

**Army Regulation 385-10**

**Safety**

# **The Army Safety and Occupational Health Program**

**Headquarters  
Department of the Army  
Washington, DC  
24 July 2023**

**UNCLASSIFIED**

# ***SUMMARY of CHANGE***

AR 385-10

The Army Safety and Occupational Health Program

This major revision, dated 24 July 2023—

- o Changes the proponent from Director of Army Staff to Assistant Secretary of the Army (Installations, Energy and Environment) (title page).
- o Changes the title from “The Army Safety Program” to “The Army Safety and Occupational Health Program” (cover).
- o Changes official title of additional/collateral duty safety officer to unit safety officer (para 1-8c and throughout).
- o Incorporates a new Army Safety and Occupational Health Management System (para 1-9).
- o Incorporates six core capability objectives and corresponding elements of the Army Safety and Occupational Health Management System (para 1-9a through 1-9f).
- o Incorporates Army Directive 2018-07-2, Prioritizing Efforts—Readiness and Lethality (Update 2), by eliminating unit safety officer grade requirements (para 1-10).
- o Modifies unit safety officer requirements (paras 1-10 and 1-11).
- o Eliminates requirement for Travel Risk Planning System (para 1-11).
- o Modifies Army Readiness Assessment Program to include midpoint follow up assessment (para 2-24j).
- o Updates Assistant Secretary of the Army (Installations, Energy and Environment) and Army command, Army service component command, and direct reporting unit commander responsibilities (paras 2-4, 2-25, and 2-26).
- o Incorporates Army Directive 2016-24, Department of Defense Biological Select Agent and Toxins Biosafety Program, by updating responsibilities of Headquarters, Department of the Army principal officials (chap 2).
- o Incorporates Army Directive 2018-07-3, Prioritizing Efforts—Readiness and Lethality (Update 3) by eliminating the requirement for unit safety officers to maintain motor vehicle mishap reports (chap 3).
- o Eliminates requirement for Accident Avoidance Course training (chap 5).
- o Integrates the risk management process from DA Pam 385-30 and DA Pam 385-64 (para 6-2).
- o Consolidates applicable federal requirements for the industrial operations safety program (chap 10).
- o Expands and clarifies regulation of industrial base safety and occupational health (chap 10).
- o Incorporates Army Directive 2018-07-15, Prioritizing Efforts—Readiness and Lethality (Update 15) by incorporating Army radiation safety program requirements from DA Pam 385-24 and DA Pam 385-25, both hereby superseded (chaps 16 and 17).
- o Modifies co-mingling of radioactive commodities with nonradioactive devices, if needed (para 16-3l(6).)

- o Incorporates Army Directive 2018–07–13, Prioritizing Efforts–Readiness and Lethality (Update 13) by eliminating the requirement for aviation commanders to establish a written commander’s safety philosophy (chap 18).
- o Incorporates Army Directive 2018–07–13, Prioritizing Efforts–Readiness and Lethality (Update 13) by eliminating requirement for appointment of a unit foreign object damage prevention officer (chap 18).
- o Incorporates Army Directive 2018–07–15, Prioritizing Efforts–Readiness and Lethality (Update 15) by eliminating the requirement for monthly safety meetings in aviation units (chap 18).
- o Incorporates Army Directive 2019–29, Enabling Readiness and Modernization through Advanced Manufacturing, by incorporating procedures ensuring readiness and performance benefits are balanced with cost, program protection, and safety (para 19–2r).
- o Adds requirements for contracts involving infectious agents and toxins (para 20–2e).
- o Adds requirements for explosives safety assistance visits (para 22–7b).
- o Adds new requirements for certain munitions operating facilities to take effect in 2024 (para 22–9g).
- o Incorporates requirements for the Army Electrical Safety Program (chap 23).
- o Adds regulation of fire and emergency services safety (chap 25).
- o Incorporates Army Directive 2018–07–18, Prioritizing Efforts–Readiness and Lethality (Update 18) by removing criteria for safety belts and vests during daylight hours, or while conducting physical training on closed roads or dedicated physical training routes (throughout).
- o Streamlines document to reduce redundancies and eliminate unsubstantiated requirements (throughout).

Effective 24 August 2023

**Safety**

**The Army Safety and Occupational Health Program**

By Order of the Secretary of the Army:

JAMES C. MCCONVILLE  
*General, United States Army*  
Chief of Staff

Official:

  
MARK F. AVERILL  
*Administrative Assistant to the  
Secretary of the Army*

**History.** This publication is a major revision. The portions affected by this major revision are listed in the summary of change.

**Summary.** This regulation implements the requirements of Public Law 83-703; Public Law 91-596; Public Law 93-438; Title 10, Code of Federal Regulations; Title 21, Code of Federal Regulations; Part 1960, Title 29, Code of Federal Regulations; Title 40, Code of Federal Regulations; Title 49, Code of Federal Regulations; DoDI 5000.69; DoDI 6055.01; DoDI 6055.04; DoDI 6055.07; DoDI 6055.08; DoDI 6055.11; and DoDI 6055.15. It provides new policy on Army safety and occupational health management procedures with special emphasis on responsibilities and organizational concepts.

**Applicability.** This regulation applies to the Regular Army, the Army National Guard/Army National Guard of the United States, and the U.S. Army Reserve, unless otherwise stated. It also applies to Department of the Army Civilians

(to include nonappropriated fund employees, wage grade, and foreign nationals), the U.S. Army Corps of Engineers and Civil Works activities, and tenants and volunteers in accordance with Section 1588, Title 10, United States Code. During mobilization or national emergency, this regulation remains in effect.

**Proponent and exception authority.**

The proponent of this regulation is the Assistant Secretary of the Army (Installations, Energy and Environment). The proponent has the authority to approve exceptions or waivers to this regulation 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 regulation by providing justification that includes a full analysis of the expected benefits and must include a 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 requirements.

**Army internal control process.** This regulation contains internal control provisions in accordance with AR 11-2 and identifies key internal controls that must be evaluated (see app C).

**Supplementation.** Supplementation of this regulation and establishment of command and local forms are prohibited

without prior approval from the Assistant Secretary of the Army (Installations, Energy and Environment), Safety and Occupational Health Director, 110 Army Pentagon, Suite 3D453, Washington, DC 20310-0110.

**Suggested improvements.** Users are invited to send comments and suggested improvements on DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly to the Assistant Secretary of the Army (Installations, Energy and Environment), Safety and Occupational Health Director, 110 Army Pentagon, Suite 3D453, Washington, DC 20310-0110.

**Committee management.** AR 15-39 requires the proponent to justify establishing/continuing committee(s), coordinate draft publications, and coordinate changes in committee status with the U.S. Army Special Programs Directorate at email usarmy.pentagon.hqda-hsa.committee-management@army.mil. Further, if it is determined that an established "group" identified within this regulation later takes on the characteristics of a committee as found in AR 15-39, then the proponent will follow all AR 15-39 requirements for establishing and continuing the group as a committee.

**Distribution.** This publication is available in electronic media only and intended for the Regular Army, the Army National Guard/Army National Guard of the United States, and the U.S. Army Reserve.

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\*This regulation supersedes AR 385-10, dated 24 February 2017; DA Pam 385-1, dated 23 May 2013; DA Pam 385-11, dated 25 June 2013; DA Pam 385-24, dated 30 November 2015; DA Pam 385-25, dated 2 October 2012; DA Pam 385-26, dated 1 February 2013; DA Pam 385-65, dated 1 February 2008; and DA Pam 385-90, dated 28 August 2007. Army Dir 2018-07-13, dated 4 September 2018, and Army Dir 2018-07-15, dated 22 October 2018, are rescinded upon publication of this regulation.

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## **Glossary**

## **Chapter 1**

### **Army Safety and Occupational Health Program**

#### **Section I**

##### **General**

###### **1–1. Purpose**

This regulation prescribes the Army Safety and Occupational Health Program (ASOHP), which establishes policies, responsibilities, and procedures to safeguard and preserve Army resources worldwide against accidental loss. It establishes risk management (RM) as the Army's principal risk reduction methodology. It provides public safety policy incidental to Army operations and activities and ensures regulatory and statutory compliance. A violation of any of these paragraphs is separately punishable as a violation of a lawful general regulation under Article 92, Uniform Code of Military Justice (UCMJ, Art. 92). Penalties for violating any of these paragraphs include the full range of statutory and regulatory sanctions, both criminal and administrative.

###### **1–2. References and forms**

See appendix A.

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

See the glossary.

###### **1–4. Responsibilities**

Responsibilities are listed in chapter 2 and throughout this regulation.

###### **1–5. Records management (recordkeeping) requirements**

The records management requirement for all record numbers, associated forms, and reports required by this publication are addressed in the Records Retention Schedule–Army (RRS–A). Detailed information for all related record numbers, forms, and reports are located in Army Records Information Management System (ARIMS)/RRS–A at <https://www.arims.army.mil>. If any record numbers, forms, and reports are not current, addressed, and/or published correctly in ARIMS/RRS–A, see DA Pam 25–403 for guidance.

###### **1–6. Statutory authority**

The following statutory authority governs the ASOHP:

- a.* Public Law (PL) 91–596, known as the Occupational Safety and Health Act of 1970, as amended.
- b.* Executive Order (EO) 12196.
- c.* PL 83–703, known as The Atomic Energy Act of 1954, as amended.
- d.* PL 93–438, known as The Energy Reorganization Act of 1974, as amended.

###### **1–7. Introduction**

*a.* The ASOHP consists of 14 functional areas structured for mishap prevention in Army operations. It provides for public safety incidental to Army operations and activities. The ASOHP functional areas are necessary for sustaining operations of the U.S. Army whether at an installation, during contingency operations, or in wartime conditions (see table 1–1). Each organization's strategic goals and objectives should be aligned to execute the ASOHP in the most effective manner possible (see DA Pam 385–10).

*b.* Commanders of Army commands (ACOMs), Army service component commands (ASCCs), and direct reporting units (DRUs) will make every effort to align the execution of strategic safety and occupational health (SOH) goals and objectives to an Army establishment hierarchy to ensure continuity of reporting annual ASOHP metrics and mishap reporting requirements. In regard to SOH program management, an Army establishment is defined as an ACOM where a mission or service is conducted or where operations are performed under one management system. Distinctly separate activities performed under the authority of a single commander/director will be treated as one establishment. ACOMs, ASCCs, and DRUs, through brigade headquarters (or equivalent), will be considered independent establishments. Brigade headquarters will be treated as follows:

(1) Brigades will be considered distinctly separate establishments when the commands represent distinctly separate missions and management processes and no one industry description code in the North American Industry Classification System applies to the joint activities of the command.

(2) Two or more brigades at separate physical locations may be combined under one establishment when operations conducted at the separate locations are controlled by a single commander/director under one management system.

(3) Establishments with an annual average of 10 or less civilian personnel will report under their parent activity regardless of physical location.

(4) The U.S. Army Corps of Engineers (USACE) will consider USACE headquarters, divisions, and districts as separate establishments. Area offices, resident offices, temporary project sites, civil works sites, recreational areas and other personnel work locations will be represented under their parent district establishment.

(5) The U.S. Army Materiel Command (AMC) will consider organic industrial base depots, plants, arsenals as well as installation garrisons as separate establishments.

c. Army officials will provide personnel at all levels safe and healthful working conditions, ensure safe work practices, and provide SOH information, education, and training that will enable personnel to effectively use RM on and off duty. A successful ASOHP depends upon all parties fulfilling their responsibilities. This requires effective leadership engagement at every level, and the active participation of Soldiers and Department of the Army (DA) Civilians. The ASOHP applies to Army contractor personnel and contractor operations only as specified in specific contract provisions. As a point of information to Army personnel, the contractor is directly responsible for complying with federal and state occupational safety and health standards for its employees.

d. The words “will” and “must” are used to state mandatory requirements in this regulation. Deviation from these provisions requires completion of DA Form 7632 (Deviation Approval and Risk Acceptance Document (DARAD)) and risk acceptance at the appropriate level in accordance with chapter 6 of this regulation and the mandatory procedures contained in DA Pam 385-64.

e. The word “should” in this regulation, DA Pam 385-10, DA Pam 385-16, DA Pam 385-40, DA Pam 385-61, DA Pam 385-63, DA Pam 385-64, DA Pam 385-69, indicates a recommended or preferred method of accomplishment. Deviation from these provisions requires written authorization from the local commander/senior manager or written designee.

f. The word “may” indicates an acceptable or suggested means of accomplishment.

g. Unless otherwise specified, the publications cited in this regulation refer to the latest edition.

**Table 1-1**  
**Army safety and occupational health functional areas**

<b>1</b>	<b>Workplace/Operations</b>
	Workplace safety
	Hazard communication (HAZCOM) program
	Industrial operations (lockout/tagout, confined space, fall protection)
	Emergency planning and response
	Industrial hygiene/occupational health (OH) (U.S. Army Medical Command (MEDCOM) program)
<b>2</b>	<b>Community, Off-Duty Recreation, and Seasonal Safety</b>
	Public, family, child, and youth safety
<b>3</b>	<b>Tactical (Contingency) Operations</b>
	Tactical safety
	Force mobilization
<b>4</b>	<b>Transportation Safety</b>
	Motor vehicle mishap prevention
	Maritime activities
	Safe cargo operations
<b>5</b>	<b>Radiation Safety (Ionizing/Nonionizing)</b>
<b>6</b>	<b>Aviation Safety Management</b>
<b>7</b>	<b>System Safety</b>

**Table 1-1**  
**Army safety and occupational health functional areas—Continued**

	System safety management
	Facilities system safety (FASS) program management
<b>8</b>	<b>Biological Safety (Infectious Agents and Toxins (IAT))</b>
<b>9</b>	<b>Chemical Agent Safety Management</b>
<b>10</b>	<b>Ammunition and Explosives (AE) Safety</b>
<b>11</b>	<b>Range Safety Operations</b>
<b>12</b>	<b>Electrical Safety</b>
<b>13</b>	<b>Fire and Emergency Services (F&amp;ES) Safety</b>
<b>14</b>	<b>Contract Safety</b>

### **1-8. Safety and occupational health program specifics**

The SOH program is a commander's responsibility at every echelon. Commanders with sufficient authority and responsibility to plan and manage the SOH program will designate in writing a qualified SOH manager/director. The safety manager/director is encouraged to be a member of the commander's personal staff and reports directly to the commander. The SOH managers/directors and staff will meet Office of Personnel Management standards for the positions of SOH functional community (FC) professionals. Commanders will assure funding is available for SOH staff, equipment, materials, and training required to implement an effective SOH program. Commanders will—

- a.* Determine the composition of the SOH staff according to their mission requirements.
- b.* Establish SOH staff at brigade/garrison level and above to serve as the organization SOH advisors and program administrators.
- c.* Designate unit safety officers (USOs) at organizations below brigade/garrison to company level unless a full-time safety officer is assigned. USO will—
  - (1) Be appointed by the commander on written orders.
  - (2) Have met or will meet the requirements of 29 CFR 1960.58.
  - (3) Have met or will meet the training requirements of paragraph 5–5.
  - (4) Have a year or more retainability in the unit upon duty appointment.
  - (5) Report directly to their unit commander on safety-related matters.
- d.* Designate a unit radiation safety officer (RSO) per chapter 16.

### **1-9. Army Safety and Occupational Health Management System**

The Army Safety and Occupational Health Management System (ASOHMS) provides the plans and procedures used to evaluate the ASOHP effectiveness at every operational level. It serves as the framework to guide individual ACOMs, ASCCs, DRUs, and the Army National Guard (ARNG) SOH management systems. The ASOHMS is six core interrelated/interacting SOH management capability objectives and corresponding elements performing as one coherent system to synchronize, coordinate, collaborate, and improve how SOH is implemented into Army operations. Mandatory ASOHMS procedures are contained in DA Pam 385–10. The six core capability objectives and corresponding elements for the ASOHMS are:

- a.* Leadership engagement and personnel/Soldier participation (program management).
- b.* Training and promotion.
- c.* Inspections/assessments.
- d.* Mishap, incident, and illness reporting and investigation.
- e.* Hazard analysis and countermeasures.
- f.* Health protection and readiness.

### **1-10. Army leaders, generally**

Commanders, leaders, and supervisors ultimately have the responsibility to identify, mitigate, and assume risk, including risks not specifically outlined in this program. Army leaders will—

- a.* Integrate the RM process into Army operations to prevent mishaps, occupational injuries, and illnesses.
- b.* Protect Army personnel, property, and equipment, and reduce costs of occupational injuries, illness, and accidental loss to improve readiness.

