the OH professional. Consultation and collaboration with the OH staff are strongly recommended.

#### **4-22. Safety and Occupational Health Advisory Council**

The IHP is represented on the installation OSH committee, which is comprised of all installation staff offices and tenant activities. IHP representatives may—

- a. Review safety and health suggestions.
- b. Review injury and illness reports and recommend corrective measures to prevent recurrence.
- c. Review suspected unsafe or unhealthful working conditions and recommend corrective measures.
- d. Promote safety and OH education within the organization.
- e. Conduct periodic self-assessments in their AORs and coordinate with the organization's safety office.
- f. Coordinate with tenant activities to encourage IH input when ordering replacement equipment to decrease worksite hazards, injuries, and illnesses.

#### **4-23. Public affairs office**

The IHP should coordinate with the public affairs officer, who can—

- a. Help promote education and circulate training information through local publications.
- b. Act as a liaison with agencies and communication avenues (newspapers, television, and radio) outside DOD for the marketing and advertising of IH accomplishments and capabilities.

#### **4-24. Directorate of public works or U.S. Army Installation Management Command**

The IHP should coordinate with the DPW or USAIMCOM to ensure that—

- a. New and existing controls, to include ventilation systems, are effectively carried out.
- b. Industrial hygiene expertise is incorporated into installation-managed programs such as asbestos and lead management, hazardous waste, IAQ management programs, and so forth.
- c. Industrial hygiene staff participate in the design review process for proposed new systems and modifications of existing systems. The design review process allows the IHP to review project drawings in the early stages to ensure the project design meets applicable Federal, authoritative, and local design review criteria and specifications. The IHP makes recommendations for corrections (for example, heating, ventilation and air-conditioning (HVAC) system modifications, lighting, IAQ, and so forth) to avoid costly mistakes that may impact the health and safety of building occupants.

#### **4-25. Environmental coordinator**

The IHP should provide technical assistance to the environmental coordinator to ensure IH hazards are identified and controlled as part of the installation's environmental programs, to include asbestos, lead, solid and hazardous waste, air pollution, and waste water programs. (The environmental coordinator may be part of the engineering office or staff and may be responsible for the management of all environmental programs.)

#### **4-26. Installation integrated pest management coordinator**

- a. The installation integrated pest management coordinator can provide the IHP with information concerning the location and use of pesticides.
- b. The IHP can provide the installation integrated-pest-management coordinator with—
  - (1) An evaluation of potential pesticide exposure.
  - (2) Expertise in recommending and implementing engineering controls and PPE to reduce risk.

#### **4-27. Civilian personnel office**

- a. The IHPM can work with the civilian personnel office, which can assist the IHPM with internal staffing (such as recruiting) to ensure a fully qualified IH staff.
- b. The IHPM can provide the civilian personnel office with specific requirements for job descriptions and classifications based on health hazard evaluation information (for example, employees whose duties require a respirator must be clean-shaven). The health hazard evaluation information can also be used to support FECA claims.
- c. The IHPM can assist in evaluating employees' claims for environmental differential pay or hazard differential pay.

#### **4-28. Contracting office**

a. IHP staff can review all installation contracts and make recommendations to the contracting office to ensure contractors have compliant OSH programs.

b. The contracting office alerts the IHPM when construction, demolition, renovation, and abatement projects are scheduled.

c. Where Federal employees or Government property may be affected, the IHP representative, in coordination with the site Government representative, performs inspections of construction, renovation, and abatement projects to ensure regulatory compliance. If these construction, renovation, and abatement projects are contracted by the U.S. Army Corps of Engineers (USACE), the IHP representative coordinates with the local or supporting USACE office. Army construction contracts are required by the Federal Acquisition Regulation (FAR) (Clause 52.236-13) to comply with USACE Engineering Manual (EM) 385-1-1 (see AR 385-10). Unless specified in the contract, IHP staff will not conduct sampling or monitoring of contract employees. Sampling and monitoring of contract employees is the responsibility of the contractor (para E3.5.2, DODI 6055.1).

d. Any deficiencies and recommendations found during inspections must be reported directly to the contracting officer and not to the contractor. The contracting officer is the only person who can legally convey recommendations to the civilian contractor.

#### **4-29. Others**

Coordination among the IHP and unions, work councils, supervisors, and workers is essential to ensure health and safety concerns are addressed and regulatory compliance is accepted at all levels.

## **Chapter 5 Quality Assurance**

### **Section I Industrial Hygiene Program Assessment**

#### **5-1. Internal program assessments**

The IHPM performs annual assessments of the IHP using DA Form 7693. The results of this assessment are used to recognize and target weaknesses and to make plans for program improvement. Assessment results should be summarized and sent to the medical commander and USAPHC/AIPH for inclusion in overall Army IHP improvement initiatives.

#### **5-2. External program assessments**

The USAPHC/AIPH provides external assessments of local programs according to the request of the IHPM, the regional command industrial hygienist or equivalent. For assistance regarding external assessments, contact USAPHC/AIPH, Industrial Hygiene and Medical Safety Management Program (MCHB-IP-OIM), 5158 Blackhawk Road, Aberdeen Proving Ground, MD 21010-5403.

### **Section II Army Industrial Hygiene Professionalism**

#### **5-3. Standards of conduct**

All IH personnel must adhere to the standards of conduct under DODD 5500.07 and DOD 5500.7-R.

#### **5-4. Code of ethics**

All IH personnel must adhere to the professional goals outlined by the Joint Industrial Hygiene Associations (see app H).

#### **5-5. Career Program 12, Safety and Occupational Health**

##### *a. Background.*

(1) Civilian careerists. Career program 12 (CP-12) is an ACTEDS career program composed of the following career fields: 0018 occupational safety and health manager, 0019 occupational safety and health technician, 0640 industrial hygiene technician, 0690 industrial hygienist, 0803 safety engineer, 1306 health physicists, 1815 air safety investigators, and 0081 firefighters. The goal of CP-12 is to develop a professional group of civilians (careerists) who assist commanders and directors in protecting forces through risk management to enhance mission accomplishment.

(a) The CP-12 functional chief (FC) is the Deputy Assistant Secretary of the Army (Environment, Safety and Occupational Health) under the Assistant Secretary of the Army (Installations, Energy and Environment).

(b) The FC selects a senior military or civilian executive to serve as the principle advisor, and that individual is

designated the CP functional chief representative (FCR). The program FCR delegates responsibility for the day-to-day management, execution, and administration of CP-12 to the career program manager (CPM).

(c) Current CP-12 contacts are listed on the CP-12 Web site at <https://safety.army.mil/cp12online/WelcomeOverview/tabid/1261/Default.aspx>.

(d) AR 690-950 governs the development, operation, and administration of the civilian career programs.

(2) Individual development plan. The CP-12 provides careerists with a career roadmap by defining and periodically funding formal training, on-the-job training (OJT), developmental assignments, and self-developmental activities. The IDP is the tool that records and tracks the unique action plan that the careerist and his or her supervisor have created together. Careerists create and periodically update their IDP online at the following CP-12 Web site: <https://safety.army.mil/cp12online/ManageYourIDP/tabid/1289/Default.aspx>.

(3) The CP-12 intern training program. This is a 2-year education program that includes formal classroom instruction and OJT in the functional elements of the safety and OH program. The ACTEDS interns are assigned to the ACTEDS table of distribution and allowances (TDA). Their salary and training costs are funded by ACTEDS while they are in the program. Army IHPs may host and mentor interns for 2 years if there is a vacant GS-0690-11 position in which to place the interns when they successfully graduate the program.

*b. Industrial hygiene qualifications.*

(1) All Army industrial hygienists must meet the position classification standard for the industrial hygiene series, 0690. These standards are maintained by OPM. Additional information is available at the following Web site: <http://www.opm.gov/qualifications/standards/IORs/gs0600/0690.htm>. To qualify as an industrial hygienist, the individual must have an undergraduate bachelor of science (BS), or bachelor of arts (BA), degree. The degree may be in industrial hygiene or a branch of engineering, physical science, or life science that includes 12 semester hours in chemistry, including organic chemistry, and 18 additional semester hours in any combination of the following courses: chemistry, physics, engineering, health physics, environmental health, biostatistics, biology, physiology, toxicology, epidemiology, or industrial hygiene. Courses in the history or teaching of chemistry are not acceptable.

(2) Army IH technicians must meet the position classification standard for the health aid and technician series, 0640. There are educational and experience requirements for IH technicians, but no degree requirement. Additional information is available at the following Web site: <http://www.opm.gov/qualifications/standards/IORs/gs0600/0640.htm>.

*c. Certification.* Certification is an indication of professionalism and dedication. Certification requires review by an oversight organization and successful completion of an examination. Some organizations offer registrations, but a registration is not synonymous with a certification or equivalent to a certification.

(1) A certification in the profession of industrial hygiene (certified industrial hygienist<sup>®</sup> or CIH<sup>®</sup>) is issued by the American Board of Industrial Hygiene<sup>®</sup> (ABIH<sup>®</sup>) (<http://www.abih.org/certified/index.html>) when the OSH professional has successfully passed an examination and has accrued years of practice. There are strict requirements for maintaining certification. (Certified industrial hygienist<sup>®</sup>, CIH<sup>®</sup>, American Board of Industrial Hygiene<sup>®</sup> and ABIH<sup>®</sup> are registered trademarks of the American Board of Industrial Hygiene<sup>®</sup>, Lansing, MI.)

(2) A certification as a safety professional (certified safety professional<sup>®</sup> or CSP<sup>®</sup>) is issued by the Board of Certified Safety Professionals, Inc. (BCSP) when the OSH professional successfully passes an examination and has accrued years of practice. There are strict requirements for maintaining certification (<http://www.bcspp.org>). (Certified safety professional<sup>®</sup> and CSP<sup>®</sup> are registered trademarks of the Board of Certified Safety Professionals, Inc., Savoy, IL.)

(3) The Council on Certification of Health, Environmental and Safety Technologists (CCHEST<sup>®</sup>) operates certification programs for safety and health practitioners at the technologist/technician level. (CCHEST<sup>®</sup> is a registered trademark of the Board of Certified Safety Professionals, Inc., Savoy, IL.) The CCHEST<sup>®</sup> operates with the BCSP and offers three peer certifications, including—

(a) Occupational health and safety technologist<sup>®</sup> (OHST<sup>®</sup>). (Occupational health and safety technologist<sup>®</sup> and OHST<sup>®</sup> are registered trademarks of the Board of Certified Safety Professionals, Inc., Savoy, IL.)

(b) Construction health and safety technician<sup>®</sup> (CHST<sup>®</sup>). (Construction health and safety technician<sup>®</sup> and CHST<sup>®</sup> are registered trademarks of the Board of Certified Safety Professionals, Inc., Savoy, IL.)

(c) Safety trained supervisor<sup>®</sup> (STS<sup>®</sup>). (Safety trained supervisor<sup>®</sup> and STS<sup>®</sup> are registered trademarks of the Board of Certified Safety Professionals, Inc., Savoy, IL.)

(4) Other certifications relevant to OSH are offered by the International Board for Certification of Safety Managers (<http://www.chcm-chsp.org/certifications.html>) and include—

(a) Certified hazard control manager (CHCM).

(b) Certified healthcare safety professional (CHSP).

## **Appendix A References**

### **Section I**

#### **Required Publications**

Unless otherwise stated, publications are available on the Army Publishing Directorate Web site, at: <http://www.apd.army.mil>. Department of Defense publications are available at: <http://dtic.mil/whs/directives/>. The Code of Federal Regulations is available at <http://www.access.gpo.gov/>.

#### **AR 11-34**

The Army Respiratory Protection Program (Cited in para 4-7 and 4-7f.)

#### **AR 40-5**

Preventive Medicine (Cited in para 1-4c.)

#### **AR 50-6**

Chemical Surety (Cited in para 4-16.)

#### **AR 200-1**

Environmental Protection and Enhancement (Cited in para 4-9 and 4-10b.)