- c. Require new and modernized Army systems and facilities to meet applicable SOH standards throughout their lifecycle.
- d. Implement the standards promulgated by statutory authorities listed in appendix A to protect personnel, equipment, and property from accidental injuries and losses.
- e. Provide a mechanism for employees to report unsafe or unhealthful workplace hazards or conditions and ensure that no employee is subject to restraint, interference, coercion, discrimination, or reprisal for exercising his or her rights for doing so.
- f. Eliminate or mitigate hazards and deficiencies in accordance with regulatory requirements and/or proponent guidance.

### **1-11. Conflict resolution**

The U.S. Army will comply with federal standards or host nation (HN) requirements in DoD operations and workplaces. The only exception to this is when DoD operations are military-unique. Conflict resolution will be adjudicated at the lowest possible level.

- a. When requirements in this regulation and supporting pamphlets conflict with statutory and/or regulatory requirement, the more stringent requirement(s) will apply.
- b. Army personnel will coordinate and collaborate with other Services and federal agencies to develop mutual standards, procedures, and processes to eliminate conflict during Joint operations or when occupying Joint facilities.

### **1-12. Safety and occupational health strategic planning**

Commanders of ACOMs, ASCCs, DRUs, U.S. Army Reserve Command (USARC), and the Chief, National Guard Bureau (CNGB) will develop an SOH strategic plan in accordance with mandatory procedures in DA Pam 385-10 and annually update strategic planning to integrate Army-level guidance in preparation for the coming fiscal year (FY) and focus on specific operational risks.

### **1-13. Army safety and occupational health manpower requirements**

Sufficient SOH personnel will be identified for all levels and administrative costs provided to implement the ASOHP in accordance with 29 CFR 1960 and DoDI 6055.01.

a. *Institutional Army.* The Army SOH model is used to establish manpower requirements for Army safety offices that support the institutional Army. It provides standardization and uses mandated safety functions, tasks, and subtasks in determining requirements. It is validated by the U.S. Army Manpower Analysis Agency and approved by the Deputy Chief of Staff (DCS), G-3/5/7.

b. *Operational Army.* The Headquarters, Department of the Army (HQDA) augmentation table of distribution and allowance (TDA) implementation prescribes requirements for SOH positions that support the operating force throughout the Army. This includes Army corps, division, and brigade SOH requirements.

c. *Other.* All other SOH requirements are established by a concept plan.

## **Section II**

### **Safety Committees and Councils**

All safety committees, councils, and boards will be established in accordance with 29 CFR 1960, DoDI 6055.01, and AR 15-39.

### **1-14. Joint councils**

Joint councils will be established, as required, to coordinate SOH activities and functions between the Services. The offices of the Assistant Secretary of the Army (Installations, Energy and Environment) (ASA (IE&E)) and the Director of Army Safety (DASAF) lead in establishing Joint councils with other Services and DA Civilian agencies and selecting representatives to participate in the councils.

### **1-15. Army Safety Occupational and Environmental Health Senior Executive Council**

The Safety Occupational and Environmental Health (SO&EH) Senior Executive Council (SEC) is the Senior General Officer Steering Committee comprised of O-8 through O-10 general officer or senior executive service (SES) Army commanders and directors that provide the Secretary of the Army (SECARMY), Chief of Staff of the Army (CSA), the designated agency safety and health official (DASHO), and HQDA principal officials a single intra-Army committee to facilitate oversight of Army SOH matters. The SO&EH SEC provides the SECARMY, CSA, DASHO, and HQDA principal officials a single interagency committee to continually review actions across the U.S. Army to ensure

a constant focus on mishap losses to facilities, equipment, personnel, and the impact on readiness. The SO&EH SEC will meet annually, or at the direction of the co-chairs. The SOH SEC reports to and takes direction from the Vice Chief of Staff of the Army (VCSA) and the ASA (IE&E).

### **1–16. Army Safety Occupational and Environmental Health Board**

*a.* The SO&EH Board is comprised of designated O–7/O–8/SES representatives of the SEC. The SO&EH Board receives direction from and reports directly to the SO&EH SEC and reviews and approves matters for presentation to the SEC. The SO&EH Board may direct action using its own inherent authority of the members, coordinate action through official HQDA taskings, or establish ad hoc working groups, councils, or boards. The SO&EH Board is co-chaired by the Deputy Assistant Secretary of the Army (Environment, Safety, and Occupational Health), Deputy Assistant Secretary of the Army (Civilian Personnel)/Director, Civilian Senior Leader Management Office, DASAF, and general officer/SES representative of the Office of The Surgeon General (OTSG). The SO&EH Board will meet semiannually or at the direction of the co-chairs.

*b.* There are no permanent or standing working groups, councils, or boards as part of the SO&EH SEC. However, when an ad hoc working group/council/board is established, the SO&EH Board members will name a chairperson and allocate organizational resources necessary to accomplish the defined tasks. Working groups will provide periodic updates to the SO&EH Board through the executive secretary. Ad hoc working groups/councils/boards will terminate after successful completion of assigned tasks unless specifically directed by the SO&EH Board to continue with additional tasks.

### **1–17. Safety and Occupational Health Advisory Council**

*a.* Brigade, brigade equivalent, and above commands identified as an Army establishment will establish a Safety and Occupational Health Advisory Council (SOHAC). An annual safety plan will be developed and approved by the commander. The safety plan objectives will be reviewed during the SOHAC.

- (1)* Meetings will be conducted at least semiannually, but may be more frequent as directed by the council chair.
- (2)* Each council will develop its own rules and operations.
- (3)* Commanders with responsibility to establish a SOHAC may elect to have subordinate units participate in the SOHAC.

*b.* The commander will chair the safety council. Members will include military and civilian personnel representing key organizational elements as well as civilian SOH managers or uniformed safety officer, environmental compliance, industrial hygiene and OH professionals.

*(1)* The installation SOHAC will be chaired by the senior commander and include garrison commanders, major subordinate commanders, and all heads of tenant organizations located on the installation. The annual safety plan will be established and approved by the senior commander.

*(2)* Other command and unit membership will include representatives from maintenance; medical; training; personnel; morale, welfare, and recreation; provost marshal; a representative of civilian employees; the senior noncommissioned officer (NCO); representatives from each staff section; and any other representatives of stakeholders in the commander's safety program.

*c.* The annual safety plan objectives will be a part of the SOHACs metric data and may include a review of the following items:

- (1)* ASOHMS implementation status.
- (2)* Review of personnel required to hold installation FC or equivalent certification.
- (3)* A summary and completion status of personnel who are required to receive occupational and environmental medical exams for occupational exposures.
- (4)* Review of workplace safety hazard tracking log and line item completion status.
- (5)* Review of required command safety assessments and inspections completion status.
- (6)* Summary of the following mishap data.
  - (a)* Class A through C Soldier and civilian mishaps with associated total cost of property damage.
  - (b)* OSHA 300 Form (Log of Work-Related Injuries and Illnesses) recordable events (excluding personally identifiable information and protected health information of personnel).
- (c)* Civilian total case incidence rate and days away, restricted, or transfer rate in accordance with Occupational Safety and Health Administration (OSHA) incidence rate formulas.
  - (d)* Current FY DA Civilian worker's compensation costs.
  - (e)* Percent mandated installation safety services completed.
- (f)* Review of the installation hazard abatement tracking log completion status for all facility-related hazards associated with risk assessment code (RAC) 1, 2, or 3.

- (g) Percent Commander's Annual Safety Plan completed.
- (h) Percent workplace inspections completed.
- (i) Percent accidents investigated.
- (j) Percent employees trained.

d. The SOH proponent for the chair of the SOHAC will assure the preparation, publication, and maintenance of the minutes and that minutes will be—

- (1) Prepared and signed by the council chair within 60 days following each council meeting.
- (2) Made available to the participants of the council and all stakeholders in the commander's safety program.
- (3) Retained for a minimum of 5 years from the date of the council meeting.

## **1–18. Employee Safety Committee**

Commanders/directors of battalions, companies, and separate detachments will establish an Employee Safety Committee in accordance with 29 CFR 1960 Subpart F.

- a. The committee will be representative of the workforce within the organization. The number of committee members will be based on the size, safety needs, and diversity of the operations performed by the organization.
- b. Committee members will receive appropriate training to perform duties and may be assigned responsibilities for operational safety matters. The safety committee members will—
  - (1) Review safety suggestions.
  - (2) Review mishap reports and recommend corrective measures to prevent recurrence.
  - (3) Review suspected unsafe or unhealthful working conditions and corrective measures.
  - (4) Promote safety education within the organization.
  - (5) Conduct periodic self-assessments in their areas of responsibility and coordinate with the organization's safety office.

## **Chapter 2** **Responsibilities**

### **2–1. Secretary of the Army**

The SECARMY will—

- a. Establish programs that implement the requirements and procedures of the DoD SOH Program as delineated in DODI 6055.01.
- b. Appoint a DASHO to carry out responsibilities as defined in 29 CFR 1960 and EO 12196.
- c. Serve as the DoD Executive Agent Responsible Official (EARO) for emergency response to transportation mishaps involving DoD military munitions (also referred to as AE) in accordance with DoDD 6055.09E.
- d. Serve as EARO for the DoD Biological Select Agents and Toxins (BSAT) Biosafety Program as designated in DODI 5210.88, with responsibility for the technical review, inspection, and harmonization of biosafety protocols and procedures across DoD laboratories that handle BSAT and tasking authority of all DoD components for this purpose.

### **2–2. Assistant Secretary of the Army (Acquisition, Logistics and Technology)**

- a. The ASA (ALT) will—
  - (1) Ensure program executive officers (PEOs) and program managers (PMs) implement system safety programs throughout the acquisition lifecycle in accordance with the most current version of MIL-STD-882E and mandatory procedures in DA Pam 385–16.
  - (2) Ensure that PEOs, PMs, product managers, and project managers serve as safety officers with responsibility for the proper planning and execution of system safety requirements in this regulation, DoDI 5000.02, DoDI 5000.81, DoDI 5000.82, DoDI 5000.83, DoDI 5000.85, DoDI 5000.88, DoDI 5000.89, and DoDI 5000.90.
  - (3) Ensure contracts associated with DoD military munitions (also referred to as AE) contain the explosives safety clauses required by FAR 48.223.370, to include clearly defined roles and responsibilities required by the contractor in the statement of work.
  - (4) Require contracting officer representatives (CORs) to complete training for explosives safety in contract operations.
  - (5) Require prime contractors of government-owned, contractor-operated (GOCO) operations to comply with contractual oversight requirements of the Armament Retooling and Manufacturing Support (ARMS) Program and other tenants to include the development and maintenance of explosives safety site plans (ESSPs).
- b. The ASA (ALT) will, through the Joint Program Executive Office Armaments and Ammunition—

(1) Evaluate nonstandard ammunition requested for use from ACOMs, ASCCs, DRUs, and ARNG based on existing information from other Services, the North Atlantic Treaty Organization (NATO), federal or state agencies, or upon the results of independent testing.

(2) Ensure health hazard assessments (HHAs), surface danger zones, and system safety risk assessments (SSRAs) are obtained prior to authorizing nonstandard AE for Army use.

c. The ASA (ALT) will, through the Program Executive Office, Assembled Chemical Weapons Alternatives, under the U.S. Army Acquisition Support Center, conduct preoperational surveys and operational readiness reviews prior to the test and operation.

### **2-3. Assistant Secretary of the Army (Financial Management and Comptroller)**

The ASA (FM&C) will ensure planning, programming, budgeting, and execution of sufficient resources to staff and effectively implement the ASOHP as required by Section 7902, Title 5, United States Code (5 USC 7902) and 29 USC Chapter 15.

### **2-4. Assistant Secretary of the Army (Installations, Energy and Environment)**

a. The ASA (IE&E) will—

(1) Serve as the Army's DASHO in accordance with Section 6, Part 1960, Title 29, Code of Federal Regulations (29 CFR 1960.6) and Department of the Army General Orders 2020-01, and represent the SECARMY in the management and administration of the ASOHP.

(2) Develop and oversee ASOHP policies and provide strategic planning, direction, and advocacy for ASOHP by setting strategic goals, objectives, and metrics.

(3) Ensure that safety and health officials are designated at each appropriate level with sufficient authority and funds in accordance with DoDI 6055.01.

(4) Provide oversight of Armywide SOH.

(5) Through the Deputy Assistant Secretary of the Army (Environment, Safety, and Occupational Health), serve as the functional advisor (FA) for SOH management of installation career field.

(6) Provide oversight of the environmental, safety, and OH aspects of the Chemical Demilitarization Program, treaty compliance review, and chemical stockpile emergency preparedness.

(7) Develop policies and procedures for nonacquisition guidance of the Chemical Demilitarization Program.

(8) Provide policy, direction, and oversight to ensure the planning, construction, operation and maintenance, and renovation of facilities using the FASS engineering and management program to optimize safety and health throughout the lifecycle. The DCS, G-9 in coordination with the Commanding General (CG), USACE executes this function.

(9) Synchronize SOH direction and initiatives across the Army and with the Secretary of Defense.

(10) Act on the SECARMY's behalf as EARO with the responsibilities, functions, and authorities specified in DoDD 6055.09E for emergency response to transportation mishaps involving DoD military munitions. Coordinate, after an initial emergency response, required responses to transportation incidents or mishaps involving DoD military munitions (for example, mechanical breakdowns that may require reloading, transloading, securing, or storing the DoD military munitions).

(11) Appoint, in consultation with the DASAF and the CG, AMC, an Executive Director of Explosives Safety (EDES). Assist the EDES with Army Explosives Safety Management Program (ESMP) responsibilities per this regulation.

(12) As appropriate, approve all requests to deviate from DoD and Army explosives safety standards for construction of new potential explosive site or exposed site (ES) when such construction is properly supported by a Secretarial Certification (SecCert).

(13) In accordance with DoDI 6055.01, report, by an annual in-progress review, the status of the ASOHP to the Assistant Secretary of Defense for Energy, Installations, and Environment.

(14) In accordance with DoDI 6055.01, provide copies of comments on proposed SOH legislation and regulations to the Assistant Secretary of Defense for Energy, Installations, and Environment.

(15) In accordance with DoDI 6055.01, report to the Deputy Under Secretary of Defense (DUSD) (Environmental Security) any situation resulting from compliance with procedures in this regulation that could impair the defense mission or adversely affect national security.

(16) In accordance with 29 CFR 1960, compile and provide to the U.S. Department of Labor (DOL) the annual SOH report from the DASHO.

(17) Exercise program oversight as the DoD lead agent for Low-Level Radioactive Waste Program per DoDI 4715.27.

*b.* The ASA(IE&E) is the proponent for all Army safety publications and is authorized to approve exceptions and waivers to all Army safety publications that are consistent with controlling law and regulations.

*c.* The ASA(IE&E), through the DASAF, will—

(1) Monitor performance of the ASOHP and provide oversight to ensure ACOMs, ASCCs, DRUs, and ARNG compliance with law, policy, and guidance. Disseminate policy, guidance, and procedures for the ASOHP.

(2) Provide accurate, timely advice and support to the SECARMY, Assistant Secretaries of the Army, CSA, VCSA, Director of Army Staff, Army Staff (ARSTAF), and commanders of ACOMs, ASCCs, DRUs, and subordinate commands.

(3) Effectively represent the Army on SOH matters by coordinating, integrating, and synchronizing with the Army, Secretariat, Joint Staff, DoD, and other federal agencies.

(4) Serve as the Executive Secretary for the SO&EH SEC and SO&EH Board, and designated working groups as applicable.

(5) Implement policies and procedures in accordance with applicable federal and DoD standards.

(6) Provide direction and tasking to the Director, U.S. Army Technical Center for Explosives Safety (USATCES) on explosives and chemical agent safety matters.

(7) Serve as proponent for specialized safety training courses for the Army.

(8) Ensure implementation of procedures for mishap investigation, reporting, and recording Armywide.

(9) Develop, establish, and update the Army Safety Manning Model and participate in TDA reviews in support of determining appropriate funding for an effective ASOHP.

(10) Conduct preoperational surveys of selected chemical agent and biological operations and all biosafety levels (BSLs), animal biosafety levels (ABSLs), and arthropod containment level (ACL)-3 and BSL-4 facilities.

(11) Monitor compliance of the Nuclear Regulatory Commission (NRC) licenses and Army radiation authorizations (ARAs).

(12) Coordinate and synchronize BSAT and IAT biosafety policy, standards, and program management with MEDCOM.

(13) Coordinate with The Surgeon General (TSG) on OH issues.

(14) Serve as HQDA focal point for integration and coordination of explosives safety activities and approve actions that establish an Army explosives safety position.

(15) Develop Army safety publications to include regulations and pamphlets.

*d.* The ASA(IE&E), through the CG, U.S. Army Combat Readiness Center (USACRC) will—

(1) Conduct centralized investigations of selected Army mishaps and hazardous conditions and present the results to Army leadership.

(2) Advocate for cultural changes and assist in the integration of RM Armywide to include support in developing policy and doctrine.

(3) Maintain the Army Safety Management Information System (ASMIS).

(4) Interact with other military Services; federal, state, and local agencies; and industry to identify and publish best practices and loss prevention strategies.

(5) Research and analyze Army loss data, areas of concern, causal factors, and system defects to identify and recommend countermeasures.

(6) Manage an Armywide multimedia loss prevention communications program.

(7) Assist the FA, Army SOH management installation career field, in administering the program and providing centralized training of DA safety interns.

(8) Administer a program to provide SOH training and education that meets the Army's needs.

(9) Assist commanders of ACOMs, ASCCs, and DRUs and the CNGB in maintaining their SOH programs.

(10) Track DA and DoD-level recommendations from mishap investigations.

(11) Obtain support from a system safety engineer for mishap investigation when a mishap occurs involving an Army system or facility (to include causal analysis) and development of corrective actions.

(12) Conduct an independent safety assessment (ISA) of Army system safety risks when a system safety issue is identified by an Army stakeholder that affects any Army acquisition program, subject to approval by the DASAF. When requested for an Army System Acquisition Review Council (ASARC) or other milestone decision, provide the ISA directly to the milestone decision authority (MDA).

(13) Manage and resource required Army Traffic Safety Training Program (ATSTP) elements at designated locations in accordance with ATSTP contract requirements.

*e.* The ASA(IE&E), through the DASAF, ensures that the Director, USATCES, will execute technical aspects of the Army ESMP for the DASAF, including:

- (1) Assign hazard classification or interim hazard classification to DoD military munitions and ensure proper coordination with the Office of the Secretary of Defense and the other military Services.
- (2) Provide final Army review and approval of Department of Defense Explosives Safety Board (DDESB) required explosives safety submission (RESS) and construction plans being submitted for approval on behalf of the Office of the Director of Army Safety (ODASAF) to the DDESB.
- (3) In coordination with the ODASAF, continually assess and identify explosives and chemical agent safety training requirements for the Army and for other Services according to the Single Manager for Conventional Ammunition (SMCA)'s charter.
- (4) Provide explosives and chemical agent safety training to support Army safety installations FC requirements (with the exception of the Chemical Demilitarization Program) through the U.S. Army Defense Ammunition Center.
- (5) Provide technical assistance and centralized management of deviations from DoD and Army explosives safety criteria and DA Form 7632 (known as DARADs).
- (6) Provide technical support to the ARSTAF for budgetary planning on matters affecting explosives safety.
- (7) Provide explosives safety and chemical agent safety technical information and assistance to HQDA components, ACOMs, ASCCs, DRUs, field operating agencies, and installations in support of Armywide operations.
- (8) Establish and maintain an explosives safety technical database and a comprehensive explosives safety technical library.
- (9) Maintain and execute the U.S. Army Explosives Safety Test Management Program to validate, establish, or modify explosives safety requirements promoting research, development, promulgation, and application of explosives safety technology.
- (10) Provide explosives and chemical agent mishap investigation assistance, analyze explosives and chemical agent mishap data, and track remedial actions to develop and recommend corrective measures to the ODASAF.
- (11) Track and follow up inspection results; provide consolidated trend data to ODASAF to develop recommended improvements, prioritization, and program policy changes.
- (12) Review, approve, and support RESS for munitions responses.
- (13) Perform initial and periodic validation of explosives manufacturing and load, assembly, and pack processes. Provide copies of validations to ODASAF.
- (14) Maintain the database to catalog all explosives or chemical agent deviations with duration greater than 60 days. Periodically review database to ensure that deviations are reviewed at the local level (to ensure that risk assessments are current and that all exposures, risks, and mitigating actions have been identified) and validate the need for continuance.
- (15) Assist ODASAF with the maintenance of Army explosives safety policy and doctrine to ensure that the Army is executing a comprehensive and effective Army ESMP.
- (16) Disseminate procedures for transportation (unitization, out loading, ship loading, and containerization) and storage of class V items and guided missile ground support equipment in support of DoD, Army, and SMCA requirements.
- (17) Provide engineering and support services for ammunition logistics to DoD, Army, and SMCA in the areas of transportability and pallet testing, container certification, and instrumentation support.
- (18) Periodically, at intervals not to exceed 5 years, review SecCert and HQDA-approved DARADs to ensure they are still needed; risk assessments are current; and exposures, risks, and mitigating actions are identified and sufficient. Provide an endorsement for Secretariat for continuation of a SecCert or the DARADs and required changes mitigating measures.
- (19) Assist the EDES with Army ESMP responsibilities per this regulation.
- (20) Provide technical support to the Munitions and Explosives Safety Management Council and the Department of the Army Chemical Agent Safety Council (DACASC).
- (21) Conduct explosives safety assistance visits (ESAVs) of ammunition activities as requested by ACOMs, ASCCs, DRUs, and ARNG. Reports will be provided directly to the commander involved and will contain observations or processes to enhance safety.
- (22) Participate in preoperational surveys for chemical warfare material response activities (and similar activities that involve the recovery and assessment of munitions and certain materials of interest or the destruction of recovered chemical warfare material (RCWM)) as technical advisor to and representative of the ODASAF.

## **2-5. Assistant Secretary of the Army (Manpower and Reserve Affairs)**

The ASA (M&RA) will—

- a. Provide policy oversight for and supervise the implementation of the medical aspects of safety policy; the Army OH Program; medical support for chemical, biological, or radiological activities; and the Army HHA Program.

*b.* Provide oversight of the Workers' Compensation Program for the DA Civilian workforce. Ensure senior leaders are held accountable in managing programmatic aspects of the Federal Employee Compensation Act to include cost and claim reductions.

## **2-6. Administrative Assistant to the Secretary of the Army**

The AASA will—

*a.* According to DODI 6055.01, coordinate with Washington Headquarters Services for any Army-provided SOH services within the Pentagon Reservation and other Washington Headquarters Services-managed facilities in the National Capital Region.

*b.* Ensure implementation of SOH requirements and procedures for HQDA/Operating Agency–22 organizations in the National Capital Region.

## **2-7. The Inspector General**

TIG will—

*a.* Evaluate the safety programs of Army organizations with nuclear surety, chemical surety, non-traditional agents (NTAs), BSAT, and selected IAT missions according to this regulation and requests from ODASAF.

*b.* Conduct other special inspections involving Army safety when directed to do so in compliance with AR 20–1.

*c.* Evaluate medical support functions related to the nuclear surety, chemical surety, NTA, BSAT, and IAT programs according to this regulation, AR 40–5, DA Pam 40–8, DA Pam 40–11, DA Pam 40–173, and MEDCOM policy and standards published by OTSG.

## **2-8. Chief, Public Affairs**

The CPA will advise and counsel Army leadership on response to media concerning mishaps and incidents.

## **2-9. Deputy Chief of Staff, G-1**

The DCS, G-1 will ensure that system safety is integrated into materiel development and acquisition phases through the Human Systems Integration (HSI) Program; include safety concerns and issues on Army materiel in HSI assessments and presentations at the ASARC.

## **2-10. Deputy Chief of Staff, G-3/5/7**

The DCS, G-3/5/7 will—

*a.* Develop and implement policy and procedures governing the selection, training, testing, and licensing of Army motor vehicle operators.

*b.* Through the Commander, Army Service Watch Cell—

(1) Serve as DoD's coordination center for emergency response to transportation mishaps in the continental United States (CONUS) involving DoD military munitions in compliance with DoDD 6055.09E.

(2) Determine the DoD military installation nearest to the mishap that is capable of providing the needed support; task the installation to provide the assistance and/or support needed, and notify the appropriate military department to contact the installation.

(3) Task the U.S. Army Forces Command (FORSCOM), Operations Center, to arrange for explosive service or support from the nearest explosive ordnance disposal (EOD) unit regardless of the Service affiliation.

(4) Notify Military Surface Deployment and Distribution Command (SDDC) and U.S. Department of Transportation (DOT) of all transportation mishaps involving AE and/or radiation.

(5) Forward reports of BSAT and other biosafety mishaps or incidents to the ODASAF.

(6) Forward reports of radiation mishaps or incidents to the ODASAF.

(7) Task the Army Operations Center to notify DCS, G-3/5/7; ODASAF; Office of the Provost Marshal General (PMG); and other ARSTAF elements, as appropriate, of biological, chemical agent, and radiation serious incident reports (SIRs).

*c.* Act as the Army Chief of Safety and representative to the DoD Joint Safety Council.

## **2-11. Deputy Chief of Staff, G-4**

The DCS, G-4 will—

*a.* Implement policy for safety in demilitarization of DoD military munitions (AE).

*b.* Manage the Hazardous Materials Information Resource System (HMIRS).

*c.* Integrate explosives safety requirements into AE storage construction programs.

*d.* Advise on the development of policy and guidance to inventory radioactive materials (RAMs), radiation generating devices (RGDs), lasers systems, nonlaser high intensity optical sources (HIOS), and electromagnetic field (EMF) emitters.

*e.* Recommend policy, guidance, and oversight management of foreign and nonstandard munitions.

*f.* Assist the EDES with Army ESMP.

## **2-12. Deputy Chief of Staff, G-9**

The DCS, G-9 will—

*a.* Provide oversight of radioactive contamination surveys conducted in support of base closure or installation restoration activities. Coordinate surveys with NRC license holders and ARA holders.

*b.* Compile liability estimates for NRC license and ARA holders for inclusion on the Army Financial Statement.

*c.* Ensure the planning, construction, operation and maintenance, and renovation of facilities utilizing FASS engineering and management to optimize safety and health throughout the lifecycle in coordination with the CG, USACE.

*d.* Develop and provide programming guidance to commanders of ACOMs, ASCCs, DRUs, and installations and the CNGB to support implementation of the provisions of this regulation appropriate to the installation program evaluation group.

*e.* Advise on the development of policy and procedures to integrate childcare and youth safety concepts in all Army childcare and youth facilities and Family childcare (FCC) homes.

*f.* As the functional chief for the installation career field, ensure a viable installations FC and coordinate installation FC actions with the Deputy Assistant Secretary of the Army (Environment, Safety, and Occupational Health), who serves as the installations FC FA.

## **2-13. The Surgeon General**

TSG will—

*a.* Coordinate with the ASA(IE&E) and ODASAF on OH issues, including annual management reviews, SOH data collection and analysis, Federal Employees' Compensation Act and Longshore and Harbor Workers' Compensation Act injury, illness, claims, and cost data to inform program and policy guidance.

*b.* Execute TSG's responsibilities in support of identifying, assessing, and recording current and emerging health threats, developing and communicating public health solutions, and monitoring readiness, quality, and effectiveness of the Army's Public Health Enterprise as specified in AR 40-5.

*c.* Provide guidance on health and safety procedures and protocols for human-use testing.

*d.* Provide advice and guidance for HHAs, safety and occupational hazard assessments (SOHAs), and medical surveillance during research, development, testing, and fielding of systems and equipment.

*e.* Ensure that OH procedures and controls are implemented during the development and fielding of medical materiel and systems.

*f.* Provide advice and guidance for selecting protective clothing and equipment (PCE) for use in chemical operations.

*g.* Provide medical guidance for selecting appropriate protective equipment for use in the biological program.

*h.* Provide advice and guidance for selecting PCE for use in radiological operations.

*i.* Review radiation dose limits in excess of limits promulgated in this regulation and provide these increased limits to the Army Radiation Safety Officer (RSO) for promulgation, as necessary. Medical personnel will only review doses received by personnel after special planned exposures, in excess of investigational levels, or at the request of the RSO.

*j.* Establish and promulgate Army radiological health protection information for deployment operations.

*k.* Provide medical support for the Army's activities in Joint chemical surety, biological safeguards, and nuclear surety programs as well as for the Army's Chemical Agent Safety Program and the Army's Biological Safety Program.

*l.* Act on behalf of SECARMY for all DOD BSAT Biosafety Program EARO responsibilities, functions, and authorities and implement the DoD BSAT Biosafety Program as set forth in Army Directive 2016-24.

*m.* Notify Director of Security, Under Secretary of Defense for Intelligence as soon as possible, and in no case later than 24 hours, after notification of a biological warfare materiel (BWM) or biological agent contaminated materiel (BACM) response, characterization, and remediation mishap or incident.

## **2-14. The Provost Marshal General**

The PMG will support DASAF in synchronizing BSAT biosafety and biosecurity requirements.

## **2-15. Commanding General, U.S. Army Forces Command**

The CG, FORSCOM will—

- a.* Provide EOD assets to installations and combatant commanders, as required (in other words, unexploded ordnance (UXO)).
- b.* Provide EOD escort of off-post chemical surety material and RCWM, as requested or required.
- c.* Ensure SOH is a component of training to provide trained and ready forces.
- d.* Ensure compliance to NRC licenses and ARAs.

## **2-16. Commanding General, U.S. Army Training and Doctrine Command**

The CG, TRADOC will—

- a.* Integrate safety, RM, and lessons learned into branch-specific doctrine, training, leadership development, organizational design, and materiel requirements.
- b.* Incorporate system safety performance objectives into capability and concept formulation packages.
- c.* Act as RM proponent for the Army.
- d.* Integrate hazard information and hazard controls associated with occupational specialty and special skill identifiers into corresponding training and doctrine.
- e.* Ensure compliance to NRC licenses and ARAs.
- f.* Provide radiation safety training to RSOs and operators/users with training commensurate with the radiation safety program (RSP) for which they are responsible in accordance with chapters 16 and 17.
- g.* Ensure training is available and meets DTR 4500.9-R—Part II for persons involved in the shipping of class 7 materials to include certified shippers.

## **2-17. Commanding General, U.S. Army Materiel Command**

- a.* The CG, AMC will—
  - (1) Provide subject matter expertise in system safety and software safety programs to minimize hazards for materiel and systems acquired for the Army and other military Services.
  - (2) Recommend to the ODASAF whether specific chemical agents or weapons are safe for storage and what safety controls are required.
  - (3) Develop and transmit safety messages for commodities according to AR 750-6 and a vehicle safety recall campaign.
  - (4) Develop and maintain explosives safety standards for AMC industrial operations and the ammunition production base and AMC research and development activities.
  - (5) Provide safety review for ammunition-peculiar equipment to the materiel developer (MATDEV) for proper action.
  - (6) Report and investigate malfunctions involving AE (see AR 75-1).
  - (7) Ensure that proper testing is done on AE according to 49 CFR 173 and TB 700-2.
  - (8) Provide assistance in the establishment and maintenance of the chemical agent surety programs and ensure that safety training programs to support them are consistent with this regulation and AR 50-6.
  - (9) Exercise control and compliance of NRC licenses and ARAs for RAM, Army radioactive commodities, and RGDs within AMC's purview.
  - (10) Provide ionizing radiation dosimetry services at the U.S. Army Dosimetry Center (ADC) that meet the requirements of 10 CFR 20.1501 and paragraph 16-10 of this regulation and maintain the Army's Central Dosimetry Records Repository (CDRR).
  - (11) Provide the Army radiation test, measurement, and diagnostic equipment program material, accredited radiation instrument calibration and repair, and laboratory radiological sample analysis services according to AR 750-43.
  - (12) Provide Army low-level radioactive waste disposal services according to paragraph 16-27.
  - (13) Maintain the capability to provide onsite radiation consultation and support during the retrograde of radiologically contaminated equipment according to AR 700-48.
  - (14) Ensure that foreign military sales of RAM and items that contain RAM, RGD, and military-exempt lasers comply with applicable U.S. regulations and DoD directives.
  - (15) Establish an Ignition System Safety Board to ensure that rocket motor ignition systems provide an optimum degree of safety.
  - (16) Establish an Army Weapon System Safety Review Board to ensure that Army weapon systems are safe and suitable during their full lifecycle.
  - (17) Ensure AE contracts have appropriate explosives safety clauses as required by 48 CFR 223.370.
  - (18) Ensure contracts have appropriate clauses as required by chapter 26.