#### **AR 385-10**

The Army Safety Program (Cited in paras 1-4d, 2-4a, 2-5a(3), 4-16, 4-17a, and 4-28c.)

#### **AR 690-400**

Total Army Performance Evaluation System (Cited in para 3-1b(3)(c).)

#### **AR 690-950**

Career Management (Cited in para 5-5a(1)(d).)

#### **DA Pam 40-11**

Preventive Medicine (Cited in paras 1-8b(3), 2-1a(1), 4-1, and 4-12a.)

#### **DA Pam 385-10**

Army Safety Program (Cited in para 2-5a(3).)

#### **DA Pam 385-61**

Toxic Chemical Agent Safety Standards (Cited in para 1-8d and 4-16.)

#### **DA Pam 385-69**

Safety Standards for Microbiological and Biomedical Laboratories (Cited in para 4-17a.)

#### **Army Civilian Training, Education and Development System Plan for CP-12 Safety & Occupational Health**

(Available at <https://safety.army.mil/cp12online/>) (Cited in paras 2-1a(3), 2-1b(8), 3-1b(3)(b), 5-5a(1), and 5-5a(3).)

#### **DOD Industrial Hygiene Exposure Assessment Model, Report 2000-1**

DOD Industrial Hygiene Working Group, January 2000 (Cited in paras 2-1a(4), 2-1b(1), 2-2, 2-3a, 2-3b, 2-4b, 2-5a, 4-13b(1), and B-1.)

#### **3 CFR**

The President (Cited in para 1-4a.)

#### **29 CFR 1910**

Occupational Safety and Health Administration, Department of Labor (Cited in para 1-8a and B-2f(2)(a)2.)

#### **29 CFR 1910.134(c)**

Respiratory protection program (Cited in para 4-7f.)

#### **29 CFR 1926**

Safety and Health Regulations for Construction (Cited in para 1-8a.)



**29 CFR 1960**

Basic Program Elements for Federal Employee Occupational Safety and Health Programs and Related Matters (Cited in paras 1–4a, 1–8a, and 3–8b.)

**29 CFR 1960.25**

Qualifications of safety and health inspectors and agency inspections (Cited in para 2–4a.)

**Section II****Related Publications**

A related publication is a source of additional information. The user does not have to read it to understand this pamphlet. Unless otherwise stated, publications are available on the Army Publishing Directorate Web site, at: <http://www.apd.army.mil>. Department of Defense publications are available at: <http://dtic.mil/whs/directives/>. The Code of Federal Regulations is available at <http://www.access.gpo.gov/>.

**AR 25–30**

The Army Publishing Program

**AR 25–400–2**

The Army Records Information Management System (ARIMS)

**AR 210–14**

The Army Installation Status Report Program

**AR 420–1**

Army Facilities Management

**AR 700–141**

Hazardous Materials Information Resource System

**AR 750–43**

Army Test, Measurement, and Diagnostic Equipment

**DA Pam 40–21**

Ergonomics Program

**DA Pam 40–501**

Hearing Conservation Program

**DA Pam 40–506**

The Army Vision Conservation and Readiness Program

**DA Pam 385–24**

The Army Radiation Safety Program

**DA Pam 385–64**

Ammunition and Explosives Safety Standards

**DA Pam 611–21**

Military Occupational Classification and Structure

**Air Monitoring Instrumentation: A Manual for Emergency, Investigatory, and Remedial Responders**

Edited by C.J. Maslansky and S.P. Maslansky. New York, New York: John Wiley & Sons, Inc., current edition. (Available at <http://www.amazon.com/Air-Monitoring-Instrumentation-Investigatory-Responders/dp/0471284602>.)

**Air Sampling Instruments for Evaluation of Atmospheric Contaminants**

American Conference of Governmental Industrial Hygienists. Edited by B.S. Cohen and C.S. McCammon. Cincinnati, Ohio: American Conference of Governmental Industrial Hygienists, current edition. (Available at <http://www.acgih.org/store/>.)

**ANSI/ASHRAE Standard 55**

Thermal Environmental Conditions for Human Occupancy (Available at <http://webstore.ansi.org/RecordDetail.aspx?sku=ANSI/ASHRAE+Standard+55-2010>.)

**ANSI/ASHRAE Standard 62**

Ventilation for Acceptable Indoor Air Quality (Available at <http://webstore.ansi.org/RecordDetail.aspx?sku=ANSI%2FASHRAE+62.1-2007>.)

**ANSI/ASHRAE/ASHE Standard 170**

Ventilation of Health Care Facilities (Available at <http://aec.ihs.com/news/2008/ansi-ashrae-ashe-ventilation-091808.htm>.)

**ANSI/ASSE Z117.1**

Safety Requirements for Confined Spaces (Available at <http://webstore.ansi.org/RecordDetail.aspx?sku=ANSI%2FASSE+Z117.1-2009>.)

**ANSI/IICRC S500**

Standard and Reference Guide for Professional Water Damage Restoration (Available at <http://iicrc.org/standards/iicrc-s500/>.)

**ANSI/IICRC S520**

Standard and Reference Guide for Professional Mold Remediation (Available at <http://iicrc.org/standards/iicrc-s520/>.)

**A Strategy for Assessing and Managing Occupational Exposures**

Bullock, W.H., and J.S. Ignacio. Fairfax, Virginia: American Industrial Hygiene Association Press, current edition. (Available at [https://webportal.aiha.org/Purchase/ProductDetail.aspx?Product\\_code=96e7072a-4778-de11-96b0-0050568361fd](https://webportal.aiha.org/Purchase/ProductDetail.aspx?Product_code=96e7072a-4778-de11-96b0-0050568361fd).)

**Bioaerosols: Assessment and Control**

American Conference of Governmental Industrial Hygienists. Edited by J. Macher. Cincinnati, Ohio: American Conference of Governmental Industrial Hygienists, current edition. (Available at <http://www.acgih.org/Store/ProductDetail.cfm?id=349>.)

**Burton Field Guide for Industrial Hygiene**

Burton, D.J. Fairfax, Virginia: American Industrial Hygiene Association Press, current edition. (Available at [https://webportal.aiha.org/Purchase/ProductDetail.aspx?Product\\_code=c19f083c-4778-de11-96b0-0050568361fd](https://webportal.aiha.org/Purchase/ProductDetail.aspx?Product_code=c19f083c-4778-de11-96b0-0050568361fd).)

**Casarett and Doull's Toxicology: The Basic Science of Poisons**

Edited by M.O. Amdur, J. Doull, and C. Klaassen. New York, New York: McGraw-Hill, Inc., current edition. (Available at [http://www.knovel.com/web/portal/browse/display?\\_EXT\\_KNOVEL\\_DISPLAY\\_bookid=2355](http://www.knovel.com/web/portal/browse/display?_EXT_KNOVEL_DISPLAY_bookid=2355).)

**Chemical Hazards of the Workplace**

Edited by G.J. Hathaway, N.H. Proctor, and J.P. Hughes. New York, New York: Van Nostrand Reinhold, current edition. (Available at <http://www.wiley.com/WileyCDA/WileyTitle/productCd-0471268836.html>.)

**Complete Confined Spaces Handbook**

Rekus, J.F. Boca Raton, Florida: Lewis Publishers, current edition. (Available at <http://shop.nsc.org/Reference-Complete-Confined-Spaces-Handbook-P1805.aspx>.)

**Documentation of the Threshold Limit Values and Biological Exposure Indices**

American Conference of Governmental Industrial Hygienists. Cincinnati, Ohio: American Conference of Governmental Industrial Hygienists, current edition with annual supplements. (Available at <http://www.acgih.org/store/>.)

**DOD 5500.7-R**

Joint Ethics Regulations (Available at [http://www.dod.mil/dodgc/defense\\_ethics/ethics\\_regulation/](http://www.dod.mil/dodgc/defense_ethics/ethics_regulation/).)

**DOD 6025.18-R**

DOD Health Information Privacy Regulation

**DOD 8580.02-R**

DOD Health Information Security Regulation

**DODD 5500.07**

Standards of Conduct

**DODI 6050.05**

DOD Hazard Communication (HAZCOM) Program

**DODI 6055.1**

DOD Safety and Occupational Health (SOH) Program

**DODI 6055.05**

Occupational and Environmental Health (OEH)

**DODI 6055.11**

Protecting Personnel from Electromagnetic Fields

**DOEHRS-IH User's Manual**

(This publication is available from the Commander, USAPHC, ATTN: MCHB-IP-OIM, 5158 Blackhawk Road, Aberdeen Proving Ground, MD 21010-5403.)

**EM 385-1-1**

U.S. Army Corps of Engineers Safety and Health Requirements Manual (Available at [http://140.194.76.129/publications/eng-manuals/em385-1-1/2008\\_English/toc.html](http://140.194.76.129/publications/eng-manuals/em385-1-1/2008_English/toc.html).)

**Executive Order 12196**

Occupational safety and health programs for Federal employees (Available at <http://www.archives.gov/federal-register/codification/executive-order/12196.html>.)

**Federal Acquisition Regulation (Reissue Vol. 2)**

Clause 52.236-13, Accident Prevention (Available at [https://www.acquisition.gov/far/old\\_pdfframe.html](https://www.acquisition.gov/far/old_pdfframe.html).)

**Fundamentals of Industrial Hygiene**

National Safety Council. Edited by B.A. Plog, J. Niland, and P.J. Quinlan. Itasca, Illinois: National Safety Council, current edition. (Available at <http://train.nsc.org/ntc/TCALDet01.aspx?id=52>.)

**IESNA Lighting Handbook**

Illuminating Engineering Society of North America. Edited by M.S. Rea. New York, New York: Illuminating Engineering Society of North America, current edition. (Available at <http://www.iesna.org/handbook/>.)

**Industrial Hygiene Reference & Study Guide**

Fleeger, A. and Lillquist, D. Fairfax, Virginia: American Industrial Hygiene Association Press, current edition. (Available at [https://webportal.aiha.org/Purchase/ProductDetail.aspx?Product\\_code=0ea0083c-4778-de11-96b0-0050568361fd](https://webportal.aiha.org/Purchase/ProductDetail.aspx?Product_code=0ea0083c-4778-de11-96b0-0050568361fd).)

**Industrial Ventilation – A Manual of Recommended Practice for Design**

American Conference of Governmental Industrial Hygienists. Cincinnati, Ohio: American Conference of Governmental Industrial Hygienists, current edition. (Available at <http://www.acgih.org/store/>.)

**ISO/IEC 17025**

General requirements for the competence of testing and calibration laboratories (Available at [http://www.iso.org/iso/home/store/catalogue\\_tc/catalogue\\_detail.htm?csnumber=39883](http://www.iso.org/iso/home/store/catalogue_tc/catalogue_detail.htm?csnumber=39883).)

**NIOSH Pocket Guide to Chemical Hazards**

U.S. Department of Health and Human Services (National Institute for Occupational Safety and Health). Washington, DC: Centers for Disease Control and Prevention, current edition. (Available at <http://www.cdc.gov/niosh/npg/>.)

### **OPM Qualification Standards**

Qualification Standards for General Schedule Positions (Available at <http://www.opm.gov/qualifications/Standards/index-Standards.asp>.)

### **Patty's Industrial Hygiene and Toxicology**

Patty, F.A. Edited by E. Bingham, B. Cohrssen, and C. Powell. New York, New York: John Wiley & Sons, Inc., current edition. (Available at <http://onlinelibrary.wiley.com/book/10.1002/0471125474>.)

### **PL 91–596**

Occupational Safety and Health Act of 1970 (Available at [http://www.osha.gov/pls/oshaweb/owadispl.show\\_document?p\\_id=2743&p\\_table=OSHACT](http://www.osha.gov/pls/oshaweb/owadispl.show_document?p_id=2743&p_table=OSHACT).)