- (19) Require CORs to complete training for AE safety in contract operations.
- (20) Require prime contractors of GOCO operations to comply with contractual oversight requirements of ARMS and other tenants to include the development and maintenance of ESSPs.
- (21) Establish and maintain procedures for safety of flight restrictions for Army aircraft and safety of use restrictions for other Army materiel.
- (22) Ensure laser weapon systems meet laser safety program requirements.
- (23) Ensure proper disposition and accountability of radiation sources/commodities.
- (24) Ensure commodities used as monuments and displays are free of radiation emitting sources/items or have been assessed to ensure licensing and radiation safety is effective as applicable in accordance with NRC license RSOs for radioactive commodities.
- (25) Ensure, when appropriate, life cycle management commands (LCMCs) will use the Army Equipment Safety and Maintenance Notification System (AESMNS) and safety of flight message system in accordance with AR 750-6 to communicate corrective actions on fielded systems to users.

*b.* The CG, AMC, through the CG, U.S. Army Installation Management Command (IMCOM) will—

- (1) Establish, resource, and support the IMCOM Safety Program to ensure compliance with federal, DoD, Army, senior commander, and IMCOM requirements.
- (2) Establish safety oversight and inspection programs to ensure IMCOM subordinate organizations develop, implement, resource, and manage safety programs in compliance with applicable federal, DoD, Army, and IMCOM requirements.
- (3) Ensure U.S. Army garrison (USAG) commanders:
  - (a) Execute, resource, and direct the USAG's safety program focusing on USAG assets and workplaces, among other functions.
  - (b) Collaborate, cooperate, and coordinate with other federal, DoD, Army, and local safety personnel in support of the USAG commander's safety program's requirements.
  - (c) Establish and maintain an installation-specific Recognize, Retreat, Report (3Rs) Program (see <https://www.asaie.army.mil/public/esoh/army3rs.html>) to advise Soldiers and their Families who live or work on an installation, personnel who work on the installation, visitors, and members of surrounding communities of the dangers associated with munitions and the actions to take in the event they encounter or suspect they have encountered a munition.
  - (d) Prohibit magnet fishing on Army installations.
- c.* The CG, AMC, through the Director, U.S. Army Chemical Materials Activity (CMA) will—
  - (1) Support the ASA (IE&E), whom the SECARMY has delegated as EARO for the RCWM Program by:
    - (a) Maintaining the capability to provide the RCWM Program support functions.
    - (b) Coordinating matters related to CMA's support of the RCWM Program, including the expenditure of Chemical Agents and Munitions Destruction Defense funds, with the Office of the ASA (IE&E).
  - (2) Support preoperational surveys and operational readiness reviews—
    - (a) Prior to the test and operation of new facilities or equipment in support of major changes.
    - (b) When changing demilitarization campaigns (for example, reconfiguring equipment and facilities to process different munitions or agent).
  - (c) Prior to the conduct of RCWM destruction operations and other RCWM support functions when directed by the EARO for the RCWM Program.
- d.* The CG, AMC, through the EDES will—
  - (1) Plan, program, budget, and execute the funding of resources necessary to accomplish the USATCES mission and to assist the DASAF with the Army ESMP.
  - (2) Be the Army's representative for operationalizing the Army's ESMP tenets into every facet of DoD military munitions' lifecycle and munitions-related operations, to include acquisition, testing, manufacture, transport, storage, training, use, and demilitarization.
  - (3) Provide a direct line of communication for the Army's senior leadership to address explosives safety-related concerns with AMC, as the materiel provider for the Army.
  - (4) Support senior commanders in successfully meeting their ESMP responsibilities, including supporting USATCES direct support to ACOMs and the conduct of studies and research, development, test, and evaluation (RDT&E) requirements needed to improve the Army's ESMP.
  - (5) Assist the Army in mitigating explosives safety risks that necessitate the use of risk acceptance.
  - (6) Identify, in consideration of input from the Army's senior leadership, policy issues, studies, and RDT&E requirements needed to improve the Army's ESMP.

## **2-18. Commanding General, U.S. Army Futures Command**

- a.* The CG, AFC will—
  - (1) Collect, analyze, and disseminate chemical agent safety information to HQDA components and activities with a chemical agent mission.
  - (2) Jointly develop with MEDCOM biological safety contract clauses, including clauses for mishap and incident investigation and reporting. Commanders of AFC, AMC, and MEDCOM will ensure that such clauses are promulgated according to FAR Subpart 1.3 and FAR Subpart 1.4; DFARS 201.3 and DFARS 201.4; and AFARS 5101.3 and AFARS 5101.4. Forward contract clauses to ODASAF where they are maintained.
  - (3) Exercise control and compliance of the ionizing and nonionizing RSPs (including NRC licenses, ARA for RAM, Army radioactive commodities, lasers, HIOS, and RGD) within AFC's purview.
  - (4) Establish a Fuze Safety Board to ensure that fuzing systems provide an optimum degree of safety. The board will serve as the technical advisor for fuze safety of Army non-nuclear munitions, issue or withdraw interim and/or final safety certifications, review SSRAs and documentation to determine the level of risk during the fuze lifecycle, and establish and review design safety criteria and safety requirements for all Army non-nuclear fuzes and safety and arming devices. The Board will also lead and facilitate Joint Service safety reviews of Army fuzing systems proposed for Joint Service applications.
- b.* The CG, AFC, through the Combat Capabilities Development Command, ensures that the Director, Chemical Biological Center (CBC) will—
  - (1) Establish and manage a quality assurance program for chemical agent storage and use at CBC laboratories and sites except those of CMA.
  - (2) Provide quality systems certification for organizations, except those of CMA and the Program Executive Office, Assembled Chemical Weapons Alternative, which conduct agent-monitoring activities for personnel and environmental protection.

## **2-19. Commander, U.S. Army Special Operations Command**

The CG, USASOC will—

- a.* Develop and approve doctrine, tactics, techniques, and procedures that support special operations and Army special operations aviation safety to be employed during special operations unique training and operations in lieu of Army safety and range standards.
- b.* Coordinate high and serious risk material issues identified in equipment to be deployed to Army special operations forces (ARSOF).
- c.* Investigate or provide technical assistance to other commands, as required, to investigate mishaps involving ARSOF tactics, techniques, and procedures.
- d.* Provide guidance, in accordance with U.S. Special Operations Command (USSOCOM) and USASOC standards, for unconventional warfare training to support special operations unique training and operational requirements.
- e.* Ensure compliance to NRC licenses and ARAs.

## **2-20. Commanding General, Military Surface Deployment and Distribution Command**

The CG, SDDC will—

- a.* Implement DoD and DA intermodal transportation safety policies.
- b.* Review, develop, and implement DA commercial stevedore contracts to ensure they comply with safety and health statutory and regulatory guidance, including this regulation.
- c.* Implement policy for DoD Service component and U.S. Transportation Command approval for safety in operations requiring DoD compliance with DOT hazardous materials (HAZMAT) regulations.
- d.* Implement policy for exemption requests by DoD Service components for HAZMAT shipments by DoD shippers that require DOT and/or international regulatory exemptions.
- e.* Provide traffic engineering support to Army activities.
- f.* Develop safety policy for maritime operations requiring compliance with the International Maritime Dangerous Goods (IMDG) Code when loading vessels at SDDC terminals.
- g.* Obtain waivers (when appropriate) from DOT to waive full compliance with DOT HAZMAT regulations.
- h.* Provide input to the DOT's Emergency Response Guidebook (available for download at <https://www.phmsa.dot.gov/hazmat/erg/emergency-response-guidebook-erg>).
- i.* Establish commercial carrier and driver qualifications and supplementary training requirements, in cooperation with DOT, for transporting DoD military munitions and explosives.
- j.* Coordinate with the Association of State Police, Highway Patrol, Commercial Vehicle Safety Alliance, or similar organizations, to ensure mishap prevention and emergency response cooperation.

*k.* Oversee DA transportation services required for safe movement of conventional AE.

## **2-21. Commanding General, U.S. Army Test and Evaluation Command**

*a.* The CG, ATEC will—

(1) Review safety documentation and issue safety releases prior to any hands-on testing, training, demonstration, experimentation, use, or maintenance by Soldiers on new/nonfielded equipment or type-classified items that are to be used in a new or innovative manner. Review/issue safety confirmations in support of major milestone and materiel release decisions.

(2) Ensure system evaluation plans, test support orders, and test design plans for developmental tests and operational tests require the collection and recording of data from which an independent evaluation of hazards can be made and results are documented in test reports, safety confirmation, and system evaluation reports.

(3) Verify the effectiveness of safety requirements, design changes, or procedural controls incorporated to reduce the risk associated with previously identified hazards.

(4) Require prime contractors of GOCO operations to comply with contractual oversight requirements of ARMS and other tenants to include the development and maintenance of ESSPs.

(5) Serve as supporting agency to the coordinating agency (OSHA) under the National Response Framework, Worker Safety and Health Support Annex.

(6) Provide safety confirmation by the U.S. Army Evaluation Center (AEC) directly to the MDA for all milestone decision reviews (MDRs) and in-process reviews.

(7) Provide a safety release by AEC prior to any hands-on testing, training, demonstration, experimentation, use, or maintenance by Soldiers on new/nonfielded equipment or type-classified items that are to be used in a new or innovative manner.

*b.* The CG, ATEC, through the Deputy Under Secretary of the Army (Test and Evaluation (T&E)), will—

(1) Ensure that Army policy on weapon system T&E in support of acquisition adheres to environmental regulations, policy, range safety, and OH standards and promotes sustainable ranges in coordination with ASA (ALT).

(2) Advise on the development of policies addressing test range clearance and managing range residue.

(3) Provide the PM, product manager, or project manager with a notification of the RAC assigned to test incident reports and identified potential health and safety hazards in the test report.

## **2-22. Commanding General, U.S. Army Corps of Engineers**

The CG, USACE will—

*a.* Ensure that Army standard designs and USACE-administered facility/utility designs and construction conform to statutory and regulatory fire, safety, occupant health, and explosives standards and otherwise provide a safe and healthful workplace for personnel and materiel.

*b.* Promulgate the safety standards to be used in Army construction and USACE civil works facilities and activities (see EM 385-1-1).

*c.* Serve as the Army executing agency for chemical agent cleanup operations at formerly used defense sites and provide assistance to Regular Army installations conducting chemical agent cleanup operations.

*d.* Advise and assist the DCS, G-3/5/7 in determining range, training land, and support facility requirements during development of new weapon systems.

*e.* Assist Army activities in the planning and execution of UXO clearance and response operations.

*f.* Provide FASS policy, direction, and oversight to Army elements according to paragraph 2-13 and chapter 19 of this regulation, and with mandatory procedures in DA Pam 385-16.

*g.* Serve as supporting agency to the coordinating agency (OSHA) under the National Response Framework, Worker Safety and Health Support Annex.

*h.* Serve as the proponent for FAR 52.236-13 and its Alternate 1 for use in DoD construction, renovation, and demolition contracts.

*i.* Provide safety at civil works facilities being used for recreation and/or the visiting public.

## **2-23. Commanding General, U.S. Army Medical Command**

The CG, MEDCOM will—

*a.* Provide safety and health oversight of medical RDT&E activities in support of the Regular Army and Joint chemical defense programs sponsored by MEDCOM. Provide safety and health oversight of contract personnel performing medical RDT&E activities as specified in specific contract provisions.

*b.* Implement medical policies and provide health-related chemical agent training to patient care providers and industrial hygienists.

- c. Develop MEDCOM policies in support of the Regular Army and Joint chemical, biological, radiological, and nuclear (CBRN) defense activities.
- d. Archive Army NRC licenses, ARAs, and Army facility decommissioning documents in a central repository.
- e. Ensure the development of doctrine, implementation plans, procedures, capabilities, and training relative to occupational and environmental health (OEH) surveillance to address exposures to Soldiers and DA Civilian employees throughout their time in service.
- f. Jointly develop with AMC biological safety contract clauses, including clauses for mishap and incident investigation and reporting. Commanders of AFC, AMC, and MEDCOM will ensure that such clauses are promulgated according to FAR Subpart 1.3 and FAR Subpart 1.4; DFARS 201.3 and DFARS 201.4; and AFARS 5101.3 and AFARS 5101.4. Forward contract clauses to ODASAF where they are maintained.
- g. Coordinate and synchronize BSAT and IAT biosafety policy, standards, and program management with the DASAF.
- h. Assist HQDA components in monitoring IAT safety activities throughout the Army to identify concerns, trends, and required corrective actions.
- i. Provide or designate physicians, industrial hygienists, and other public health personnel to support chemical and biological inspection and preoperational survey teams.
- j. Provide HHA and SOHAs for the HSI program in accordance with AR 40-10.
- k. Exercise control and compliance of NRC licenses and ARAs for RAM, Army radioactive commodities, and RGDs within MEDCOM's purview.
- l. When requested, provide RSP assessment services to support triennial surveys of military medical treatment facility (MTF), NRC license, or ARA holder for compliance with applicable radiation safety and health regulations and guidance.
- m. Provide, on a cost-reimbursable basis, RSP assessment services to support triennial surveys of each command, installation, and/or garrison; NRC license; Army reactor permit; or ARA holder for compliance with applicable radiation safety and health regulations and guidance.
- n. Support foreign and other health inquiries for radiological, chemical, and biological concerns.

## **2-24. Chief, National Guard Bureau and other commanders**

The CNGB and commanders of ACOMs, ASCCs, DRUs, and field operating agencies will—

- a. Designate a qualified safety professional as the command safety director and the primary point of contact (POC) for every aspect of the command's safety program.
- b. Ensure program, planning, budget, and execution of ASOHMS functions are integrated in all operations to effectively implement the ASOHP to fulfill the requirements of the programs listed in table 1-1.
- c. Integrate OSHA and national consensus standards into military policy, standards, tasks, techniques, and procedures, as appropriate.
- d. Prohibit visitors from operating any military system, vessel, aircraft, or vehicle that causes or perceives to cause an increase in risk.
- e. Ensure SOH personnel and USO are appointed or designated by commanders at the appropriate level in accordance with this regulation and associated DA pamphlets.
- f. Through the program, planning, budget, and execution process, resource ACOMs, ASCCs, DRUs, ARNG, and subordinate organization's SOH professionals in accordance with statutory requirements and this regulation.
- g. Ensure subordinate organizations use systems according to safety and health guidance published in technical, field, and training manuals; Ground Safety Notification System; safety of flight messages; bulletins; circulars; and Army and federal regulations.
- h. Approve the use of nonstandard ammunition within their commands.
- i. Ensure subordinate organizations develop, coordinate, and exercise aviation and ground emergency plans in accordance with 29 CFR 1910.38.
- j. Establish policy to ensure commanders at battalion level or equivalent enroll in and complete the Army Readiness Assessment Program (ARAP) within 90 days of assumption of command, review the results, and conduct a follow-up assessment within 12 to 18 months (mid-tour).
- k. Provide written guidance and ensure personnel are trained in applicable SOH functional areas listed in table 1-1.
- l. Ensure personnel have adequate personal protective equipment (PPE) for their operations.
- m. Ensure compliance with conditions of NRC licenses and ARAs, including AMC-held radioactive commodity licenses (see para 16-2b).

- n.* Establish and employ, as applicable, procedures to ensure that captured, purchased, borrowed, or otherwise obtained foreign equipment and materiel are surveyed for RAM and that appropriate actions are taken following discovery of any RAM in those items.
- o.* Ensure that Servicemembers are monitored for potential radiation exposure when operational exposure guidance is in effect. See DA Pam 385-10 for mandatory procedures for monitoring.
- p.* Ensure an ergonomics program is established as a shared responsibility in the SOH program in accordance with 29 CFR 1960, DoDI 6055.01, AR 40-5, and DA Pam 40-21.
- q.* Ensure ARNG SOHACs are established (see para 1-17).
- r.* Ensure ARNG SOH directors serve on the SOH board and recommend matters for improving ASOHP to the SOH Synchronization Oversight Council (see para 1-16).
- s.* Ensure ARNG SOH personnel develop ASOHP metrics that include both quantitative and qualitative measures (see para 4-4).
- t.* Ensure ARNG SOH personnel develop a tracking system to record ASOHP deficiencies reported or identified, analyze all hazards to determine the degree of risk using Army-approved risk assessment techniques, and assign a priority for correcting hazards (see para 4-5).
- u.* Ensure that ARNG USOs complete the USO course and RM training within 90 days of appointment (see para 5-5).
- v.* Ensure that the first O-7 in an ARNG passenger's chain of command serves as the approval authority for airland seats out operations in Army aircraft (see para 12-6).
- w.* Ensure ARNG commands and agencies conducting biological activities include an IAT SOH section in their written SOH program prescribing responsibilities and procedures for implementing the biological safety program prescribed in this regulation (see para 20-3).

## **2-25. Commanders of Army service component commands outside the United States**

Commanders of ASCCs outside the United States will—

- a.* Conduct mission/command analysis to determine the applicability of HN SOH standards to Army operations in regulations and policies.
- b.* Establish the theater-unique policy and procedures for SOH requirements to address theater-unique hazards and to ensure compliance with applicable status of forces agreements (SOFAs), supplements, and undersigned protocols thereto. Provide theater-unique training and medical requirements to deploying forces prior to entry into theater.
- c.* Advocate establishment of SOH requirements in SOFAs that are common for U.S. and HN personnel.
- d.* Comply with applicable standards to operations and missions unless compliance is unfeasible or would violate applicable SOFAs, supplements, and undersigned protocols thereto.
- e.* Ensure risk assessments are conducted and, as appropriate, accept risks identified as high or serious for materiel to be directly or urgently fielded to Army units within their commands.
- f.* Fulfill the requirements as applicable for installations not managed by IMCOM.

## **2-26. Senior commanders of Army installations**

Senior commanders of Army installations will—

- a.* Be responsible for the safety of people who live or work on installations, visitors to the installation, and the public that may be impacted by installation-related activities, critical assets, and the environment. (Delegate responsibilities to regionally aligned subordinate general officer(s) as required at ASCC locations outside CONUS.)
- b.* Appoint an installation safety director (ISD) responsible to direct, synchronize, and deliver the installation SOH program.
- c.* Establish and maintain an ESMP and ensure the ESMP prohibits magnet fishing on the installation.
- d.* Synchronize and integrate Army safety priorities and initiatives at Army installations.
- e.* Provide oversight for integrating safety in installation support activities.
- f.* Direct the installation safety program in accordance with AR 600-20.
- g.* Establish formal agreements, as needed, between host and tenant organizations to ensure installation SOH responsibilities are addressed.
- h.* Establish and chair the installation SOH Council.
- i.* Resolve installation safety issues, to include infrastructure or support with IMCOM, and as needed, the associated ACOMs, ASCCs, DRUs, and the National Guard Bureau (NGB).
- j.* Appoint an installation RSO in writing. See requirements in paragraph 16-3*j*.
- k.* Utilize the installation SOHAC to support and provide oversight to the installation radiation program as needed.
- l.* Establish an installation Explosives Safety Council as needed.

*m.* Approve the installation SOH Plan annually.

## **2-27. Commanders with a Department of Defense military munitions mission**

*a.* Brigade level commanders and above will establish an ESMP that is based on and consistent with the senior commander's ESMP and complies with this regulation and mandatory procedures for ammunitions and explosives safety in DA Pam 385-64.

*b.* Battalion level commanders and below will establish standard operating procedures (SOPs) to implement applicable portions of the senior commander and their chain of command's ESMP.

*c.* All commanders will—

(1) Provide explosives safety training that is consistent with mandatory procedures in DA Pam 385-64. At a minimum, such training will include RM training for personnel responsible for the development and review of deviations from applicable explosives safety criteria and preparation of required risk assessment documents, including measures to mitigate the risk associated with the deviation.

(2) Advise Soldiers of the 3Rs Explosives Safety Program (see <https://www.asiae.army.mil/public/esoh/army3rs.html>), the dangers associated with UXO and taking munitions as souvenirs, and the command's amnesty program.

(3) Conduct annual reviews of deviations to applicable explosives safety criteria in compliance with mandatory procedures in DA Pam 385-64. The review should ensure each deviation is still required, the risk assessment is accurate, risk mitigation measures are effective, and the appropriate level of leadership has accepted the risk.

(4) Submit, upon approval, a copy of each deviation and the associated risk acceptance documentation and, upon completion, a copy of the annual review of deviations to USATCES for centralized management and oversight.

## **2-28. Commanders of deploying units**

Commanders of deploying units will—

*a.* Comply with the ASCC's safety requirements when deployed into its area of responsibility.

*b.* Ensure that subordinate commanders, managers, and supervisors are informed regarding their ASCC's SOH requirements and applicable HN safety requirements.

*c.* Ensure deploying personnel are informed of the 3Rs Explosives Safety Program (see <https://www.asiae.army.mil/public/esoh/army3rs.html>), the dangers associated with UXO and taking munitions as souvenirs, and the command's amnesty program.

## **2-29. Installation safety directors**

The ISD will—

*a.* Be assigned to either the senior commander's safety office or the garrison safety office.

*b.* Serve as principal advisor to the commander in SOH-related matters of mission execution pertaining to AR 385-10 and SOH regulatory and statutory requirements.

*c.* Will be rated by the garrison commander, if assigned to the garrison safety office, with the senior commander as higher level reviewer (DoD Performance Management and Appraisal Program (DPMAP)).

*d.* Develop the installation SOH Plan annually.

(1) The installation SOH Plan will be staffed with the garrison commander and approved by the senior commander annually (see para 2-26*m*).

(2) The installation SOH Plan will include all applicable Army SOH functional areas (see table 1-1), listed in order of priority, with associated risk level if not resourced properly.

*e.* Develop written local policy and procedures for installation SOH programs, as required.

*f.* Evaluate and monitor installation SOH programs for effective implementation.

*g.* Communicate best practices and share lessons learned.

*h.* Ensure SOH training program is implemented.

*i.* Train and advise personnel on the integration of RM processes within their missions.

*j.* Assist leaders in implementation of installation SOH programs.

*k.* Coordinate/integrate with OH, industrial hygiene, and F&ES programs.

*l.* Suspend, limit, or terminate operations where the potential for damage, exposure, and loss (to include stolen property) to radioactive sources can occur.

## **2-30. Commanders of tenant/subordinate units on an installation**

All commanders of tenant/subordinate units on an installation will—

*a.* Apply senior commander safety priorities and initiatives (as applicable) at Army installations.

- b. Participate in installation SOHACs.
  - c. Provide documentation support (such as radiation commodity inventory, mishap data, workplace safety inspections, hazard log data, and so forth) to the installation safety office (ISO) as required.

## 2–31. Unit safety officer

USO responsibilities, which are prescribed by the parent unit, include:

- a. Conduct surveys and hazard analyses.
- b. Participate in unit level mission planning, preparation, execution, and recovery to ensure that hazard identification, risk assessment, and integration of controls are addressed by the commander and other mission planners (for example, platoon leader, operations officer, supply officer) prior to and during unit operations.
  - c. Observe unit operations to detect and correct unsafe practices.
  - d. Advise the commander on a regular basis on the following:
    - (1) The status and adequacy of the unit safety program.
    - (2) The status of the hazards control log.
    - (3) Safety matters which degrade or inhibit mission accomplishment.
  - e. Recommend to the commander effective courses of action to address matters which degrade or inhibit mission accomplishment.
  - f. Monitor the following:
    - (1) Personnel attached or assigned to ensure they are trained in RM and other safety-related subjects.
    - (2) Unit mishaps to ensure they are reported, investigated, and conduct root cause analysis in accordance with this regulation and coordinated with the parent unit safety office.
    - (3) Tests of the unit's pre-mishap plan, conducting after action reviews (AARs) and recommending improvements to the plan as necessary.
  - g. Review investigation reports for accuracy, completeness, and timeliness.
  - h. Assist in developing and reviewing unit SOPs to ensure safety and RM are integrated and controls are established for identified hazards.
    - i. Acquire and maintain required references to perform assigned duties (Army, command headquarters, and local policy and procedures).
    - j. Provide safety oversight to unit operations involving the transport or storing of arms, ammunition, explosives, petroleum products, RAMs, and other HAZMAT.
    - k. Manage unit safety awards program in accordance with local guidance.
    - l. Participate in AARs to ensure that lessons learned are captured and disseminated for use in planning and executing the next iteration of the same mission or similar missions.
    - m. Assist the commander in promoting privately-owned vehicle (POV) safety.

## 2-32. Materiel developers, acquisition managers, and equipment, process, and facility designers

MATDEVs, acquisition managers, and equipment, process, and facility designers will—

- a. Initiate and tailor a System Safety Program according to this regulation, mandatory procedures in DA Pam 385-16, and MIL-STD-882E for Army materiel, systems, software, equipment, facilities, and processes.
- b. Establish requirements, budget, fund, and provide adequate resources to implement and maintain an effective system safety effort covering development, production, fielding, deployment, demilitarization, and disposal for their programs, projects, equipment, processes, and developmental areas.
- c. Obtain the appropriate safety documentation from the item manager, equipment developer, or vendor when purchasing and developing equipment or facilities for the Army (see mandatory procedures in DA Pam 385-16).
- d. Obtain a safety release from ATEC/AEC prior to any hands-on testing, training, demonstration, experimentation, use, or maintenance by Soldiers on new/nonfielded equipment or type-classified items that are to be used in a new or innovative manner. See other mandatory procedures in DA Pam 385-16.
- e. Certify safety hazards are eliminated, controlled to the lowest risk level, or the resulting residual risk is formally accepted. This applies to materiel, systems, equipment, facilities, and processes developed, acquired, fielded, disposed of, tested, and provided to the Army and other military Services.
- f. Upon identification or report of a significant hazard in fielded systems, materiel, developed equipment, and facilities, immediately initiate notification (safety message), risk assessment, funding, and corrective action.
- g. Identify any RAM or RGDs and ensure NRC license or ARA and, as applicable, the Sealed Source and Device Registry is obtained. Ensure a cost versus benefit analysis is performed for RAMs and radioactive items. Ensure items identified as radioactive are assigned separate national stock numbers from the nonradioactive version. Ensure cradle to grave life-cycle program for radioactive and radiation-producing commodities. Address training, fielding, and

accountability in the life-cycle management and obtain available safety devices and nonradioactive training devices, if applicable.

*h. Implement the HHA.*

### **2-33. Contracting officers and contracting officer representatives**

Contracting officers and CORs will—

- a. Ensure contracts have proper clauses to meet Army, DoD, and applicable federal, state, and local SOH regulations.*
- b. Prepare written procedures for reviewing contractor capability to comply with and administer the SOH aspects of the contract requirements.*
- c. Ensure that periodic inspections are conducted by a qualified safety professional at contractor work sites to ensure compliance with contractual SOH requirements.*
- d. On a cost-reimbursable basis, characterize BWM and BACM.*
- e. Ensure that Army IAT safety clauses are made contractually binding on all contractors required to possess or use Army or DoD-provided IAT, with the exception of clinical diagnostic, epidemiologic, and surveillance specimens.*
- f. Ensure that contract facilities handling Army or DoD-supplied IAT are pre-inspected using the mandatory checklist in DA Pam 385-69, and annually inspected for compliance with IAT safety clauses and mandatory procedures in DA Pam 385-69.*
- g. As a contracting officer function, designate a COR to monitor all contracts when contractors are required to possess or use Army or DoD-provided IAT, with the exception of clinical diagnostic, epidemiologic, and surveillance specimens.*
- h. Ensure AE contracts have appropriate explosives safety clauses as required by 48 CFR 223.370.*
- i. Ensure AE contracts have required property clauses and clearly define roles and responsibilities required by the contractor in the statement of work.*
- j. Require CORs to complete training for AE safety in contract operations.*
- k. Ensure contracting officers provide the contractor with a military laser exemption memorandum if required.*
- l. Ensure that the current United Facilities Guide Specifications for Safety and Health in effect on the date of solicitation is used in contract work administered on behalf of the Army under the provisions of FAR Clause 52.236-13 and other contracts as deemed appropriate based on the risk assessment and ensure that mishap prevention plans required by USACE EM 385-1-1 are reviewed by a qualified safety professional to determine if the plan meets criteria specified by EM 385-1-1.*

## **Chapter 3**

### **Mishap Investigation, Reporting, and Recordkeeping**

#### **Section I**

##### **Defining an Army Mishap**

###### **3-1. Introduction**

This chapter provides policy and assignment of responsibilities for the initial notification, investigation, reporting, and recordkeeping of Army mishaps. This chapter implements the provisions of DoDI 6055.07 and 29 CFR 1904.39.

###### **3-2. Authority**

Army mishaps will be investigated in accordance with this regulation and mandatory procedures in DA Pam 385-40 and DA Pam 385-64. USACRC will maintain a team of professional mishap investigators ready to deploy and investigate any mishap. The DASAF retains unilateral authority to investigate any mishap based on current and relevant information and the needs of the U.S. Army.

###### **3-3. Army mishaps**

An Army mishap is an unplanned event, or a series of related events, resulting in one or more of the following:

- a. Injury to or occupational illness incurred by Army military personnel.*
- b. On-duty injury or occupational illness, or medically diagnosed work-related aggravation or complication of pre-existing injuries to military and civilian personnel involving:*
  - (1) Injury to members of the visiting public authorized to be on Army facilities, installations, or properties for recreational or other sanctioned events.*

- (2) Fratricide/friendly fire mishaps.
- (3) Damage to Army property or equipment.

*Note.* Include the National Fire Investigation Reporting System records as independent fire investigation report enclosures to class A and B Army mishap reports.

- (4) Damage to public or private property and/or injury or occupational illness caused to non-Army personnel resulting from Army operations (the U.S. Army may have had a causal role in the mishap).

### **3-4. Mishap reporting requirements**

Mishap reporting guidance is provided in DA Pam 385-40.

- a. Report mishaps involving injuries occurring both on and off duty.
- b. Report military personnel who are missing and/or presumed dead as the result of a mishap until determined otherwise.
- c. Initially deem and investigate as mishaps those Soldier deaths or medical events occurring during or in association with physical training or endurance-related training.
- d. Report cases of medical diagnosis of work-related aggravation or complication of pre-existing injuries.
- e. Report damage to government-owned/furnished material, property, or equipment under a DoD contract (GOCO).
- f. Report all fire losses for equipment and real, to include wildlands due to wildland fires.

### **3-5. Events not considered Army mishaps**

The following events do not require reporting through safety channels:

- a. Intentional injuries.
  - (1) Attempted or consummated suicide, murder, or intentionally self-inflicted injuries.
  - (2) Injuries resulting from altercations, attacks, or assaults, unless the injuries of this type were incurred in the performance of official duties.
  - b. Death due to natural causes unrelated to the work environment.
  - c. Death or injury attributable solely to the use of illegal drugs or abuse of other substances; for example, alcohol.
  - d. Adverse reactions resulting directly from the use of drugs, under the direction of a competent medical authority.
  - e. Deliberate injury to Army personnel or damage to Army equipment, including vehicles and aircraft.
  - f. Property damage resulting from vandalism, riots, civil disorders, or criminal acts such as arson, or damage that occurs to Army equipment after having been stolen or misappropriated.
  - g. Injury or fatality while escaping from or eluding military or civilian custody or arrest.
  - h. Inpatient hospitalization for treatment beyond the day of admission solely for administrative reasons, such as hospitalization for observation, counseling, diagnostics testing, or administrative reasons not related to the immediate injury or occupational illness.
    - i. Minimum stress and strain (simple, natural, nonviolent body positions or actions, as in dressing, sleeping, coughing, or sneezing, not directly associated with the work environment or allergens therein).
    - j. Injuries associated with non-occupational diseases when the disease, not the injury, is the proximate cause of the lost time (for example, loss of vision as a resulting complication of diabetes).
    - k. Injuries sustained prior to entry into military service or employment by the U.S. Government, unless specifically aggravated by the current tenure of service.
    - l. Pre-existing injuries and musculoskeletal disorders, unless aggravated or accelerated by conditions of federal employment.
    - m. Illness caused by specific organisms and toxins (such as food borne disease) unless the disease is directly related to or the result of the worker's conditions of employment.
    - n. Foreign object damage (FOD) to aircraft, air-breathing missiles, or drone engines. Only damage discovered during scheduled engine disassembly applies.
      - o. Normal, anticipated, residual damage resulting from a missile launch.
      - p. Normal, anticipated, residual damage resulting from unmanned aircraft system (UAS) launch and recovery (for example Raven designed to break apart upon landing).
      - q. Damage or injury as a direct result of action by an enemy force.
        - (1) Damage, loss, or injury directly caused by enemy action or sabotage.
        - (2) Damage, loss, or injury due to evasive action taken to avoid enemy fire.
        - (3) Loss of equipment in combat or failure of an individual to return from a combat mission when the last known position was in or over enemy territory.

*r.* Intentional, controlled, in-flight jettison or release of canopies, cargo, doors, drag chutes, hoist cables, jungle penetrators, hatches, life rafts, auxiliary fuel tanks, missiles, drones, rockets, non-nuclear munitions, and externally carried equipment that is not essential to flight, unless there is injury and/or reportable damage to the aircraft or other property. (Jettisoning of missiles, drones, or non-nuclear munitions is not a reportable mishap, unless it occurred as the result of a malfunction.)