### **PL 104–191**

Health Insurance Portability and Accountability Act of 1996 (Available at <http://aspe.hhs.gov/admsimp/pl104191.htm>.)

### **PL 105–85**

National Defense Authorization Act for Fiscal Year 1998 (Available at <http://www.dod.gov/dodgc/olc/docs/1998NDAA.pdf>.)

### **PWTB 420–70–2**

Installation Lead Hazard Management (Available at [http://www.wbdg.org/ccb/ARMYCOE/PWTB/pwtb\\_420\\_70\\_2.pdf](http://www.wbdg.org/ccb/ARMYCOE/PWTB/pwtb_420_70_2.pdf).)

### **PWTB 420–70–8**

Installation Asbestos Management Program (Available at [http://www.wbdg.org/ccb/ARMYCOE/PWTB/pwtb\\_420\\_70\\_8.pdf](http://www.wbdg.org/ccb/ARMYCOE/PWTB/pwtb_420_70_8.pdf).)

### **Sax's Dangerous Properties of Industrial Materials**

Edited by R.J. Lewis. New York, New York: Wiley-Interscience, current edition. (Available at <http://onlinelibrary.wiley.com/mrw/advanced/search?doi=10.1002/0471701343>.)

### **TB MED 507/AFPAM 48–152(I)**

Heat Stress Control and Heat Casualty Management. (Available at [http://armypubs.army.mil/med/DR\\_pubs/dr\\_a/pdf/tbmed507.pdf](http://armypubs.army.mil/med/DR_pubs/dr_a/pdf/tbmed507.pdf).)

### **TB MED 508**

Prevention and Management of Cold-Weather Injuries (Available at [http://armypubs.army.mil/med/DR\\_pubs/dr\\_a/pdf/tbmed508.pdf](http://armypubs.army.mil/med/DR_pubs/dr_a/pdf/tbmed508.pdf).)

### **TB MED 510**

Guidelines for the Recognition, Evaluation, and Control of Occupational Exposure to Waste Anesthetic Gases (Available at [http://armypubs.army.mil/med/dr\\_pubs/dr\\_a/pdf/tbmed510.pdf](http://armypubs.army.mil/med/dr_pubs/dr_a/pdf/tbmed510.pdf).)

### **TB MED 513**

Guidelines for the Evaluation and Control of Asbestos Exposure (Available at [http://armypubs.army.mil/med/dr\\_pubs/dr\\_a/pdf/tbmed513.pdf](http://armypubs.army.mil/med/dr_pubs/dr_a/pdf/tbmed513.pdf).)

### **The Noise Manual**

Edited by E.H. Berger, L.H. Royster, J.D. Royster, D.P. Driscoll, and M. Layne. Fairfax, Virginia: American Industrial Hygiene Association Press, current edition. (Available at [https://webportal.aiha.org/Purchase/ProductDetail.aspx?Product\\_code=bff5064e-4778-de11-96b0-0050568361fd](https://webportal.aiha.org/Purchase/ProductDetail.aspx?Product_code=bff5064e-4778-de11-96b0-0050568361fd).)

### **The Occupational Environment: Its Evaluation, Control and Management**

Edited by D.H. Anna. Fairfax, Virginia: American Industrial Hygiene Association Press, current edition. (Available at [https://webportal.aiha.org/Purchase/ProductDetail.aspx?Product\\_code=d1edd7dd-fe5c-df11-ba2b-005056810034](https://webportal.aiha.org/Purchase/ProductDetail.aspx?Product_code=d1edd7dd-fe5c-df11-ba2b-005056810034).)

**TLVs and BEIs: Threshold Limit Values for Chemical Substances and Physical Agents & Biological Exposure Indices**

American Conference of Governmental Industrial Hygienists. Cincinnati, Ohio: American Conference of Governmental Industrial Hygienists, published annually. (Available at <http://www.acgih.org/store/>.)

**UFC 4-510-01 (with Changes)**

DOD Design: Medical Military Facilities (Available at [http://www.wbdg.org/ccb/browse\\_archive.php?o=29&c=4](http://www.wbdg.org/ccb/browse_archive.php?o=29&c=4).)

**USACHPPM TG 190**

Guide to Managing Occupational Exposure to Bloodborne Pathogens (Available at <http://phc.amedd.army.mil/Pages/Library.aspx>.)

**USACHPPM TG 277**

Army Facilities Management Information Document on Mold Remediation Issues (Available at <http://phc.amedd.army.mil/Pages/Library.aspx>.)

**USACHPPM TG 278**

Industrial Hygiene/Preventive Medicine Mold Assessment Guide (Available at <http://phc.amedd.army.mil/Pages/Library.aspx>.)

**USAPHC TG 141**

Industrial Hygiene Sampling Guide (Available at <http://phc.amedd.army.mil/Pages/Library.aspx>.)

**USAPHC TG 230**

Environmental Health Risk Assessment and Chemical Exposure Guidelines for Deployed Military Personnel (Available at <http://phc.amedd.army.mil/Pages/Library.aspx>.)

**29 CFR 1910.146**

Permit-required confined spaces

**29 CFR 1910.1020**

Access to employee exposure and medical records

**29 CFR 1910.1200**

Hazard communication

**29 CFR 1926.1101**

Asbestos

**30 CFR 10**

Federal Employees Compensation Act

**40 CFR**

Protection of the Environment

**45 CFR 160**

General administrative requirements

**45 CFR 164**

Security and privacy

**Section III**

**Prescribed Forms**

Unless otherwise indicated, DA Forms can be downloaded from the Army Publishing Directorate (APD) Web site, <http://www.apd.army.mil/>.

**DA Form 7693**

Industrial Hygiene Program Evaluation. (Prescribed in para 2-1a(10) and 5-1.)

**Section IV**

**Referenced Forms**

Unless otherwise indicated, DA Forms can be downloaded from the Army Publishing Directorate (APD) Web site, <http://www.apd.army.mil/>.

**DA Form 2028**  
Recommended Changes to Publications and Blank Forms

## Appendix B Department of Defense Industrial Hygiene Exposure Assessment Model

### B-1. Introduction

This appendix describes the eight steps in the DOD IH EAM (figure B-1). The DOD IH EAM is a risk management tool that Army industrial hygienists use as their core business practice to anticipate, recognize, evaluate, and control OH hazards. The DOEHRS-IH supports this model; however, the application may not specifically coincide with each of the steps of the DOD IH EAM.

### B-2. The Exposure Assessment Model process

*a. Step 1: Define the scope of support and resources.* In this first step, supported organizations and the scope of IH services are identified. The IHP office determines where worksite visits will be conducted, establishes a survey schedule, and develops resources for providing services.

(1) List organizations. List the organizations and shops to be serviced based on the assigned mission of the IHP office, the host-tenant support agreements, the intra-agency and interagency support agreements, and the contractor support agreements. Geographically separated units and co-located operating bases should also be included.

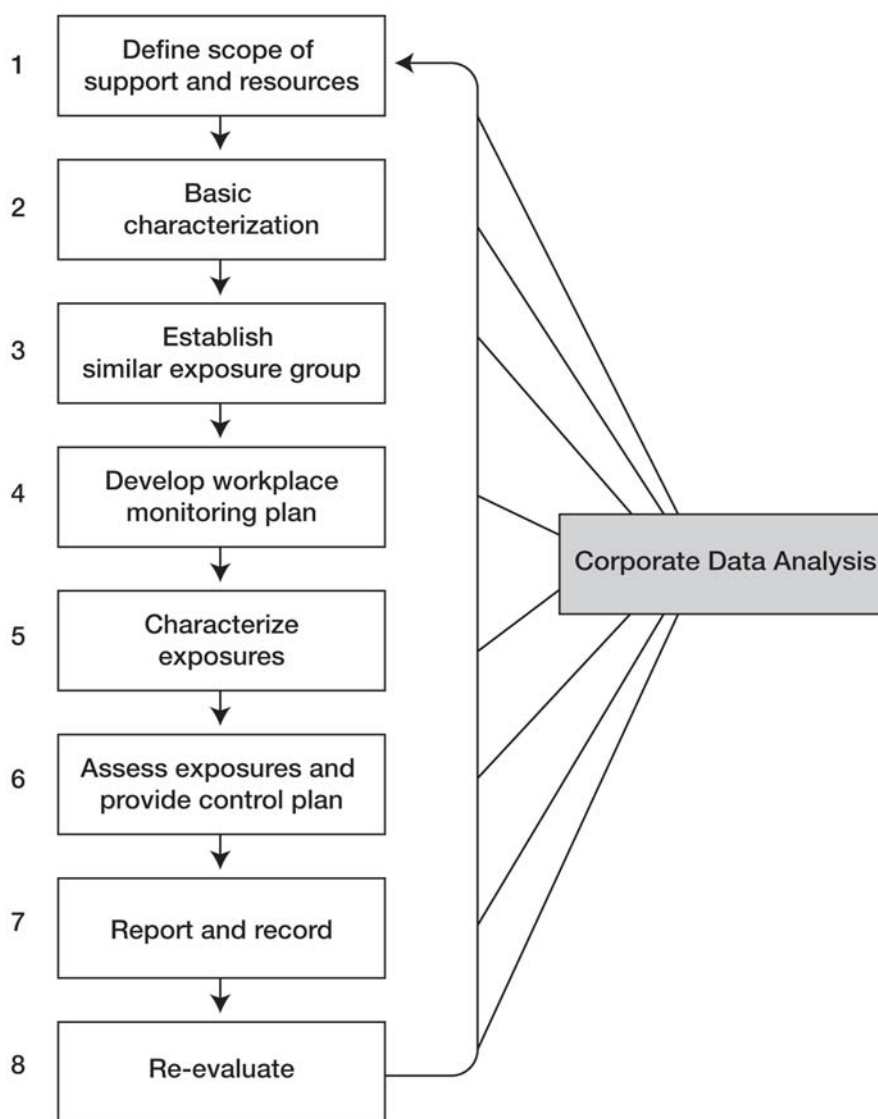


Figure B-1. The Exposure Assessment Model process

(2) Meet commanders. Meet with commanders of organizations or their representatives to identify their mission requirements, the relative pace of military operations, and concerns for the health of their staff.

(3) Capture organization demographics. Document the following: organization or shop name; the parent command; the unit identification code (UIC); mission description; exposure locations within each organization; the name of the workplace supervisor; telephone, facsimile, and email addresses; and descriptions of operations performed.

(4) Establish a program and budget. Establish a program and budget for required IH manpower, equipment, and supplies.

(5) Schedule visits. Schedule visits to exposure locations for assessments coordinating work with the workplace supervisor and safety and environmental management personnel and others if necessary.

*b. Step 2: Conduct basic characterization.* Basic characterization consists of two parts, anticipating and identifying potential exposures and assessing hazard sources.

(1) Anticipating and identifying potential exposures.

(a) Identify the types of processes performed, potential exposure situations, and the types of hazards that need to be assessed at each potential exposure location.

(b) Review previous assessments.

(c) Review monitoring plans.

(d) Review existing medical surveillance (abnormal findings, occupational injuries and illnesses, medical profiles, and so forth).

(e) Meet supervisor or representative.

(f) Update demographics information (supervisor, number of personnel, job codes, geographic location, floor plan, operation description, and so forth).

(g) Identify or inventory hazard sources (hazardous materials, emitters, physical hazards, and so forth).

(2) Assessing hazard sources.

(a) Describe operating characteristics of hazard sources as operated in the location.

(b) Describe any existing controls for each source.

(c) Collect data on emissions from each source based on the best available data within available resources using the levels of data quality. Qualitatively assess whether or not there are significant personal exposures to toxic chemicals and/or hazard physical agents based on all available information. Record the rationale used for the qualitative assessment. A quick assessment using direct reading measurements, bulk sampling, and so forth, is usually performed versus more in-depth personal sampling (air breathing zone, noise dosimetry, and so forth) conducted during step 5.