*s.* Mishaps involving civil aircraft owned by civil operators while accomplishing contract air missions for the U.S. Army.

*t.* Mishaps that occur during the transportation of Army materiel by commercial carriers.

*u.* Army equipment that is leased, on bailment, or loaned to contractors, commercial airlines, or other government agencies or foreign governments when the lessee has assumed risk of damage or loss.

*v.* Planned, intended, or expected damage to Army equipment or property is not considered a mishap during authorized testing or intentional destruction. “Planned and intended” signifies the damage was specifically required and expected to accomplish the objectives of a formally authorized test or was the desired outcome of an authorized destruction or disposal of property, including damage to test fixtures designed to provide protection.

*w.* Mishaps involving the destruction of, or serious damage to, nuclear weapons, nuclear weapons systems, or nuclear weapons components resulting in an actual or potential threat to national security or life and property.

*x.* Malfunctions or failure of parts that are normally subject to fair wear and tear and have a fixed useful life less than the complete vehicle, aircraft, weapon system, or major unit of equipment. Unless the malfunction or failure causes subsequent damage to other respective components, single component failures are not considered mishaps.

*y.* Mishaps resulting in damage to factory-new equipment prior to government-acceptance of the risk of damage or loss, as contractually stipulated.

## **Section II**

### **Categorizing and Classifying Army Mishaps**

#### **3–6. Command responsibility for Army mishaps**

*a. Initial notification.* The commander who first becomes aware of a mishap involving Army personnel or property, or injury to non-Army personnel or damage to non-Army property/equipment as the result of Army operations, is responsible for notification through Army channels per section III of this chapter.

*b. Investigation and reporting.*

(1) The commander responsible for investigating an Army class A or B mishap will direct and convene a safety board. Paragraph 3–11 establishes the process for identifying the board convening authority, to include exceptions for Joint command involvement.

(2) Command responsibility for directing a mishap investigation and subsequent reporting is generally at the level of the administrative convening authority—

(a) Having operational control or risk-approval authority over the personnel, property/equipment, or mission associated with the mishap, or;

(b) To whom the personnel or equipment are assigned, or;

(c) Under whose responsibility the installation/facility falls.

*c. Exceptions to command responsibility roles and accountability.*

(1) Attribute personnel who are involved in mishaps while on temporary duty (TDY), pass, or military leave to the activity or ACOM, ASCC, or DRU to which they are assigned, or the CNGB, in accordance with the Standard Installation/Division Personnel System (SIDPERS), or military personnel office unit strength report. DA Civilian personnel will be attributed to the command identified by current SF 50 (Notification of Personnel Action).

(2) Army, other Service component, and foreign military personnel who are involved in a mishap while TDY at an Army school will be attributable to the school’s Army-level headquarters, if school curriculum meets or exceeds 30 calendar days.

#### **3–7. Categories of Army mishaps**

Army mishaps fall into one of the following categories; specific case-by-case exceptions are included.

*a. Ground mishap.* Army ground mishaps encompass all mishaps involving ground-based operations, equipment, or activities, including but not limited to, motor vehicle, Army rail and rail equipment, airborne, biological, weapons/explosives (including radiation and chemical agents), radiation, and fire.

*b. Aviation mishap.* This category encompasses all mishaps directly involving aircraft, UAS, aerostat systems, or other vehicles or systems designed to operate aloft.

(1) *Flight mishap*. A mishap where there is intent for flight as defined by AR 95-1 and damage to DoD aircraft. Explosives, chemical agent, or missile events that cause damage to an aircraft with intent for flight are categorized as flight mishaps to avoid dual reporting. (Mishaps involving factory-new production aircraft until successful completion of the post-production flight are reported as contractor mishaps.)

(2) *Flight-related mishap*. A mishap where there is intent for flight and no reportable damage to the aircraft itself, but the mishap involves fatality, reportable injury, or reportable property damage. A missile that is launched from an aircraft, departs without damaging the aircraft, and is subsequently involved in a mishap is reportable as a guided missile mishap.

*Note*. Flight-related mishaps will not be calculated as flight mishap rates.

(3) *Aviation-ground mishap*. A mishap where there is no intent for flight that results in damage to an aircraft or death or injury involving an aircraft. This applies to aircraft both on land and onboard ship. Damage to an aircraft when it is being handled as a commodity or cargo is not reportable as an aircraft mishap.

(4) *Space mishap*. Damage to any unique space system or support equipment during the pre-launch, launch, or orbit phase, or to ground-based space systems.

c. *Maritime (afloat) mishap*. Mishap resulting from or during the operation of an Army vessel, including Army diving or swimmer operations.

### **3-8. Explosives related mishaps**

a. Commanders will report mishaps involving DoD military munitions, foreign munitions, commercial (nonstandard) munitions, as well as mishaps involving the use of homemade and similar explosives used in training and RDT&E (collectively referred to in this sections as munitions).

b. An explosive safety mishap report will be submitted:

(1) For the unintentional or inadvertent functioning of a munition to include the following:

(a) Production, renovation, demilitarization, storage, handling, or transport of munitions on a military installation, a government-owned government-operated facility, or a GOCO facility.

(b) Range clearance activities, munitions responses, and related activities.

(c) RDT&E activities and tests.

(d) EOD operations, including support of an explosives or munitions emergency.

(e) Training with munitions.

(f) Explosives activities on Civil Works projects (regardless of location).

(2) When munitions cause injuries, death, or unintended property damage during testing, onand off-range.

(3) For a premature initiation or detonation of a munition or the inadvertent actuation, jettisoning, release, or launching of munitions during training or normal operations.

c. Commanders will provide notification of explosive safety mishaps, conduct an investigation of the mishap, and submit a mishap report in accordance with requirements of chapter 3.

(1) CG, USACRC will establish a Safety Investigation Board (SIB) limited-use mishap investigation board for selected class A and class B explosives mishaps.

(2) Senior commanders will form an installation mishap investigation board for class A and B explosive mishaps that USACRC does not investigate.

(3) Director, USATCES will provide explosives safety subject matter experts (SMEs) for every class A and class B mishap investigation.

### **3-9. Mishap classification**

Use mishap classes to determine the appropriate safety investigation and reporting requirements. Mishap classes are listed in paragraphs 3-9a through 3-9f.

a. *Class A mishap*. An Army mishap in which—

(1) An injury and/or occupational illness results in a fatality or permanent total disability (as defined in the glossary); or

(2) A manned Army aircraft is either destroyed, missing, or abandoned, or

(3) The resulting total cost of property damage to Government and other property is \$2.5 million or more.

b. *Class B mishap*. An Army mishap in which—

(1) An injury and/or occupational illness results in permanent partial disability (as defined in the glossary); or

(2) Three or more personnel are hospitalized as inpatients as the result of a single occurrence; or

(3) The resulting total cost of property damage to Government and other property is \$600,000 or more but less than \$2.5 million.

*c. Class C mishap.* An Army mishap in which—

(1) A nonfatal injury or occupational illness results in 1 or more days away from work or training beyond the day or shift on which it occurred; or

(2) Temporary disability ensues at any time thereafter, resulting in days away from work and does not meet the definition of class A or B; or

(3) The resulting total cost of property damage to Government and other property is \$60,000 or more but less than \$600,000.

*d. Class D mishap.* An Army mishap in which—

(1) A nonfatal injury or illness which results in days of restricted work, or transfer to another job, or medical treatment greater than first aid; or

(2) Medical/clinical duties result in needle stick injuries or cuts from medical instruments contaminated by blood or other potentially infectious material; or

(3) Medical removal is required under medical surveillance requirements of an OSHA standard; or

(4) Occupational hearing loss exceeds the threshold shift established by 29 CFR 1910.95 and DoDI 6055.12; or

(5) Tuberculosis is contracted associated with work; or

(6) The resulting total cost of property damage is \$25,000 or more but less than \$60,000.

*e. Class E mishap.* An Army mishap in which total cost of property damage is \$5,000 or more, but less than \$25,000.

*f. Class F aviation incident.* An aviation incident confined to aircraft turbine engine and drone engine damage due to unavoidable internal or external foreign object (does not include installed aircraft auxiliary power units).

*g. Class G mishap.* Biological mishaps are classified as an Army class G biological mishaps, see paragraph 20–12.

*h. Class H mishap.* Chemical mishaps are classified as an Army class H chemical mishap, see paragraph 21–5.

*i. Reporting.* Report events meeting the definition of an Army mishap using established mishap reporting methods, see figure 3–1.

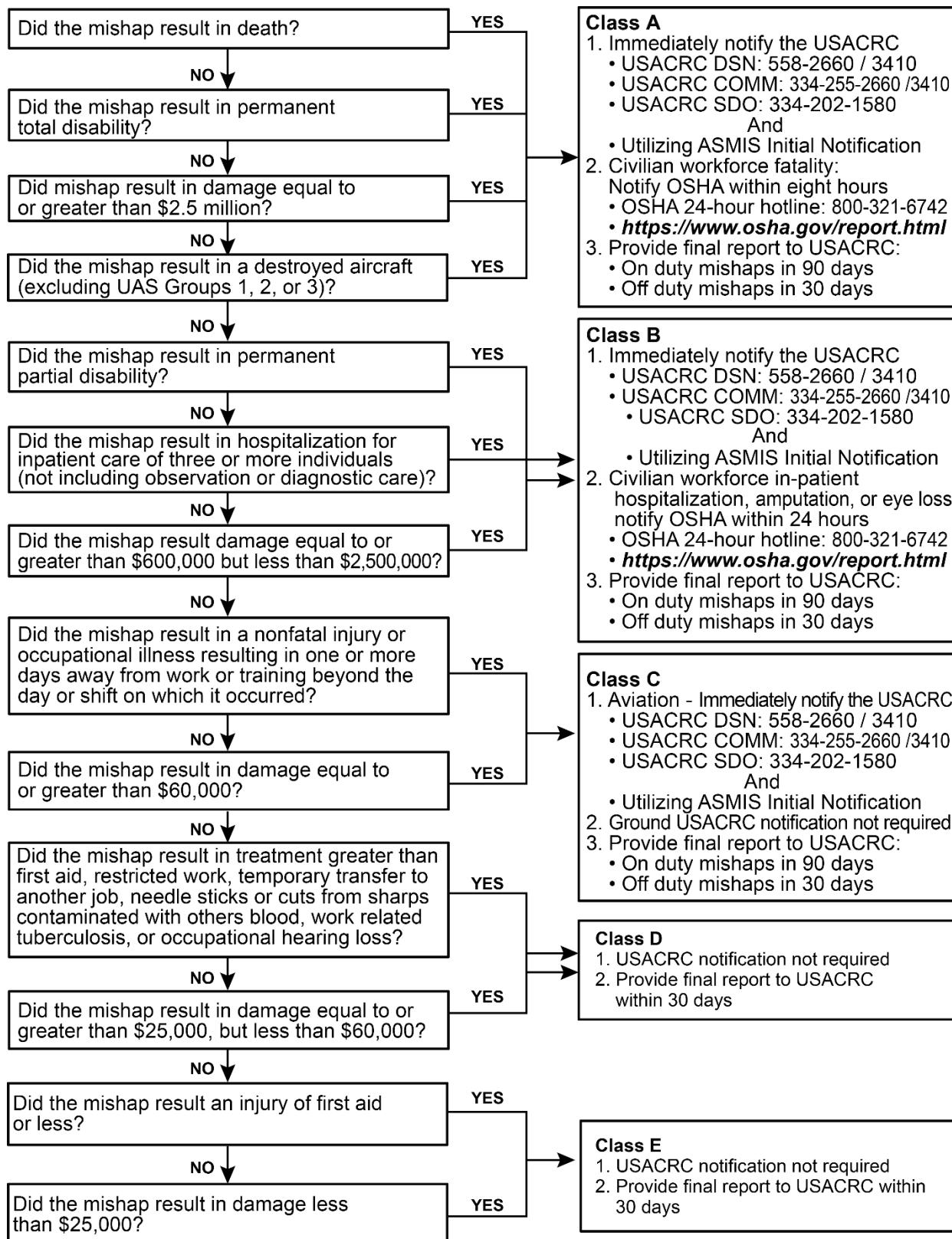


Figure 3-1. Mishap classification

### 3-10. Calculating damage costs for initial classification

a. When initially classifying a mishap, use the estimated cost of damage (ECOD) of all equipment damaged as the result of the mishap. Authorized maintenance personnel prepare the ECOD and estimated man-hour costs for repair in accordance with AR 750-1, DA Pam 750-8, DA Pam 738-751, and TB 43-0002-3. See figure 3-2.

b. The actual cost of damage (ACOD) overrides the ECOD and requires an amendment or change report if resulting in a reclassification.

c. If the ECOD exceeds the maximum expenditure limit of the equipment, use the equipment replacement cost found in the Maintenance Master Data File (MMDF), Federal Logistics, or the commercial off-the-shelf (COTS) cost.

d. The logistical disposition of damaged property/equipment (either repaired or replaced) will not negate the requirement to report the mishap.

e. Include the cost of cleaning up the mishap site and recovery of mishap related items.

f. Do not use the estimated scrap or residual value of destroyed equipment to reduce mishap classification.

g. Do not include the cost of damage to equipment or property that is not a direct result of the mishap, including pre-existing damage found during post-mishap analysis or damage occurring during equipment recovery.

h. Costs peculiar to aviation mishaps include:

(1) *Destroyed, missing, or abandoned aircraft.* Compute the cost of destroyed, missing, or abandoned Army aircraft per aircraft replacement cost figures obtained from MMDF. Update the cost of aircraft repair in the mishap report if the depot's ECOD is significantly different (10 percent or nonrepairable) from the initial or reported ECOD. Include the cost of all previous modifications.

(2) *Cost computation of manned aircraft turbine engines.* Compute the cost of damage at 17 percent of the replacement cost of an engine when it requires depot-level repair as the result of a mishap.

(3) *Cost computation of helicopter main or tail rotor blades and fixed-wing propeller blades.* Compute costs based on the following criteria:

(a) Calculate destroyed blades at the full unit cost per MMDF.

(b) Blades repaired locally will reflect the ACOD, if known, or the ECOD if ACOD is unknown before the submission of the report. Do not submit ECOD/ACOD early to reduce blade cost.

(c) Calculate repairable blades at 44 percent of the MMDF cost if the repair requires shipment to a depot or other contract rebuild facility. For example, if returning a repairable blade to depot for repair and the MMDF cost of the blade were \$100,000, the cost of the blade for classification and reporting purposes would be \$44,000. Do not include the cost of the entire blade when the only damage is to tip caps even if an external facility conducts the tip cap replacement.

(4) *Aircraft structural damage.* Cite the actual cost of structural damage when available. When actual cost cannot be determined, and structural damage is repairable, use the following calculations:

(a) For minor structural damage not requiring realignment (jigging), use 3 percent of the MMDF aircraft replacement cost.

(b) For major structural damage (for example, extensive damage to fuselage or damage requiring structural realignment), use 6 percent of the MMDF aircraft replacement cost.

(c) For structural damage deemed unrepairable, use the actual cost of the fuselage when available or 40 percent of the MMDF aircraft replacement cost.

(d) In addition to the percentile calculations, include the costs associated with inspections conducted to determine the extent of structural damage, including man-hour costs and transportation costs associated with shipment to the repair facility.

(5) *Cost computation of other major components.* Compute the repair cost of a major component at 15 percent of the MMDF cost when damaged to the extent that it must be returned to depot for overhaul or inspection. Verify whether a component is deemed major, authorized for depot-level repair in the appropriate maintenance technical manual that lists the component's source, maintenance, and recoverability (SMR) code. If the 4th position (maintenance code) of the SMR code features either the letter D (requiring depot-level repair) or L (requiring a special repair facility), calculate the cost of the component at 15 percent of the MMDF cost for the ECOD.

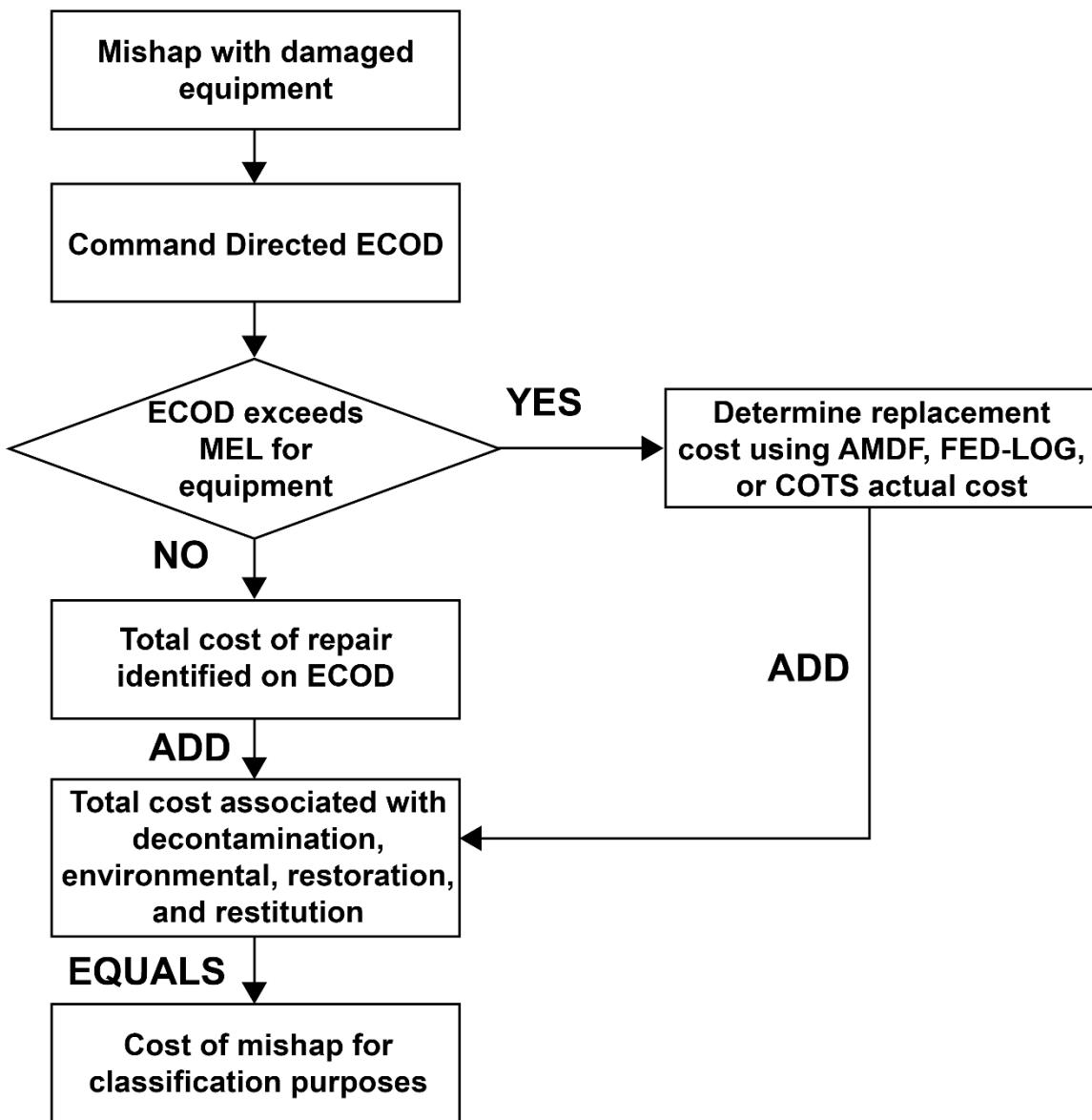


Figure 3–2. Mishap damage cost

### Section III

#### Notification of Army Mishaps

##### 3–11. Initial notification

This section describes initial notification requirements for Army mishaps through command channels to USACRC. Additionally, this section prescribes federal and other Army notification requirements for Army mishaps or prescribed incidents. Army personnel involved in or aware of an Army mishap will immediately notify the commander or supervisor directly responsible for the operation, materiel, or persons involved. Standard initial notification requirements apply to all operating environments. See DA Pam 385–40 for further instructions on coordinating with other investigations.

a. *Initial notification for class A/B and aviation class C mishaps.* The Army commander or supervisor who first becomes aware will make command level notification to the first general court-martial convening authority (GCMCA) for confirmation and subsequent notification to USACRC, providing initial classification assessment of the mishap.

b. *U.S. Army Combat Readiness Center notification.* Initial telephonic notification is required for all or potential class A, B, and aviation C mishaps as follows: commercial (334) 255–2660/3410, Defense Switched Network (DSN) (312) 558–2660/3410, or alternate commercial (334) 202–1580. Notification applies to all operating environments. Identify substantiating information telephonically; for example, date time group, unit, location, personnel/equipment involved, and available or potentially substantiating details for a class A, B, or aviation C mishap.

c. *Joint Service mishap notification.* In the event of an Army mishap which is associated with the operations of another Service component, the Army commander who first becomes aware will make notification through the chain of command to USACRC for Army-level coordination with the respective service safety agencies.

d. *Civil aircraft involvement.* When any Army aircraft mishap (regardless of classification) involves a civil aircraft or function of the Federal Aviation Administration (FAA), notify USACRC per paragraph 3–11b.

e. *U.S. Department of Labor mishap notification requirements to the Occupational Safety and Health Administration.*

(1) In accordance with 29 CFR 1904.39, the U.S. Army will notify OSHA of injury mishaps involving DA Civilian personnel, nonappropriated fund personnel, or other civilian employees of the U.S. Army, to include foreign national personnel.

(2) Command safety offices having reporting authority will make the following notifications to OSHA (in addition to notifying USACRC):

(a) Civilian employee work-related fatalities within 8 hours of occurrence.

(b) Civilian employee work-related in-patient hospitalization and amputations and loss of an eye within 24 hours of occurrence.

(3) Notification options are as follows:

(a) Contact the DOL/OSHA area office nearest to the site of the incident.

(b) Dial the OSHA toll free central telephone number 1–800–321–OSHA (1–800–321–6742).

(c) Submit notification electronically on OSHA public website at <https://www.osha.gov/>.

(4) Confirm OSHA reporting compliance within mandated timelines when making telephonic notification to USACRC. Provide the following additional information to ensure DA-level tracking:

(a) Name/DoD identification number.

(b) Job series and title.

(c) Age.

### 3–12. Additional notification requirements

See table 3–1 for other notification and reporting requirements involving mishaps not covered in this chapter.

**Table 3–1**  
**Unique mishap notifications**

Mishap category	Sources of additional requirements	
	This regulation	External notification requirements
Explosives mishap	Chapter 22	DA Pam 385–64
Explosive malfunctions		AR 75–1
Ionizing radiation	Chapter 16	DoDI 6055.08
Nonionizing radiation	Chapter 17	DoDI 6055.11, DoDI 6055.15
Army rail mishap	Chapter 14	AR 56–3
Nuclear weapon and reactor mishap	Chapter 16	AR 50–5, AR 50–7
Biological defense mishap	Chapter 20	DA Pam 385–69
Chemical agent mishap	Chapter 21	DA Pam 385–61
Maritime (watercraft)	Chapter 15	AR 56–9
Maritime (diving)	Chapter 15	OPNAVINST 3150.27C, OPNAVINST 5102.1D, AR 611–75
Catastrophic or fatal army civilian mishap		29 CFR 1904.39; DoDI 6055.07, Enclosure 4

**Table 3-1**  
**Unique mishap notifications—Continued**

Mishap category	Sources of additional requirements	
	This regulation	External notification requirements
Facility fire		AR 420-1, DoDI 6055.06

## Section IV

### Mishap Investigations

#### 3-13. Safety Investigation Board convening authority

- a. *Convening authority.* The SIB convening authority is the commander with GCMCA—
  - (1) Over the unit or command having operational control or risk approval authority associated with the mishap, or
  - (2) Over the installation, personnel, or materiel involved in a mishap, or
  - (3) Having Title 10 USC administrative responsibility. In a combat environment, the safety investigation appointing authority, after consulting with USACRC, may authorize a nonstandard investigation.
- b. *Involvement of units under different commands.* When personnel or materiel involved in a mishap are from units under different GCMCAs, the convening authorities concerned should agree on who appoints the SIB. The relative degree of involvement and administrative convenience are considerations for the final decision. If unable to reach an agreement, the respective commanders of ACOMs, ASCCs, DRUs, or USARC; CNGB; or the DASAF will determine the convening authority.
- c. *Geographical dislocation from command.* When a mishap occurs away from the responsible unit's home station, the normal convening authority may request the GCMCA of the installation closest to, or upon which, the mishap occurred to conduct a safety investigation. Coordination for such a transfer of authority should include specific agreement on funding the cost of the safety investigation.
- d. *U.S. Army Reserve or Army National Guard.* For mishaps involving U.S. Army Reserve (USAR) or ARNG personnel in active duty training status, assigned, or attached to a command other than USARC or ARNG, the officer who exercises GCMCA over the mishap site will convene the SIB.
- e. *U.S. Army Corps of Engineers.* For USACE mishaps, the convening authority for the SIB will be the division commander (brigadier general or equivalent).
- f. *Mishaps involving multiple Services.* For a multi-Service or Joint operational mishap, the Army convening authority will contact USACRC as the Army-level authority to carry out coordination with other Services, as established by DoDI 6055.07. If determined that the U.S. Army will lead the safety investigation, the Army convening authority will appoint the Joint Service SIB.
- g. *Contract mishaps.* Investigate and report mishaps that occur as a result of a government contractor's operations in which there is reported damage to Army property or injury or occupational illness to Army personnel. When multiple DoD components are involved, the contracting DoD component will conduct the safety investigation and report through Army channels for recording, unless otherwise directed by the DUSD (Installations and Environment).
- h. *Mishaps involving civil aviation.* The National Transportation Safety Board (NTSB) investigates mishaps involving both Army and civil aircraft that occur within U.S. jurisdiction. The NTSB investigation takes priority, but USACRC determines whether Army participation or an Army-specific safety investigation is conducted. AF Pam 91-206 provides DoD guidance for coordination with the NTSB and FAA.

#### 3-14. Convening authority responsibilities

Upon notification of a class A or B mishap the GCMCA will—

- a. Appoint a safety professional or aviation safety officer (ASO) as a unit POC.
- b. For class A and class B mishaps, appoint on orders the president and other members of the SIB from organizations outside of the mishap battalion or equivalent size organization. Individuals from the accountable organization may advise to enhance the safety investigation.
- c. Request support from higher headquarters when safety investigation support requirements span beyond his or her authority.
- d. Ensure the primary duty of the appointed SIB is to conduct the mishap investigation and complete the report.
- e. Ensure adequate clerical and administrative support is available to assist in the rapid completion of safety investigations.
- f. Ensure no member of the SIB has a personal interest in the outcome of the safety investigation.

g. Initiate preliminary actions required by this regulation. At a minimum, these actions include, but are not limited to:

- (1) Secure the mishap scene and take action as required by this regulation.
- (2) Obtain copies of personnel, medical, training, and maintenance records for all personnel and equipment directly involved in the mishap.
- (3) Identify potential witnesses and obtain the following witness information: name, rank, unit, and telephone number.
- (4) Obtain the SIR, military police Criminal Investigation Division (CID) reports, and appropriate civil reports if available.
- (5) Obtain the name of the medical officer conducting the autopsy and the date, time, and location it will be/was performed and the results.
- (6) Obtain a map that includes the mishap site.
- (7) Obtain directives that pertain to the operation that resulted in the mishap.
- (8) Obtain an official weather statement (signed by a forecaster).
- (9) Confirm personnel security clearances, as necessary, and obtain access for SIB members (such as special clearances to access the mishap scene).
- (10) Provide any other data or information requested by the SIB president.
- (11) Identify and notify local SIB members.
- (12) Publish orders appointing the investigation SIB.
- (13) SIB members who are delegated to deploy into a combat zone for Army safety investigation purposes will be attached (for all administrative and logistical support) to the ASCC.
- (14) Fund all support costs of the safety mishap investigation.
- (15) Provide administrative and logistical support for the SIB.
- (16) Coordinate logistical support, to include recovery of the wreckage and resources necessary to ship components to the appropriate Army depot or laboratory for teardown analysis, and special conveyance (such as tactical vehicles or aircraft, if required) to transport the SIB members to the mishap scene.

### **3-15. Safety Investigation Board composition**

a. Investigate the following mishaps with an SIB consisting of a minimum of three members (see table 3-2):

- (1) All on-duty class A and class B mishaps.
- (2) Any mishap the appointing authority or the Commander, USACRC believes may involve a potential hazard serious enough to warrant a safety investigation by a multimember board.

b. Personnel appointed as board members for the conduct of a safety investigation will be available for and give priority to the conduct of the mishap investigation and associated requirements to ensure prompt completion.

c. The following mishaps do not require formal board appointment orders; they will be investigated by one or more officers, warrant officers, NCOs, supervisors, or safety specialists or managers:

- (1) All off-duty Soldier mishaps.
- (2) Class C, D, and E mishaps and class F aviation incidents.

d. USACRC is the sole authority for requesting other Army, other Service component, Federal Government, or public or commercial agency support for safety investigations. An SIB may incorporate personnel of other Services as members of an Army SIB; however, members from other Services may not serve in a board president role for an Army-led SIB.

e. For on-duty class A and B mishaps, individuals appointed as SIB members will not be assigned to or under the battalion or battalion-equivalent organization that incurred the mishap.

- (1) Local advisors will normally consist of a POC from the organization incurring the mishap. In mishaps involving equipment unique to a unit or organization, such that external technical expertise is unavailable, unit technical personnel may be used at the discretion of the SIB President, but in an advisory capacity only.
- (2) A class A or B SIB President will be an officer (major or above), warrant officer (CW4 or above), or DA Civilian (GS-12 or above) who is trained or familiar with the equipment or operational aspects associated with the mishap.
- (3) One SIB member will be a graduate of a USACRC-approved mishap investigation course to serve as an investigation technical SME for the SIB.
- (4) Requirements for SMEs are as follows:
  - (a) A medical professional is required for mishaps involving personal injuries or issues associated with PPE, egress, medical evacuation, rescue, or survivability. In the case of an on-duty DA Civilian mishap, a medical advisor is

sufficient. A physician or physician assistant is required for ground mishaps. A flight surgeon is required for aviation mishaps.

(b) A maintenance NCO, warrant officer, or DA Civilian personnel maintenance technician familiar with the equipment is required if materiel is involved.

(c) A qualified weather officer is required if/when weather is a suspected contributing factor.

(d) For watercraft mishaps, an Army marine warrant officer (deck/engineer or both) or a DA Civilian personnel member, qualified in or familiar with boat operations, navigation, and boating safety is required.

(e) For Army rail equipment mishaps, a designated supervisor of locomotives expert and/or a Defense nontactical generator and rail expert will be designated as board member, as pertinent to the focus of the safety investigation.

(f) For airborne mishaps, board members will include a currently rated senior jumpmaster (for either static line or freefall) and an airdrop systems technician in the grade of CW2 or higher.

(g) For explosive mishaps, board members will include a quality assurance specialist (ammunition surveillance) (QASAS) or an ammunition warrant officer.

(h) For Army diving mishaps, at least one board member will be a currently rated (combat or engineer) master diver, qualified in the operation of related dive equipment, and the medical officer will a physician specializing in aerospace medicine or other medical officer with dive medicine or hyperbaric medicine experience.

(i) Class A and class B aviation mishap requirements are as follows:

1. *Manned aircraft mishap.*

a) One member will be a master or senior Army aviator.

b) One member will be qualified in the mission, type, design, and series of the aircraft involved (if the master/senior aviator is not).

2. *Unmanned aircraft systems.*

a) One member will be an Army ASO.

b) One member will be a UAS military occupational specialty (MOS)-qualified operator in the grade of E-6 or higher.

c) One member will be a standardization operator/pilot.