1. Measure source emission characteristics and operating parameters.

2. Capture environmental conditions.

3. Capture information on the survey instrument(s) used.

4. Capture IH survey or name and qualifications.

5. Extrapolate and record measurements from similar sources.

6. Model potential emissions.

*c. Step 3: Establish similar exposure groups.* See the glossary for a definition of SEGs.

(1) Establish SEGs at a level of detail needed to separately identify and evaluate exposures. The hygienist may choose to group more workers together into a single SEG to save time, or separate workers into smaller groups to more accurately identify workers needing training, protective equipment and medical surveillance. The industrial hygienists may establish SEGs according to—

(a) Unit organization structure, treating an organization or sub-unit as one SEG.

(b) Geographic location.

(c) Identification of each operation as a SEG.

(2) Identify each SEG and indicate when the SEG started and ended (start date/end date). When hazards or operations for a SEG change, establish a new SEG (assign end date and new start date).

(3) Identify each person assigned to each SEG. Indicate when their membership started and ended. The current process in DOEHS-IH is to assign personnel to processes and then assign processes to SEGs.

*d. Step 4: Develop a workplace monitoring plan.* The objectives of the monitoring plan include monitoring the performance of the exposure controls, collecting exposure data to monitor control effectiveness, improving exposure estimate accuracy, and complying with periodic required monitoring.

(1) Breathing zone, ventilation and noise measurements, and other appropriate hazard exposure measurements are performed and documented using the sampling strategy. Instructions for sampling chemical contaminants can be found in USAPHC TG 141; DA Pam 40-501 provides instructions for sampling noise hazards.

(2) An effective monitoring plan will have the following data:



- (a) Hazard and SEG monitored.
- (b) Purpose of monitoring.
- (c) Procedures for measuring exposures or controls.
- (d) Number of measurements.
- (e) Type of sample or measurement.
- (f) Location type.
- (g) Location description.
- (h) Conditions required for monitoring.
- (i) Standards used for comparison to the results.
- (j) Data analysis procedures to be used.

*e. Step 5: Characterize exposures.* In this step, personal and area sampling are collected to determine the intensity, duration and frequency of worker exposures. The industrial hygienist also documents the operating conditions of engineering and administrative controls and the use of PPE. From this data an exposure estimate for workers within a SEG is developed using the most accurate method available given existing program office resources. The exposure estimate can be derived by—

- (1) Directly measuring exposures.
  - (a) Capture the process during measurements.
  - (b) Capture process characteristics during unmeasured time.
  - (c) Capture information on the person selected.
  - (d) Capture sample type and location.
  - (e) Capture PPE worn by the person sampled.
  - (f) Capture environmental conditions.
  - (g) Capture the survey instrument model number, the serial number, and the calibration dates and values.
  - (h) Capture the measurements for direct reading instruments or detectors.
  - (i) Identify supporting samples.
  - (j) Capture the IH surveyor name and qualifications.
- (k) Submit the samples for analysis using required COC procedures, and monitor the elapsed time until analysis is completed to ensure the samples are analyzed within the required time.
  - (l) Capture the laboratory analysis results.
- (2) Estimating exposures from similar operations.
- (3) Modeling exposures from estimates of exposure conditions.
- (4) Estimating exposure based on professional experience.

*f. Step 6: Assess exposures and provide a control plan.* In the first part of this step, worker exposures are compared to the OEL to determine the need for corrective actions and follow-up surveillance. In the second part of this step, a control plan is developed.

- (1) Assessing exposures.
  - (a) *Select the OEL.* Select the OEL according to DOD component policy. If policy is not available, seek guidance from technical support offices. If guidance is not provided, make a professional judgment for an appropriate local OEL.
  - (b) *Compile data.* Compile for the SEGs for all exposure routes (for example, inhalation, skin absorption, skin contact, mucous membrane contact, and ingestion).
  - (c) *Evaluate data.* Evaluate the data using the best means available considering the type of data available. Determine the likelihood that exposures will exceed the OEL. Statistical analysis is used to determine data accuracy and precision and exposure trends. The IHPM must use statistical analysis to both develop sampling strategies and to analyze sample results. Statistical analysis is not a substitute for professional judgment but is an additional tool used by the IHPM to provide a better health hazard assessment.
  - (d) *Calculate and assign the exposure assessment priority.* Calculate and assign the EAP to all potential exposures in a SEG, whether or not hazard abatement is planned (see app D). Do not include protection factors provided by PPE.
  - (e) *Evaluate effectiveness.* Evaluate the effectiveness of controls for worker exposure for each of the following routes of exposure.
    - 1. Inhalation—process controls, isolation or containment, dilution or local exhaust ventilation, respiratory protection, physical security of chemical storage.
    - 2. Eye or skin contact—process controls, isolation and containment, safe work practices, administrative procedures, PPE.
    - 3. External ionizing radiation—shielding, exclusion zones, interlocks.
    - 4. Noise— isolation, barriers, hearing protection, time limits.
    - 5. Lasers—exclusion zones, interlocks, eye protection.
    - 6. Radiofrequency radiation—exclusion zones, interlocks.

7. Ingestion—process controls, isolation or containment, safe work practices, administrative procedures, sanitary measures.

(2) Developing a control plan.

(a) *Develop options.* Develop options for controlling exposures, considering inherent effectiveness and reliability of controls. When a chemical, physical, or biological hazard cannot be eliminated from the workplace, worker exposure can be controlled through engineering controls, administrative controls, and, lastly, through PPE. The IHPM recommends the appropriate control, often consulting with area supervisors, facility engineers, safety, or other health professionals and monitors the implementation of the recommended controls.

1. Examples of engineering controls include substitution of processes or materials, local exhaust ventilation, barriers or structures that separate or isolate the worker(s) or the process, and redesign of the equipment or process.

2. Examples of administrative controls include rotating workers throughout the various tasks during the workday to limit exposure to any individual worker and limiting the duration of an operation performed. Title 29 CFR 1910 prohibits the implementation of administrative controls solely to maintain the contaminant exposure of each worker below the PEL. The IHPM should consult specific OSHA standards prior to recommending administrative controls.

3. Examples of times when PPE recommendations may be appropriate include when the implemented engineering controls will not sufficiently reduce or eliminate employee exposure, when engineering controls are technologically unfeasible, and before installing engineering controls. Note: Insufficient funding is not a valid reason for not implementing engineering controls.

(b) *Identify options.* Determine for each option the actions required, cost, residual risk, abatement priority numbers, cost/benefit ratio, and estimated timeline.

(c) *Make a final determination.* Determine and document—

1. If worker exposures are acceptable or unacceptable.

2. If workers should be recommended for inclusion in medical surveillance programs.

3. If existing controls are adequate.

4. If controls are needed and, if so, what type.

5. If additional monitoring is required and its priority.

6. The relative priority assigned to the recommendations.

g. *Step 7: Report and record.* Step 7 includes—

(1) Compiling information on each SEG.

(2) Verbally out-briefing the workplace supervisor.

(3) Performing quality control review of assessment and control options.

(4) Providing an executive summary or a briefing to the commander.

(5) Providing a full report and briefing of the workplace evaluation to the workplace commander or supervisor. Regardless of the outcome, the IHPM notifies the workplace supervisor, in writing, of the assessment results. The supervisor in turn notifies the employees about—

(a) SEGs identified and evaluated.

(b) Hazard sources.

(c) Exposures.

(d) Conditions in violation of OSHA or DOD component standards.

(e) Existing controls and their effectiveness.

(f) Recommended actions.

(g) Future actions to be taken by the IH staff.

(6) Recording exposures, conditions and recommendations made to be tracked by IH staff.

(7) Identifying exposures and medical surveillance recommendations for each SEG to the supervisor of the workplace surveyed and to occupational medicine personnel.

h. *Step 8: Re-evaluate.* Step 8 includes—

(1) Repeating the exposure assessment process with the goal of improving previous assessments and thereby continuing to reduce risk.

(2) Consolidating requirements. Include periodic verification of workplace controls in a survey schedule prioritized by a DOD component-specific scheme. Locations should be evaluated at least annually when—

(a) Personal exposure to toxic chemicals, harmful physical agents, and/or biological hazards requires medical surveillance.

(b) Personal exposure to toxic chemicals, harmful physical agents, or biological hazards is controlled by engineering, work practices, or PPE.

(c) Mandated by Federal or DOD regulations.

(d) Exposures by ingestion or through skin absorption are significant.

(3) Repeating the assessment process. Repeat the IH exposure assessment process.

(4) Establishing procedures for organizations to notify the industrial hygienist of process changes rather than waiting for the next scheduled visit.

## Appendix C Support for Industrial Hygiene Services

### C-1. Introduction

The regional medical command (RMC), U.S. Army medical department activity (USAMEDDAC), or health clinic IH staff located at the installation usually provides initial IH services. When the IH services required are beyond the technical capabilities or available resources of the local IH staff supporting the installations, the IHPM writes a memorandum to request services and forwards the request through command channels to the regional command or to the Commander, USAPHC.

### C-2. Supporting regions

Table C-1 lists the supporting regions for all IH issues.

| <b>Organization</b>                       | <b>Address</b>   | <b>Area served</b>  |
|---|--|---|
| USAPHC                                    | Commander U.S. Army Public Health Command (MCHB-TS-O) Aberdeen Proving Ground, MD 21010-5403.  | Worldwide support to regions or areas listed below.   |
| Public Health Command Region (PHCR)-North | Commander Public Health Command Region—North (MCHB-AN-IH) Fort Meade, MD 20755-5225.   | Connecticut, Delaware, District of Columbia, Eastern Kentucky, Illinois, Indiana, Maine, Maryland, Massachusetts, Michigan, New Hampshire, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, Vermont, Virginia, West Virginia, Wisconsin. |
| PHCR—South                                | Commander Public Health Command Region—South (MCHB-AS-IH) 2472 Schofield Road, 2 <sup>nd</sup> Floor, Fort Sam Houston, TX 78234-6233. | Alabama, Arkansas, Florida, Georgia, Western Kentucky, Louisiana, Mississippi, Oklahoma, Panama, Puerto Rico, South Carolina, Tennessee, Central and Eastern Texas.   |
| PHCR—West                                 | Commander Public Health Command Region—West (MCHB-AW-IH) Box 339500 MS 115, Joint Base Lewis-McChord, WA 98433-9500.                   | Alaska, Arizona, California, Colorado, Idaho, Iowa, Kansas, Minnesota, Missouri, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oregon, South Dakota, West Texas, Utah, Washington, Wyoming.  |
| PHCR—Europe                               | Commander Public Health Command Region—Europe (MCHB-AE-MIH) CMR 402 Landstuhl, Germany, APO AE 09180.                                  | Europe, Africa, Middle East, Western Asia.  |
| PHCR—Pacific                              | Commander Public Health Command Region—Pacific (MCHB-AJ-THI) Camp Zama, Japan, APO AP 96343-5006.                                      | Hawaii, Japan, Korea, Okinawa, Philippines, Thailand, other countries of the Far East.  |

## Appendix D Setting Shop Priorities in Defense Occupational and Environmental Health Readiness System-Industrial Hygiene

### D-1. Shop priority code

a. When the industrial hygienist creates a shop in DOEHRS-IH, the shop priority code must be assigned. The shop priority code describes the priority of the shop surveyed. High priority shops should be surveyed at least annually or more frequently and are assigned a code 1; medium priority shops should be surveyed every two years and are assigned a code 2; and low priority shops should be surveyed every three years and are assigned a code 3.

b. To assign a shop priority, the industrial hygienist should consider the types of processes and their associated hazards and the degree of control; the potential risk (higher probability of a chance of adverse outcome or bad consequence, that is, injury, illness or loss); regulatory requirements; existing injury; illness and exposure records; installation and/or AOR mission requirements; and professional judgment.

c. Initially, any shop that has not been evaluated should be assigned a shop priority code 1. Shop priorities can be changed based on subsequent surveys and assessments so the most current exposure assessment information is documented.

### D-2. Selection criteria

Table D-1 identifies the selection criteria to be considered when assigning the shop a priority code. Also listed are those processes commonly identified within the priority category.

**Table D-1  
Defense Occupational and Environmental Health Readiness System-Industrial Hygiene suggested shop priority codes**

| Shop priority code   | General selection criteria  | Common DOEHRS-IH process examples   |
|--|---|---|
| Priority 1<br><br>Requires at least an annual or more frequent evaluation. | <p>The industrial hygiene program (IHP) office has never evaluated the shop.</p> <p>Previous evaluations were not accurate.</p> <p>Deficiencies noted in the shop process have been assigned a risk assessment code (RAC) of 1 or 2.</p> <p>There are specific regulations with annual requirements (asbestos, lead, cadmium, respiratory protection, vision, ventilation, waste anesthetic gases, and so forth).</p> <p>There was an unacceptable SEG exposure assessment (exposure &gt; AL).</p> <p>Controls are not adequate (for example, to maintain exposures to &lt; the action level, to comply with regulations, and so forth).</p> <p>The work environment or process is unstable or the process is new.</p> <p>Personnel have been diagnosed with a cumulative trauma disorder.</p> <p>Potential ergonomic hazards have been identified.</p> <p>Frequency is driven by regulation.</p> <p>There is command emphasis.</p> | <p>Adhering, bonding, sealing.</p> <p>Aircraft or flightline operations.</p> <p>Asbestos work.</p> <p>Brazing, soldering, welding, cutting.</p> <p>Cleaning (chemical and degreasing).</p> <p>Coating or paint removal.</p> <p>Coating or painting operations.</p> <p>Environmental response.</p> <p>Fuels.</p> <p>Medical waste or hazardous waste handling and cleanup.</p> <p>Laboratory operations.</p> <p>Medical.</p> <p>Metal machining.</p> <p>Pest control.</p> <p>Protective services-fire.</p> <p>Vehicle maintenance.</p> <p>Veterinary services and animal care.</p> <p>Weapons and ordnance.</p> <p>Woodworking.</p> <p>X-ray processing.</p> |

**Table D-1  
 Defense Occupational and Environmental Health Readiness System-Industrial Hygiene suggested shop priority codes—Continued**

| Shop priority code                                | General selection criteria  | Common DOEHS-IH process examples   |
|---|---|--|
| Priority 2<br><br>Requires biannual evaluations.  | Hazards are well defined and controlled.<br><br>The work environment and processes are stable.<br><br>Deficiencies noted in the shop have been assigned a RAC of 3.<br><br>There is a requirement for annual audiograms.                              | Brazing, soldering, welding, cutting.<br><br>Cleaning (chemical and degreasing).<br><br>Coating or paint removal.<br><br>Coating or painting operations.<br><br>Food preparation or handling.<br><br>Woodworking.<br><br>X-ray processing. |
| Priority 3<br><br>Requires triennial evaluations. | Work environment and processes are stable.<br><br>There is full occupational and environmental health regulatory compliance.<br><br>Deficiencies noted in the shop have been assigned a RAC of 4 or 5.<br><br>No injury or illness has been recorded. | All other activities with primarily office or classroom work.<br><br>Administrative (except those with ergonomic issues).<br><br>Headquarters staff and administrative support commands.   |

## Appendix E Risk Assessment Codes

### E-1. Determining risk assessment codes

Risk assessment codes are used to evaluate four types of hazards: health, safety, ergonomic, and noise. The IHPM should use the most appropriate method and then forward the RAC to the installation safety manager or State safety and occupational health manager for inclusion to the installation hazard abatement plan or the State hazard abatement plan (see DODI 6055.1, enclosure 7).

### E-2. Method 1—health risk assessment code

Use the matrices and descriptive definitions below as a model to determine the RAC for health hazards.

*a.* Use the following procedures to assess points and to determine the health hazard severity category (HHSC). The HHSC reflects the magnitude of exposure to a single physical, chemical, or biological agent and the medical effects of exposure. Table E-1 contains the matrix for assessing exposure points (EP) for different exposure conditions. Table E-2 provides the matrix for assessing medical effects points.

*b.* Determine the HHSC by totaling the points assessed and then using guidance in table E-3.

*c.* Use the matrices in tables E-4 and E-5 to assess the duration of exposure and number of exposed personnel points. The total number of points will determine the illness probability category (IPC). The IPC is a function of the duration of exposure and the number of exposed personnel.

*d.* Determine the IPC for health hazards by totaling the points assessed and then using the guidance provided in table E-6.

*e.* Determine the RAC for health hazards by using the matrix in table E-7 to account for the HHSC and IPC.

### E-3. Method 2—safety and ergonomic hazards risk assessment codes

*a.* The safety and ergonomic hazards RACs show the degree of risk assessment by combining the elements of hazard severity and accident probability. The RACs will be used to establish priorities for corrective action to resolve identified hazards. The RACs are used to quantify risk to personnel. Use the matrix in table E-8 to determine the RAC. The lower the number assigned, the higher the assessed risk. For example, a hazard severity of IV and an accident probability of C would give a safety and ergonomic RAC of 5. Risk assessment codes 1 (critical) and 2 (serious) equal high-level risks. A RAC 3 (moderate) equals a medium-level risk, and RACs 4 (minor) and 5 (negligible) equal low-level risks.

*b.* The hazard severity for safety and ergonomic RACs is an assessment of the worst potential consequence. This assessment of the expected consequence is defined by the degree of injury or occupational illness that could occur from exposure to the hazard. The hazard severity is classified by an uppercase Roman numeral and described as follows:

(1) Hazard severity I—Death, permanent total disability or loss of facility or asset.

(2) Hazard severity II—Permanent partial disability, temporary total disability in excess of three months or major property damage.

(3) Hazard severity III—Minor injury, lost-workday injury or compensable injury or minor property damage.

(4) Hazard severity IV—Minimal threat to personnel or property, first aid, minor supportive medical treatment, but still a violation of a standard.

*c.* Accident probability refers to the likelihood that a safety and ergonomic hazard will occur. This probability is based on an assessment of such factors as location, exposure in terms of cycles or hours of operation, and effected population. Qualitative accident probability codes are assigned by a capital letter as explained in table E-9.

### E-4. Method 3—noise risk assessment

*a.* The following procedures, adapted from DODI 6055.1, should be used to determine the RAC for a noise hazard—

(1) Determine the HHSC. The HHSC reflects the magnitude of exposure to noise and the medical effects of exposure.

*(a)* Assign EPs—a maximum of eight is possible—using different equations for steady-state or impulse noise. If exposure to steady-state and impulse noise occurs on the same day, or even simultaneously, use the greater of the points calculated for either exposure. Do not combine points for both exposures.

*(b)* For steady-state noise, convert the eight-hour TWA sound level to dose using the equation in figure E-1.

*(c)* For impulse noise, use the equation in figure E-2.

$$D = 100 \cdot 10^{\frac{TWA - 85}{10}}$$

Where—

*D* is the percent noise dose (a TWA of 85 A-weighted decibel is 100 percent dose).

*TWA* is the 8-hour weighted average noise exposure in A-weighted decibel.

Then—

$$EP = \frac{D}{100}$$

Figure E-1. Steady-state noise equation

$$EP = \frac{N}{100} \cdot 10^{\frac{Lpk - 138}{5}}$$

Where—

*N* is the number of impulse noise events per day.

*Lpk* is the peak noise level of the impulse in peak decibel.

Figure E-2. Impulse noise equation

- (d) Assign six medical effects points, because the medical effect is permanent hearing loss.
- (e) Find the sum of EP and medical effects points and determine the HHSC using table E-10. Note that the total will be no higher than 14 points.
- (2) Determine the mishap probability category. This category reflects the probability of mishap and the number of personnel exposed to noise in the operation being assessed.
  - (a) Assign points for the consistency of exposure using table E-11.
  - (b) Assign points for the number of employees exposed to the operation using table E-12.
  - (c) Find the sum of the points for consistency of exposure and the points for the number of personnel exposed. Determine the mishap probability category using table E-13.
- (3) Determine the RAC using table E-14.
  - b. Assigning a RAC reflects the extent and severity of a noise hazard based solely on an analysis of the noise environment. It does not reflect the effects of any hearing protection worn by the employees. The RACs do not account for hearing-protection devices because engineering controls and other means should be used to control noise exposures. Hearing protection should be considered only as a last resort or until engineering controls are implemented.

**E-5. Risk assessment code tables**

- a. Table E-1 can be used for assessing EP for different exposure conditions.

**Table E-1**  
**Exposure points assessed**

| Alternate exposure route | Exposure conditions |   |                         |       |
|--------------------------|---------------------|---|-------------------------|-------|
|                          | < Action level      | Occasionally > Action level<br>Always < Occupational exposure limit (OEL) | > Action level<br>< OEL | > OEL |
| No                       | 0                   | 3   | 5                       | 7     |
| Yes                      | 1-2                 | 4   | 6                       | 8     |



b. Table E-2 can be used for assessing medical effects points.

| Condition  | Points |
|--|--------|
| No medical effect<br>(such as nuisance noise and nuisance odor).   | 0      |
| Temporary reversible illness requiring supportive treatment<br>(such as eye irritation and sore throat).     | 1-2    |
| Temporary reversible illness with a variable but limited period of disability<br>(such as metal fume fever). | 3-4    |
| Permanent, non-severe illness or loss of capacity<br>(such as permanent hearing loss).                       | 5-6    |
| Permanent, severe, disabling, irreversible illness or death<br>(such as asbestosis and lung cancer).         | 7-8    |

c. Table E-3 contains guidance for determining the HHSC.

| Total points (sum of exposure and medical effects points) | Health hazard severity category |
|---|---------------------------------|
| 13-17   | I                               |
| 9-12  | II                              |
| 5-8   | III                             |
| 0-4   | IV                              |

d. Table E-4 can be used to assess the duration of exposure.

| Type of exposure        | Exposure duration  |                                    |            |
|-------------------------|--------------------|------------------------------------|------------|
|                         | 1-8 hours per week | > 8 hours per week, not continuous | Continuous |
| Irregular, intermittent | 1-2                | 4-6                                | N/A        |
| Regular, periodic       | 2-3                | 5-7                                | 8          |

e. Table E-5 can be used to assess the number of exposed personnel points.

| Number of exposed workers | Points |
|---------------------------|--------|
| < 5                       | 1-2    |
| 5-9                       | 3-4    |
| 10-49                     | 5-6    |
| > 49                      | 7-8    |

f. Table E-6 contains guidance for determining the IPC for health hazards.

| Total assessed points | Illness probability category |
|-----------------------|------------------------------|
| 14-16                 | A                            |
| 10-13                 | B                            |
| 5-9                   | C                            |
| < 5                   | D                            |

g. Table E-7 contains guidance for determining the RAC for health hazards.

| Health hazard severity category | Illness probability category |   |   |   |
|---------------------------------|------------------------------|---|---|---|
|                                 | A                            | B | C | D |
| I                               | 1                            | 1 | 2 | 3 |
| II                              | 1                            | 2 | 3 | 4 |
| III                             | 2                            | 3 | 4 | 5 |
| IV                              | 3                            | 4 | 5 | 5 |

h. Table E-8 contains guidance for determining safety and ergonomic RACs.

| Hazard severity | Accident probability |   |   |   |
|-----------------|----------------------|---|---|---|
|                 | A                    | B | C | D |
| I               | 1                    | 1 | 2 | 4 |
| II              | 1                    | 2 | 3 | 4 |
| III             | 2                    | 3 | 4 | 5 |
| IV              | 4                    | 4 | 5 | 5 |

i. Table E-9 contains accident probability codes.

| Code | Description                  |
|------|------------------------------|
| A    | Likely to occur immediately. |
| B    | Probably will occur in time. |
| C    | Possible to occur in time.   |
| D    | Unlikely to occur.           |

j. Table E-10 contains guidance for determining the HHSC using the sum of EP and medical effects points.

| <b>Table E-10</b><br><b>Health hazard severity category</b>       |                 |
|---|-----------------|
| <b>Total points</b><br>(exposure points + medical effects points) | <b>Category</b> |
| 7-14  | II              |
| < 7   | III             |

k. Table E-11 contains guidance for assigning points for consistency of exposure.

| <b>Table E-11</b><br><b>Consistency of exposure points</b> |                       |   |                        |
|--|-----------------------|---|------------------------|
| <b>Long-term consistency</b>                               | <b>1 day per week</b> | <b>Weekly consistency 2-4 days per week</b> | <b>5 days per week</b> |
| Not every week   | 2 points              | 5 points                                    | 8 points               |
| Every week   | 3 points              | 6 points                                    | 8 points               |

l. Table E-12 contains guidance for assigning points for the number of employees exposed to an operation.

| <b>Table E-12</b><br><b>Employee number points</b> |               |
|--|---------------|
| <b>Number of exposed personnel</b>                 | <b>Points</b> |
| < 5  | 2             |
| 5-9  | 3-4           |
| 10-49  | 5-6           |
| > 49   | 7-8           |

m. Table E-13 contains guidance for determining the mishap probability category.

| <b>Table E-13</b><br><b>Mishap probability category</b>    |                                |
|--|--------------------------------|
| <b>Total points</b><br>(Consistency + number of personnel) | <b>Mishap probability code</b> |
| 14-16  | A                              |
| 10-13  | B                              |
| 5-9  | C                              |
| < 5  | D                              |

n. Table E-14 contains guidance for determining RACs.

**Table E-14**  
**Risk assessment codes**

| <b>Mishap probability code</b> |          |          |          |          |
|--------------------------------|----------|----------|----------|----------|
| <b>HHSC</b>                    | <b>A</b> | <b>B</b> | <b>C</b> | <b>D</b> |
| I                              | 1        | 1        | 2        | 3        |
| II                             | 1        | 2        | 3        | 4        |
| III                            | 2        | 3        | 4        | 5        |
| IV                             | 3        | 4        | 5        | 5        |

## Appendix F Action Plan Sample

### F–1. Purpose of the industrial hygiene program action plan

The IHP action plan is a formal document that defines the mission, goals, and objectives of the IHP. The IHPM reviews and revises the IHP action plan as part of the annual program assessment and submits the IHP action plan to the chief of preventive medicine or his or her equivalent for review and inclusion in the overall preventive medicine program document.

### F–2. The basic elements of an action plan

Table F–1 shows a template to use for an IHP action plan.

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**Table F–1**  
**Sample action plan**

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**INDUSTRIAL HYGIENE PROGRAM ACTION PLAN:**  
(IDENTIFY THE PREPARING OFFICE/LOCATION HERE)

#### Purpose

This document—

- a. Describes the objectives and scope of the \_\_\_\_\_ Industrial Hygiene Program (IHP) Office.
- b. Describes how the elements of the IHP are implemented.
- c. Defines the role of the IHP office in related occupational and health programs.
- d. Is updated annually by the industrial hygiene program manager (IHPM) and reviewed by the \_\_\_\_\_ (list command authority, for example, chief, preventive medicine \_\_\_\_\_).

#### References

Required and related publications are listed in appendix \_\_\_\_\_.

#### Goals

The goal of the \_\_\_\_\_ IHP is to implement the Department of the Army (DA) industrial hygiene (IH) mission: Provide support to the Warfighter, conserve resources, and enhance readiness by anticipating, recognizing, evaluating, and controlling health hazards where military and civilian personnel work and serve.

#### Objectives

This plan is designed to effectively manage industrial hygiene (IH) hazards for civilian and military personnel assigned to \_\_\_\_\_ (list area). The primary objectives of this plan are to—

- a. Ensure regulatory compliance with applicable Federal, State, and local laws and DA regulations pertaining to IH hazards.
- b. Conduct workplace health hazard assessments (both programmed and requested) to anticipate, recognize and evaluate IH hazards.
- c. Recommend appropriate engineering and administrative controls, safe work practices, and personal protective equipment (PPE) to prevent or reduce the risk of injury and illness.
- d. Recommend exposed personnel for inclusion in appropriate medical surveillance programs based on qualitative and/or quantitative assessments.
- e. Provide training to inform personnel of workplace health and safety risks and the actions for eliminating or minimizing risks.
- f. Incorporate IH expertise into related Army programs (for example, safety, environmental, and OH) to ensure regulatory compliance and to reduce costs associated with lost time (workers' compensation) and medical treatment and surveillance.

#### Scope

- a. This program document is applicable to all DA military and civilian personnel assigned to \_\_\_\_\_ (area of responsibility). The IHP office(s) identified in the Defense Occupational and Environmental Health Readiness System–Industrial Hygiene (DOEHRs–IH) are \_\_\_\_\_ (list IHP offices within the area of responsibility). The listing of supported organizations (“customers”) is collected in the DOEHRs–IH application within each IHP office.
- b. This document establishes the procedures for integrating the IHP into other DA occupational safety and health (OSH) programs within \_\_\_\_\_ (name area of responsibility).

#### Industrial hygiene program management processes

a. *Industrial hygiene program manager functions.* The IHPM—

- (1) Develops and implements an IHP that meets the goals and objectives outlined in DA Pam 40–11 and this document.
- (2) Defines IHP responsibilities relative to other OSH programs and functions at \_\_\_\_\_.
- (3) Reviews, approves and evaluates \_\_\_\_\_ IH staff individual development plans (IDPs) based on Army Civilian Training, Education and Development System (ACTEDS) guidance, to ensure IH staff can fulfill assigned duties and responsibilities.
- (4) Uses the Department of Defense Industrial Hygiene Exposure Assessment Model (DOD IH EAM) as the business practice for IH.
- (5) Develops, reviews and updates standing operating procedures (SOPs) for IH practices. These documents are found \_\_\_\_\_ (for example, titles are listed in appendix \_\_\_\_\_ or are stored on the local public drive/intranet).
- (6) Uses the master schedule in DOEHRs–IH to schedule IH survey and workplace monitoring tasks to reflect IH priorities and resources.

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**Table F-1**  
**Sample action plan—Continued**

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- (7) Develops a system for tracking and documenting DA-required and IHP support activities not available in DOEHRS-IH (for example, mandatory training, meetings, design reviews, and command requests). The system used by \_\_\_\_\_ IHP is described/found in \_\_\_\_\_ (for example, SOP, spreadsheet, database, and so forth).
- (8) Prepares a prioritized budget plan for annual staffing, equipment, supplies, and reference material requirements and costs. A description of the budget is found in \_\_\_\_\_.
- (9) Provides written reports of sampling results, survey information and recommendations to customers and applicable installation program managers (for example, safety, OH, and installation management program managers). Reports are maintained \_\_\_\_\_ (describe process).
- (10) Uses DA Form 7693 (Industrial Hygiene Program Evaluation) to perform annual assessment of the IHP and participates in external audits to document program effectiveness and make improvements to the IHP. Summaries of annual assessments and additional audits are maintained \_\_\_\_\_ (describe process).
- (11) Reviews and revises the IHP action plan and submits the plan to \_\_\_\_\_ (list the chief of preventive medicine or his or her equivalent) for review as defined in paragraph 2-7 of this document.
- (12) Provides requests for technical and managerial assistance from the supporting region when needed.
- (13) Performs quality assurance (QA) measures such as—
- (a) Verifying equipment calibration to assure the accurate quantitative measurement of health hazards.
  - (b) Using American Industrial Hygiene Association (AIHA®)-accredited IH laboratories or equivalent accredited IH laboratories to verify accurate analysis of data. (AIHA® is a registered trademark of the American Industrial Hygiene Association, Fairfax, VA.)
  - (c) Performing design reviews according to \_\_\_\_\_ (list local SOP or regulation).
  - (d) Verifying survey data in DOEHRS-IH.
- (14) Upholds the standards of conduct and code of ethics and maintains qualified IH personnel as defined in paragraph 5-4 of this publication.
- (15) Ensures DOEHRS-IH data is fully and correctly entered in DOEHRS-IH. This is necessary for quality and completeness of the IH metric data extracted from DOEHRS-IH in support of the Assistant Chief of Staff for Installation Management (ACSIM) Installation Status Report (ISR) and the Army Medical Department (AMEDD) Command Management System (CMS).

*b. Industrial hygiene staff functions. The IH staff—*

- (1) Use the DOD IH EAM as the business practice for IH.
- (2) Perform workplace surveys as scheduled through the master schedule to ensure IH hazards are recognized and evaluated using sampling protocols and equipment calibration practices according to regulatory and/or authoritative standards.
- (3) Document and make recommendations for engineering and administrative controls and PPE.
- (4) Perform qualitative and/or quantitative IH and ergonomic assessments.
- (5) Notify the OH program manager when personnel are recommended for medical surveillance; recommendations for medical surveillance should be based on IH assessments.
- (6) Enter survey and IH hazard data in DOEHRS-IH.
- (7) Provide written reports of sampling results and survey information to include recommendations to the IHPM for review and distribution.
- (8) Submit an IDP, based on ACTEDS guidance, to the IHPM for review and approval.
- (9) Assist the IHPM in reviewing and updating the IHP action plan.

**Industrial hygiene staff professional development**

Ensure IH staff receive and maintain technical competency specific to protecting workers from occupational hazards. See appendix \_\_\_\_\_ for a sample staff IDP.

**Business practice**

The \_\_\_\_\_ IHP uses the DOD IH EAM as the model for program implementation. The eight-step model describes the IH process of anticipation, recognition, evaluation, and control of IH hazards. Details of the model are found in appendix B of this publication.

**Industrial Hygiene Management Information System—DOEHRS-IH**

The \_\_\_\_\_ IHP is required to use DOEHRS-IH for occupational and environmental health hazard data collection, longitudinal exposure record keeping and exposure assessment.

**Survey and assessment frequency**

- a. Worksite IH surveys are scheduled according to their assigned shop priority which is noted in DOEHRS-IH. High priority (priority 1) shops should be surveyed at least annually or more frequently; medium priority (priority 2) shops should be surveyed every two years; and low priority (priority 3) shops should be surveyed every three years. The rationale for prioritization is outlined in appendix D. The implementation schedule is also based on the present mission; existing personnel allocations; and budget, equipment and vehicle support.
- b. The master schedule in DOEHRS-IH is the primary tracking method for survey scheduling. Special ad hoc reports to extract data collected in DOEHRS-IH can be requested through the U.S. Army Public Health Command (USAPHC)/Army Institute of Public Health (AIPH) and distributed to interested parties as needed. (The USAPHC/AIPH is formerly known as the U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM).)
- c. The master schedule is used to develop a workplace monitoring plan.
- d. Exposure characterization (exposure monitoring) will be conducted according to SOPs found \_\_\_\_\_ (describe).

---

**Table F-1**  
**Sample action plan—Continued**

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**Reporting industrial hygiene information**

All IH surveys will be reviewed by the IHPM with copies to \_\_\_\_\_ (list).

- a. The command.
- b. Occupational health.
- c. Safety.
- d. The supervisory staff.
- e. Others as needed.

**Program evaluation and performance metrics**

The IHPM will conduct an annual review of the IHP to document assessment of IHP workload, health outcomes, management effectiveness and resource use. Tools for the review should include a status of the IH surveys accomplished (use the master schedule in DOEHS-IH), the ACSIM ISR and the AMEDD CMS metrics information, program successes, and recommendations for program improvements. See appendix \_\_\_\_\_ for the annual review from the previous year.

- a. The summary of the annual review will be forwarded to \_\_\_\_\_ (for example, chief, preventive medicine, medical commander, installation commander, and so forth).
- b. Metrics guidance can be found on the Army IH Web site (<http://phc.amedd.army.mil/topics/workplacehealth/ih/Pages/default.aspx>) and the USAPHC/AIPH Web site (<http://phc.amedd.army.mil/Pages/default.aspx>).

**Industrial hygiene program relationships**

a. The \_\_\_\_\_ IHP supports the following medical and installation programs: \_\_\_\_\_. To accomplish the IH mission, the IHP office needs to work cooperatively with and be integrated into other installation commander and medical commander programs and committees. How this is accomplished will be installation-specific and depends on local memoranda of understanding or interservice support agreements.

b. All programs and committees that the IHP supports should be listed in the action plan along with the specific support elements. For example—

(1) Asbestos management. The \_\_\_\_\_ Asbestos Management Program is directed by \_\_\_\_\_ (list the organization or region in charge of the program).

(2) The IHP role is \_\_\_\_\_ (modify information from this publication to describe the IH role in the local program).

(3) The role of the IHPM in installation asbestos management (see Technical Bulletin, Medical 513 (TB MED 513), Army Regulation 200-1 (AR 200-1), and Public Works Technical Bulletin 420-70-8 (PWTB 420-70-8)) includes—

(a) Serving as the principal advisor and consultant (competent person) to the asbestos control manager on asbestos abatement projects. (See Section 1101, Part 1926, Title 29, Code of Federal Regulations.) Responsibilities may include—

- 1. Participating in a multidisciplinary installation asbestos team to develop an overall program of asbestos risk reduction.
- 2. Providing technical advice on asbestos abatement methods.
- 3. Reviewing contract specifications and proposals for asbestos abatement projects.

(b) Completing and maintaining required U.S. Environmental Protection Agency (USEPA), Occupational Safety and Health Administration (OSHA), State, and/or local training, certification, and licensing as required to conduct asbestos hazard management activities.

(c) Documenting potential worker exposure to asbestos (for example, during abatement projects) in DOEHS-IH.

c. Examples of other programs or committees that the IHP may work with to accomplish the IH mission follow:

(1) The medical commander programs, to include—

- (a) Occupational medicine.
- (b) The Army Hearing Program.
- (c) The Army Vision Conservation and Readiness Program.
- (d) Ergonomics.
- (e) Occupational radiation protection.
- (f) Medical treatment facility (MTF) industrial hygiene.

(2) The installation commander programs, to include—

- (a) The hazard communication program.
- (b) The respiratory protection program.
- (c) Personal protective equipment (other than respiratory protection).
- (d) Asbestos management.
- (e) Lead hazard management.
- (f) Hazardous and medical waste.
- (g) Indoor air quality/indoor environmental quality.
- (h) Federal Employees Compensation Act Program.
- (i) Confined space entry.
- (j) Chemical surety program.
- (k) Laboratory biosafety.

(3) Committees, to include—

- (a) The installation safety committee.
  - (b) The MTF environment of care/safety committee.
  - (c) Ergonomics subcommittee.
  - (d) Installation-specific committees.
-

## Appendix G Suggested Sampling Equipment

### G-1. Introduction

Table G-1 provides a suggested list of sampling equipment.

### G-2. Equipment selection

The IHPM will have the best understanding of what equipment is necessary to accomplish the mission of the IHP office.

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**Table G-1**

**Description of sampling equipment**

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**Sampling pumps and accessories**

Air sampling pumps for 2 to 4 lpm and 10 to 200 cc/min

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**Airflow calibrators**

Pump accessories (chargers, media holders, tubing and parts)

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**Gas and vapor sampling-active**

Sorbent sample tubes (including charcoal and silica gel)  
Sorbent tube holders and accessories

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**Gas and vapor sampling-passive**

Passive (diffusive) samplers  
Color diffusion tubes  
Color dosimeter tubes

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**Particulate sampling**

MCE and PVC filters including either matched weight or pre-weighted  
Asbestos cassettes  
Particle size-selective samplers (respirable, thoracic, and inhalable preselectors)

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**Direct reading instruments**

Ventilation evaluation equipment (for example, anemometer, velometer, manometer, pitot tube, balometer)  
Indoor air quality monitor  
Gas detection instruments (for example, photoionization detector, multi-gas, and single gas—CO, CO<sub>2</sub>, NO, NO<sub>2</sub>, H<sub>2</sub>S, O<sub>2</sub>)  
Calibration gas specific to instruments  
Respirator fit testing equipment  
Noise dosimeters  
Sound level meters including type 1 for impact noise  
Octave band analyzer  
Particulate monitors  
Heat stress, temperature, humidity, and moisture monitors  
Light meter  
Color detector tubes and pumps

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**Bioaerosol and biological sampling, as needed**

Bioaerosol impactor  
Sterilized filters-Gelatin, Teflon®<sup>1</sup>  
Spore trap sampling cassette  
Sterile surface swabs  
Lift tape for surface sampling

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**Table G-1**  
**Description of sampling equipment—Continued**

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**Surface sampling**

Colorimetric swab sampling kits (for example, lead, mercury, nickel, cadmium, chromate)  
Ghost Wipe<sup>TM2</sup>  
Wipe sample test kit  
Sterile surface swabs  
Templates for surface sampling  
Lift tape for surface sampling  
Surface and skin indicators  
Smear tabs

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Legend for Table G-1:

lpm = liters per minute  
cc/min = cubic centimeters per minute  
MCE = mixed cellulose ester  
PVC = polyvinyl chloride  
CO = carbon monoxide  
CO<sub>2</sub> = carbon dioxide  
NO = nitric oxide  
NO<sub>2</sub> = nitrogen dioxide  
H<sub>2</sub>S = hydrogen sulfide  
O<sub>2</sub> = oxygen

Notes:

<sup>1</sup> Teflon<sup>®</sup> is a registered trademark of E.I. du Pont de Nemours and Co., Wilmington, DE.

<sup>2</sup> Ghost Wipe<sup>TM</sup> is a trademark of Environmental Express, Mount Pleasant, SC.

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## **Appendix H**

### **Ethical Principles and Code of Ethics**

The AIHA<sup>®</sup>, ACGIH<sup>®</sup>, and Academy of Industrial Hygiene are nonprofit voluntary professional membership associations dedicated to the advancement of the field of IH and the protection of health and safety. Therefore, these IH professional associations support quality professional standards and practices and expect members to meet such standards. In support of these important purposes, the IH professional associations promote ethical professional practices and strongly encourage members to understand ethical responsibilities. As a matter of professional competence and public confidence, members are expected to conduct themselves consistent with applicable ethics standards, including those of the ABIH<sup>®</sup>.

#### **H-1. Ethical principles**

The IH professional associations have adopted ethical principles for members as outlined in figure H-1, in order to guide the members, support the profession, and protect health and safety.

#### **H-2. Code of ethics**

As detailed in figure H-2, CIHs<sup>®</sup> must adhere to the ABIH<sup>®</sup> Code of Ethics.

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JOINT INDUSTRIAL HYGIENE ASSOCIATIONS MEMBER ETHICAL PRINCIPLES

- I. Responsibilities to the Professional Organizations, the Profession and the Public.
- A. In order to satisfy organizational and legal policies and rules, members should:
  - 1. Comply with laws, regulations, policies, and ethical standards governing professional practice of industrial hygiene and related activities, including those of professional associations and credentialing organizations.
  - 2. Provide accurate and truthful information to professional associations and credentialing organizations.
  - 3. Cooperate with professional associations and credentialing organizations concerning ethics matters and the collection of information related to an ethics matter.
  - 4. Report apparent violations of applicable professional organizations' ethical standards to appropriate organizations and agencies upon a reasonable and clear factual basis.
  - 5. Refrain from any public behavior that is clearly in violation of accepted professional, ethical or legal standards.
  - 6. Promote equal opportunity and diversity in professional activities.
  - 7. Support and disseminate the association's ethics principles to other professionals.

*Approved by the AIHA<sup>®</sup> Board of Directors on May 21, 2007.*

**Figure H-1. Ethical principles for members of the joint industrial hygiene associations**

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II. Responsibilities to Clients, Employers, Employees and the Public.

A. In order to provide ethical professional services, members should:

1. Deliver competent services in a timely manner, and with objective and independent professional judgment in decision-making.
2. Recognize the limitations of one's professional ability, and provide services only when qualified. The member is responsible for determining the limits of his/her own professional abilities based on education, knowledge, skills, practice experience, and other relevant considerations.
3. Provide appropriate professional referrals when unable to provide competent professional assistance.
4. Maintain and respect the confidentiality of sensitive information obtained in the course of professional or related activities unless: the information pertains to an illegal activity; a court or governmental agency lawfully directs the release of the information; the client/employer expressly authorizes the release of specific information; or, the failure to release such information would likely result in death or serious physical harm to employees and/or the public.
5. Properly use professional credentials and provide truthful and accurate representations concerning education, experience, competency and the performance of services.
6. Provide truthful and accurate representations to the public in advertising, public statements/representations, and in the preparation of estimates concerning costs, services, and expected results.
7. Recognize and respect the intellectual property rights of others, and act in an accurate, truthful, and complete manner, including activities related to professional work and research.
8. Affix or authorize the use of one's seal, stamp or signature only when the document is prepared by the certificant/candidate or someone under his/her direction and control.
9. Refrain from business activities and practices that unlawfully restrict competition.

*Approved by the ACGIH® Board of Directors on April 30, 2007.*

**Figure H-1. Ethical principles for members of the joint industrial hygiene associations — continued**

- B. In order to satisfy organizational policies and legal requirements concerning possible conflicts of interest and similar issues, members should:
  - 1. Disclose to clients or employers significant circumstances that could be construed as a conflict of interest, or an appearance of impropriety.
  - 2. Avoid conduct that could cause a conflict of interest with a client, employer, employee, or the public.
  - 3. Assure that a conflict of interest does not compromise legitimate interests of a client, employer, employee, or the public and does not influence/interfere with professional judgments.
  - 4. Refrain from offering, or accepting inappropriate payments, gifts, or other forms of compensation or benefits in order to secure work, or that are intended to influence professional judgment.
- C. In order to satisfy organizational policies and legal requirements concerning public health and safety, members should:
  - 1. Follow appropriate health and safety procedures in the course of performing professional work to protect clients, employers, employees, and the public from conditions where injury and damage are reasonably foreseeable.
  - 2. Inform appropriate management representatives and/or governmental bodies of violations of legal and regulatory requirements when obligated or otherwise clearly appropriate.
  - 3. Make reasonable efforts to ensure that the results of industrial hygiene assessments are communicated to exposed populations.

*Approved by the ACGIH® Board of Directors on April 30, 2007.*

**Figure H-1. Ethical principles for members of the joint industrial hygiene associations — continued**

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## **American Board of Industrial Hygiene Code of Ethics**

### **Introduction**

The American Board of Industrial Hygiene (ABIH) is a voluntary, non-profit, professional credentialing organization. ABIH certifies qualified industrial hygienists engaged in the practice of industrial hygiene, and who have met the professional knowledge standards established by the Board of Directors. Regardless of any other professional affiliation, the ABIH Code of Ethics (Code) applies to: each individual certified by the ABIH as a Certified Industrial Hygienist (CIH) or a Certified Associate Industrial Hygienist (CAIH) (certificants); and each individual seeking ABIH certification (candidates). The Code serves as the minimal ethical standards for the professional behavior of ABIH certificants and candidates.

The Code is designed to provide both appropriate ethical practice guidelines and enforceable standards of conduct for all certificants and candidates. The Code also serves as a professional resource for industrial hygienists, as well as for those served by ABIH certificants and candidates.

### **Preamble/General Guidelines**

The ABIH is dedicated to the implementation of appropriate professional standards designed to serve the public, employees, employers, clients and the industrial hygiene profession. First and foremost, ABIH certificants and candidates give priority to health and safety interests related to the protection of people, and act in a manner that promotes integrity and reflects positively on the profession, consistent with accepted moral, ethical and legal standards.

As professionals in the field of industrial hygiene, ABIH certificants and candidates have the obligation to: maintain high standards of integrity and professional conduct; accept responsibility for their actions; continually seek to enhance their professional capabilities; practice with fairness and honesty; and, encourage others to act in a professional manner consistent with the certification standards and responsibilities set forth below.

- I. **Responsibilities to ABIH, the profession and the public.**
  - A. Certificate and candidate compliance with all organizational rules, policies and legal requirements.
    1. Comply with laws, regulations, policies, and ethical standards governing professional practice of industrial hygiene and related activities.
    2. Provide accurate and truthful representations concerning all certification and recertification information.

**Figure H-2. Code of ethics for certificate holders and candidates**

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3. Maintain the security of ABIH examination information and materials, including the prevention of unauthorized disclosures of test information.
4. Cooperate with ABIH concerning ethics matters and the collection of information related to an ethics matter.
5. Report apparent violations of the ethics code by certificants and candidates upon a reasonable and clear factual basis.
6. Refrain from public behavior that is clearly in violation of professional, ethical or legal standards.

II. **Responsibilities to clients, employers, employees and the public.**

- A. Education, experience, competency and performance of professional services.
  1. Deliver competent services with objective and independent professional judgment in decision-making.
  2. Recognize the limitations of one's professional ability and provide services only when qualified. The certificant/candidate is responsible for determining the limits of his/her own professional abilities based on education, knowledge, skills, practice experience and other relevant considerations.
  3. Make a reasonable effort to provide appropriate professional referrals when unable to provide competent professional assistance.
  4. Maintain and respect the confidentiality of sensitive information obtained in the course of professional activities unless: the information is reasonably understood to pertain to unlawful activity; a court or governmental agency lawfully directs the release of the information; the client or the employer expressly authorizes the release of specific information; or, the failure to release such information would likely result in death or serious physical harm to employees and/or the public.
  5. Properly use professional credentials, and provide truthful and accurate representations concerning education, experience, competency and the performance of services.
  6. Provide truthful and accurate representations to the public in advertising, public statements or representations, and in the preparation of estimates concerning costs, services, and expected results.
  7. Recognize and respect the intellectual property rights of others and act in an accurate, truthful and complete manner, including activities related to professional work and research.
  8. Affix or authorize the use of one's ABIH seal, stamp or signature only when the document is prepared by the certificant/candidate or someone under his/her direction and control.
- B. Conflict of interest and appearance of impropriety.
  1. Disclose to clients or employers significant circumstances that could be construed as a conflict of interest or an appearance of impropriety.
  2. Avoid conduct that could cause a conflict of interest with a client, employer, employee or the public.

**Figure H-2. Code of ethics for certificate holders and candidates — continued**

3. Assure that a conflict of interest does not compromise legitimate interests of a client, employer, employee or the public and does not influence or interfere with professional judgments.
  4. Refrain from offering or accepting significant payments, gifts or other forms of compensation or benefits in order to secure work or that are intended to influence professional judgment.
- C. Public health and safety.
1. Follow appropriate health and safety procedures, in the course of performing professional duties, to protect clients, employers, employees and the public from conditions where injury and damage are reasonably foreseeable.

Effective Date: May 25, 2007

**Figure H-2. Code of ethics for certificate holders and candidates — continued**





## **Glossary**

### **Section I**

#### **Abbreviations**

**ACGIH<sup>®</sup>**

American Conference of Governmental Industrial Hygienists

**ACSIM**

Assistant Chief of Staff for Installation Management

**ACTEDS**

Army Civilian Training, Education and Development System

**AIHA<sup>®</sup>**

American Industrial Hygiene Association

**AMEDD**

Army Medical Department

**ANSI**

American National Standards Institute

**AOR**

area of responsibility

**AR**

Army regulation

**ASHRAE**

American Society of Heating, Refrigeration and Air-Conditioning Engineers

**BEIs<sup>®</sup>**

biological exposure indices

**BSL**

biosafety level

**cc/min**

cubic centimeters per minute

**CDC**

Centers for Disease Control and Prevention

**CFR**

Code of Federal Regulations

**CLPP**

Childhood Lead Poisoning Prevention Program

**CO**

carbon monoxide

**CO<sub>2</sub>**

carbon dioxide

**CP**

career program

**CPM**

career program manager

**DA**

Department of the Army

**DA Pam**

Department of the Army pamphlet

**DOD**

Department of Defense

**DODD**

Department of Defense directive

**DODI**

Department of Defense instruction

**DPW**

Directorate of Public Works

**EM**

engineer manual

**EO**

Executive Order

**EP**

exposure point

**FAR**

Federal Acquisition Regulation

**FC**

functional chief

**FCR**

functional chief representative

**FECA**

Federal Employees Compensation Act

**GS**

General Schedule

**HAZCOM**

hazard communication

**HHSC**

health hazard severity category

**HVAC**

heating, ventilation and air-conditioning

**IDP**

individual development plan

**IH**

industrial hygiene

**IHPM**

industrial hygiene program manager

**IPC**

illness probability category

**ISO**

International Organization for Standardization

**ISR**

Installation Status Report

**ISSA**

interservice support agreement

**MOUs**

memoranda of understanding

**MSDS**

material safety data sheet

**MTF**

medical treatment facility

**NIOSH**

National Institute for Occupational Safety and Health

**OCONUS**

outside the continental United States

**OH**

occupational health

**OJT**

on-the-job training

**OPM**

Office of Personnel Management

**OSH**

occupational safety and health

**OSHA**

Occupational Safety and Health Administration

**OTSG**

Office of The Surgeon General

**PEL**

permissible exposure limit

**PL**

public law

**PPE**

personal protective equipment

**PVC**

polyvinyl chloride

**PWTB**

Public Works technical bulletin

**QA**

quality assurance

**RAC**

risk assessment code

**RMC**

regional medical command

**SASOHI**

Standard Army Safety and Occupational Health Inspection

**SOHAC**

Safety and Occupational Health Advisory Council

**SOP**

standing operating procedure

**TB MED**

technical bulletin, medical

**TDA**

table of distribution and allowances

**TG**

technical guide

**TLV<sup>®</sup>**

threshold limit value

**TSG**

The Surgeon General

**TWA**

time-weighted average

**UFC**

Unified Facilities Criteria

**UIC**

unit identification code

**USACE**

U.S. Army Corps of Engineers

**USACHPPM**

U.S. Army Center for Health Promotion and Preventive Medicine

**USAMEDCOM**

U.S. Army Medical Command

**USAMEDDAC**

U.S. Army Medical Department Activity

**USAPHC**

U.S. Army Public Health Command

**WMSD**

work-related musculoskeletal disorder

## **Section II**

### **Terms**

#### **Contractor**

A non-Federal employer engaged in performance of a DA contract, whether as prime contractor or subcontractor.

#### **DA personnel**

*a. Civilian.* Includes General Schedule, National Security Personnel System (or its equivalent), Wage Grade employees (including National Guard and Reserve technicians), Merit Pay System employees, Nonappropriated Fund employees, and foreign nationals directly employed by DA. *b. Military personnel.* Includes all military personnel on active duty, Reserve or National Guard personnel on active duty or in technician or drill status, Service academy midshipmen or cadets, Reserve Officer Training Corps cadets when engaged in directed training activities, and foreign national military personnel assigned to DA.

#### **Health hazard**

An existing or likely condition, inherent to the operation or use of materiel, that can cause death, injury, acute or chronic illness, disability, and reduced job performance of personnel by exposure to acoustical energy, biological substances, chemical substances, oxygen deficiency, radiation energy, shock, temperature extremes and humidity, trauma, and vibration.

#### **Industrial hygiene**

The science and art devoted to the anticipation, recognition, evaluation, prevention, and control of those environmental factors or stresses arising in or from the workplace which may cause sickness, impaired health and well being, or significant discomfort among workers or among the citizens of the community (AIHA®).

#### **Installation**

A grouping of facilities, located in the continental U.S. or outside the continental U.S., that support particular DA functions. Installations may be elements of a base including locations such as posts, camps, or stations.

#### **Medical commander**

The unit surgeon, command chief surgeon, USAMEDDAC and/or medical center commanders, and the director of health services or his or her representative responsible for provision of medical support at the unit, command, or installation concerned.

#### **Ototoxic**

Having a harmful effect on the organs or nerves of the ear concerned with hearing and balance.

#### **Risk assessment**

A structured process to identify and assess hazards. An expression of potential harm, described in terms of hazard severity, accident probability, and exposure to hazard.

#### **Similar exposure group**

A similar exposure group is defined by Bullock and Ignacio as: "A group of workers having the same general exposure profile for an agent because of the similarity and frequency of the task(s) they perform, the similarity of the materials and processes with which they work, and the similarity of the way they perform the task(s)."

#### **Workplace**

*a.* Nonmilitary-unique workplace or operation. A DA military or civilian workplace or operation that is comparable generally to those of the private sector. Examples include facilities involved and work performed in the repair and overhaul of weapons, vessels, aircraft, or vehicles (except for equipment trials); construction; supply services; civil engineer or public works; medical services; and office work. *b.* Military-unique workplace, operations, equipment, and systems. A DA military and civilian operation and workplace that is unique to the national defense mission. This includes combat and operation, testing, and maintenance of military-unique equipment and systems such as military weapons, ordnance, and tactical vehicles. It also includes operations such as peacekeeping missions; field maneuvers; combat training; military-unique research, development, test, and evaluation activities; and actions required under national defense contingency conditions. *c.* DA contractor workplace. Any place including a reasonable access route to and from, where work has been, will be, or is being performed by contractor employees under a DA contract. "DA contractor workplace" does not include any area, structure, machine apparatus, device, equipment, or material therein with which the contractor employee is not required or reasonably expected to have contact; nor does it include any working condition for which OSHA jurisdiction has been preempted pursuant to section 4(b)(1) of Public Law 91-596.

### **Section III**

#### **Special Abbreviations and Terms**

**ABIH®**

American Board of Industrial Hygiene

**AFPAM**

Air Force pamphlet

**AIPH**

Army Institute of Public Health

**ASHE**

American Society for Healthcare Engineering

**ASSE**

American Society of Safety Engineers

**BA**

bachelor of arts

**BCSP**

Board of Certified Safety Professionals

**BS**

bachelor of science

**CHEST®**

Council on Certification of Health, Environmental and Safety Technologists

**CHCM**

certified hazard control manager

**CHSP**

certified healthcare safety professional

**CHST®**

construction health and safety technician®

**CIH®**

certified industrial hygienist®

**CMS**

Command Management System (AMEDD)

**COC**

chain of custody

**CSP®**

certified safety professional

**DIO**

Directorate of Installation Operations

**DOD IH EAM**

Department of Defense Industrial Hygiene Exposure Assessment Model

**DOEHRS-IH**

Defense Occupational and Environmental Health Readiness System-Industrial Hygiene

**EAP**

exposure assessment priority

**H<sub>2</sub>S**

hydrogen sulfide

**IAQ**

indoor air quality

**IEC**

International Electrotechnical Commission

**IEQ**

indoor environmental quality

**IHP**

industrial hygiene program

**IICRC**

Institute of Inspection, Cleaning and Restoration Certification

**lpm**

liters per minute

**MCE**

mixed cellulose ester

**MRSA**

methicillan-resistant staphylococcus aureus

**NO**

nitric oxide

**NO<sub>2</sub>**

nitrogen dioxide

**O<sub>2</sub>**

oxygen

**OEL**

occupational exposure limit

**OHST<sup>®</sup>**

occupational health and safety technologist<sup>®</sup>

**PHCR**

Public Health Command Region

**REL<sup>™</sup>**

recommended exposure limit

**SEG**

similar exposure group

**STS<sup>®</sup>**

safety trained supervisor<sup>®</sup>

**USAIMCOM**

U.S. Army Installation Management Command



**USDOL**

U.S. Department of Labor

**USEPA**

U.S. Environmental Protection Agency

**WEEL™**

workplace environmental exposure level

**WMP**

workplace monitoring plan

**UNCLASSIFIED**

**PIN 077903-000**