**Table 3–2**  
**Board composition**

Position	Rank	Special Qualifications	Profession
Board President	Officer (major or above), warrant officer (CW4 or above), or DA Civilian (GS-12 or above)		Ground, Airborne, Maritime, Marine (Diving), Vehicle or Equipment, Explosives, Rail, Aviation <sup>1</sup> , UAS
Board Recorder	Staff sergeant or above		Ground, Airborne, Maritime, Marine (Diving), Vehicle or Equipment, Explosives, Rail, Aviation <sup>1</sup> , UAS
Board Medical Officer	Captain or above	Physician or physician assistant for ground, flight surgeon required for aviation, and physician specializing in aerospace medicine or other medical officer with hyperbaric medicine or dive medicine experience for diving.	Ground, Airborne, Maritime, Marine (Diving), Vehicle or Equipment, Explosives, Rail, Aviation, UAS
Safety Professional <sup>2</sup>	CW2, GS-11, or above	USACRC-approved mishap investigation course	Ground, Airborne, Maritime, Marine (Diving), Vehicle or Equipment, Explosives, Rail, Aviation, UAS
SMEs	Mishap complexity dependent	Familiar with equipment and/or operation involved	Ground, Airborne <sup>4</sup> , Marine (Diving), Vehicle or Equipment, Explosives, Rail

**Table 3–2**  
**Board composition—Continued**

Position	Rank	Special Qualifications	Profession
Maintenance Officer	CW3 or above	Ground: familiar with mishap equipment Aviation: qualified in mission type, design, and series of aircraft	Maritime, Vehicle or Equipment, Aviation, UAS <sup>3</sup>
Senior Aviator	CW2 or above	Qualified in mission, type, design, and series of aircraft involved	Aviation <sup>2</sup>
Technical Inspector	Staff sergeant or above	Qualified in mission, type, design, and series of aircraft involved	Aviation, UAS
Air Drop Systems Tech	CW2 or above	Familiar with type of parachute	Airborne
Jumpmaster	Sergeant first class or above	Senior parachutist	Airborne
Master Diver	Sergeant first class or above	Combat or engineer depending on mission	Marine (Diving)
Senior Deck Officer	CW2 or above		Maritime
QASAS or Ammunition Warrant Officer	CW2, GS-11, or above		Explosives
UAS Operator	Staff sergeant or above		UAS
Weather Officer <sup>4</sup>	Technical sergeant or above		Ground, Airborne, Maritime, Marine (Diving), Vehicle or Equipment, Explosives, Rail, Aviation, UAS

Notes:

<sup>1</sup> Military trained aviator.

<sup>2</sup> Safety professional not required if one member of the Board has attended USACRC mishap investigation course to meet this requirement.

<sup>3</sup> UAS qualified maintenance officer is rank immaterial.

<sup>4</sup> As required depending on mishap circumstances.

### 3–16. Support of Army mishap investigations

*a. Safety representatives.* Local safety representatives' duties and responsibilities include:

- (1) Providing the local SIB with a mishap investigation kit and/or other equipment necessary to conduct the investigation.
- (2) Advising the SIB on technical aspects of the investigation and reporting of the mishap.
- (3) Helping the SIB obtain other technical assistance as required.
- (4) Advising the SIB of administrative procedures concerning mishap reports. For example, command channel review and forwarding correspondence.
- (5) Providing regulatory documents and directives for mishap investigation and reporting.
- (6) Providing necessary interpretation of local regulations and directives.
- (7) Helping the SIB president in obtaining administrative support such as workspace, connectivity, and supplies.
- (8) Providing initial classification for the mishap.

*b. Commanders.* Commanders assigned responsibility for the conduct or support of a safety investigation will ensure the following assistance is provided to the president of the SIB, if needed:

- (1) *Public affairs officer.* Handle press representatives and public information releases.
- (2) *Provost Marshal office.* Provide guards, traffic control, and site security for the mishap scene. As required, serve as liaison with local law enforcement, provide mishap information from DA Form 3946 (Military Police Traffic Accident Report), traffic citation history, traffic flow information, and daily blotters.
- (3) *Weather officer.* Obtain complete weather, preferably a U.S. Air Force-weather generated meteorological terminal aviation report (METAR), specific to the time and location of the mishap. The METAR is distributed to all DoD air traffic control agencies.
- (4) *Transportation and movement.* Provide assistance in transportation to and from the mishap site and expeditious shipment of components selected for tear down analysis.

*c. Garrison organizations.* For example, the director of industrial operations and the director of public works. Support mishap investigations as required.

*d. Technical/materiel assistance.*

(1) The SIB President has the authority to request technical assistance from support agencies under the authority of or available to the convening authority; for example, fuel and oil analysis.

(2) The SIB will request assistance from USACRC for technical support that lies externally to convening authority's jurisdiction (see para 3-15d).

(3) The USACRC retains digital source collection download and animation responsibility for the U.S. Army in response to aviation mishaps. Aviation SIBs requiring digital source collection download assistance and enhancement in conjunction with safety investigations are able to contact the USACRC Digital Collection, Investigation, and Analysis Laboratory directly at commercial (334) 255-1641 or DSN (312) 558-1641.

### **3-17. Mishap scene preservation**

*a. General.* Safety professionals will assist commanders in the preservation of the mishap site and coordinate with criminal investigators and military police to preserve evidence for the safety investigations. The criminal investigation has primacy over safety and other investigations; therefore, the U.S. Army Criminal Investigation Division (USACID) retains authority over a mishap scene and related evidence until conclusion of the criminal investigation, at which time the authority falls to the SIB board president until completion of the safety investigation. However, AR 195-2 encourages close coordination between investigators to the maximum legal extent possible to improve the outcome of all investigations.

*b. Initial actions at the mishap scene.* Mishap scene security and safety take precedence to facilitate safe access for rescue and recovery personnel, as well as military police and USACID personnel.

*c. Aircraft and military materiel/equipment considerations.* Access to initial mishap scenes may be required for unique considerations; for example, time-sensitive recovery of systems, such as digital/telemetry recording devices, or those systems posing HAZMAT concerns. Such cases are generally addressed to the initial responders by those personnel under regulatory authority to access mishap scenes but will be coordinated through the authorities and investigators controlling the scene.

## **Section V**

### **External Investigations and Information Handling**

#### **3-18. Actions when criminal activity is suspected**

*a.* If, during the safety investigation, the SIB discovers evidence of criminal activity that is causal or associated with the mishap, the SIB president will immediately suspend the investigation and notify the safety investigation convening authority and the Commander, USACRC at commercial phone number (334) 255-2660/3410, DSN (312) 558-2660/3410, or alternate (334) 202-1580.

*b.* If the convening authority cites the event as an intentional criminal act and suspends the SIB, the SIB will provide the following to the military police or criminal investigation team assuming control:

(1) All physical items under the custody of the SIB.

(2) All official records and documentation under the custody of the SIB, documented on DA Form 4137 (Evidence/Property Custody Document).

(3) Records of all personnel identified as witnesses or possibly involved personnel, to include SIB-prepared summaries of witness interviews that were conducted without a promise of confidentiality (see para 3-20).

*Note.* Criminal investigations and safety mishap investigations may proceed concurrently for a mishap. While a legal investigation may cite criminal negligence or manslaughter as a factor associated with a mishap, it is still a reportable mishap unless there was intent to inflict injury or cause damage (see para 3-3).

#### **3-19. Legal investigations of mishaps**

*a.* Legal mishap investigations are essential to protect confidential safety information and to maintain the integrity of the safety investigation. Appointing authorities, depending on the type of incidents, should grant safety investigations priority over other Army regulatory investigations.

*b.* AR 15-6 authorizes the conduct of command-appointed investigations into serious events concurrently with safety investigations. Administrative investigations for litigation, disciplinary or administrative action, or claims against the U.S. Army in association with mishaps are conducted separately from safety investigations. Such investigations allow for the preservation of information and investigation determinations independently of safety

investigations, thereby protecting the privileged nature of safety reports. The commander (convening authority) experiencing a mishap has the dual authority to direct both concurrently, thereby ensuring comprehensive reports for both administrative action and mishap prevention, respectively.

c. Commanders will not assign personnel occupying a full-time safety position to legal mishap investigations. Legal investigators may consult with safety personnel who are not conducting a safety investigation of the same mishap for their expertise when necessary.

d. A commander whose personnel or equipment or whose operations resulted in a mishap may conduct a legal mishap investigation. Refer to AR 27-20 or AR 15-6 for this type of investigation.

e. A legal mishap investigation is conducted—

(1) For all class A mishaps.

(2) As directed by a local commander, based on legal counsel according to AR 27-20.

(3) For those mishaps in which there is a potential claim or litigation for or against the U.S. Government or a government contractor.

(4) For mishaps with a high degree of public interest or anticipated disciplinary or adverse administrative action.

(5) When a line of duty investigation satisfies the requirement for legal investigations of off-duty fatalities.

### **3-20. Access to information from other investigations**

Other types of investigations may run concurrently with the safety investigation, but the SIB has regulatory access to information accrued through other investigations.

a. Military police or CID retain chain of custody of physical evidence during active criminal investigations, but respective SIBs will be authorized access, as necessary, for the comprehensive completion of the safety investigation. The following will be made available:

(1) Photographs and witness statements collected by military police or CID when determined that release will not jeopardize a criminal investigation.

(2) Personnel and medical records of personnel involved in the mishap and maintenance records on the equipment involved in the mishap.

(3) Laboratory reports provided by CID laboratories. Whenever possible, CID personnel will telephonically alert the SIB president to laboratory determinations when received. CID laboratories will support SIB requests for further analysis if deemed necessary for the safety investigation. Results of additional testing will be deemed common source factual data to be made available to other investigative bodies by the SIB unless the results clearly reveal a deliberative process or deduction made by the SIB.

b. Legal mishap investigation exhibits and documentation, including that of investigations conducted under the provisions of AR 15-6, will be shared with the SIB at the request of the board president.

### **3-21. Access to information collected by safety mishap investigation boards**

a. The president of an SIB conducted under the provisions of this regulation will provide other authorized Army investigative bodies full access to all nonprivileged information and artifacts collected by the board.

b. The SIB president will not provide:

(1) Witness summaries completed pursuant to a promise of confidentiality.

(2) Preliminary or final board findings and recommendations.

(3) Voice recordings of intra-cockpit communications (without authorization from the Commander, USACRC and without operations security screening by the respective command).

c. Paragraph 3-21b is punitive. Violations of paragraph 3-21b are separately punishable as a violation of a lawful general regulation under UCMJ, Art. 92. Penalties for violating this paragraph include the full range of statutory and regulatory sanctions, both criminal and administrative. Violations by DA Civilians may result in administrative disciplinary actions without regard to otherwise applicable criminal or civil sanctions for violations of related laws.

### **3-22. Privileged safety information, restrictions, and promise of confidentiality**

a. For a safety investigation, privileged safety information includes:

(1) Information given to a safety investigator pursuant to a promise of confidentiality and any information derived from that information or direct or indirect references to that information.

(2) Products of deliberative processes of safety investigators, including:

(a) Draft and final findings, evaluations, opinions, preliminary discussions, conclusions, mishap causes, recommendations, analyses, and other material that would reveal the deliberations of safety investigators.

(b) Draft and final diagrams and exhibits if they contain information that depicts the analysis of safety investigators.

(c) Animations that incorporate privileged safety information. Uninterpreted animations made exclusively from flight recorder raw data, including military flight operations quality assurance data, are not protected by the safety privilege and are generally releasable. However, prior to release, especially in cases where the product is derived from aggregate data, such animations must be reviewed for sensitive national security content. Animations found to include information that could compromise national security to any degree must be handled appropriately.

(d) Photographs, films, and videotapes that are staged, reconstructed, or simulated reenactments of possible or probable scenarios developed by or for the analysis of the safety investigator. However, photographs depicting a measuring device or object contrasted against mishap evidence for the sole purpose of demonstrating the size or scale of the evidence are not considered privileged safety information and may be released.

(e) Life sciences material that contains analysis by a safety investigator.

(f) Notes taken by safety investigators in the course of their investigation, whether or not they are incorporated, either directly or by reference, in the final safety investigation report.

(g) Reviews and endorsements of safety investigation reports.

b. In accordance with DoDI 6055.07, the U.S. Army authorizes the promise of confidentiality in the conduct of witness interviews for select safety mishap investigations. This is intended to encourage frank and open communication with personnel involved in or witnessing a mishap. Summaries of witness interviews given pursuant to a promise of confidentiality are privileged information in the safety report and will be protected by the U.S. Army to the greatest extent permissible under appellate review against court order to release the respective report for any legal proceedings. Promises of confidentiality—

(1) May be given by safety investigators in all investigations of aviation mishaps, friendly fire mishaps, and mishaps involving complex systems and military-unique items, operations, or exercises.

(2) Must be explicit, documented, and given only as needed. Safety investigators must inform the witness that the promise of confidentiality applies only to information given to the safety investigator and not to the same information if given to others.

(3) May be authorized in individual cases when the mishap's causal factors are determined to be in the interest of national security. The authority to extend a promise of confidentiality pursuant to this paragraph is delegated to the Commander, USACRC.

(4) Will be extended in accordance with the mandatory procedures in DA Pam 385-40.

### **3-23. Release of information from safety mishap investigation reports**

a. The Commander, USACRC is delegated authority from the SECARMY to act as the initial denial authority on requests for information from Army safety mishap reports. Refer all requests for safety mishap reports, made under the provisions of the Freedom of Information Act (FOIA), through command channels to Commander, U.S. Army Combat Readiness Center (CSSC-SS), Ruf Avenue, Building 4905, Fort Rucker, AL 36362-5363. USACRC is the repository for all safety reports.

b. The USACRC command judge advocate must verify release of privileged safety information. SECARMY is the authority to assert the privilege to oppose any court-ordered release of privileged safety information for all investigations.

c. Only the Commander, USACRC is authorized to sanitize and release a safety mishap report. Refer requests received directly from members of Congress or their staffs for access to safety reports to Office of the Chief of Legislative Liaison, 1600 Army Pentagon, Washington, DC 20310-0107 for compliance with the provisions of DoDI 6055.07.

d. Requests to access safety reports from non-DoD federal agencies are governed by other provisions of this regulation and, in many instances, by interagency agreements or specific regulations (for example, AF Pam 91-206 governs the release of information to the FAA). Command and garrison safety offices that receive such requests will contact their local staff judge advocate or legal advisor, or USACRC command judge advocate by phone at commercial (334) 255-2924, DSN 558-2924, or via email at usarmy.rucker.hqda-secarmy.mbx.safe-helpdesk@army.mil for guidance.

e. Requests from foreign militaries for privileged safety information or Army safety mishap reports will be made from respective military service agencies.

(1) Neither privileged nor sanitized safety information will be shared without a reciprocal international agreement established between USACRC and the Foreign Defense Organization (see DoDI 6055.07, Enclosure 5).

(2) Absent a reciprocal international agreement, refer respective foreign government requests to the DCS, G-2 via the designated attaché/foreign liaison officer.

*f.* Subpoenas for the provision of safety mishap reports or for the testimony of mishap investigators will be referred to the recipient's legal advisor or staff judge advocate for action in accordance with AR 27–40, in consultation with USACRC command judge advocate.

*g.* Requests for access to safety mishap reports from other Army agencies and DoD organizations are governed by the restrictions in this paragraph.

(1) The requester must state the reason the information is needed and the purpose for which it will be used. If the requester's purpose is not solely for mishap prevention and a legal investigation was conducted, the requester will state the reason the legal investigation will not satisfy the requester's need.

(2) If the requester's sole purpose for requesting the report is mishap prevention, the entire report may be released without written nondisclosure warning. However, the requester will be advised that further disclosure is not authorized.

(3) If the requester intends to use the information for any purpose other than mishap prevention, disclose only common source data, the names of witnesses, photographs, diagrams, and the results of scientific or technical tests. The following will not be released:

(a) The report's findings, recommendations, and the investigators' analysis.

(b) The content of witness summaries (including those of witnesses not promised confidentiality).

(c) Medical records, unless the requestor meets the requirements of AR 40–66.

*h.* In addition to OSHA reporting forms, a copy of the nonprivileged portions of the respective safety mishap report for which a DA Civilian is injured or property is damaged in a DA Civilian's work area may be provided to the exclusive representative of the employee involved and to the appropriate safety and health committee, if requested. This information is provided for purposes of safety and/or mishap prevention only.

*i.* Release of privileged safety information as defined in paragraphs 3–20 and 3–21 is punitive. Violations are separately punishable as a violation of a lawful general regulation under UCMJ, Art. 92. Violations by DA Civilians may result in administrative disciplinary actions without regard to otherwise applicable criminal or civil sanctions for violations of related laws.

*j.* DoD contractors may have access to particular privileged safety information in furtherance of an articulated safety purpose related to specific projects or contracts. Under no circumstances will a DoD contractor not working in direct support of an Army safety mishap investigation have access to information (the witness statement) given to a safety investigator pursuant to a promise of confidentiality or to any direct references to that information or to any information that could be used to identify the source who provided the information. Prior to granting a DoD contractor access to any privileged safety information, ask the contractor, in its corporate capacity, to execute a nondisclosure agreement—

(1) That identifies the privileged safety information at issue.

(2) That articulates the reasons the contractor needs access to the privileged safety information and describes permitted uses.

(3) That articulates the specific rules with regard to reproducing privileged safety information.

(4) In which the contractor agrees:

(a) To acknowledge Army-approved methods for the handling and storage of and the use requirements for privileged safety information.

(b) To protect the privileged safety information from unauthorized users or release, including in litigation.

(c) To grant access to the privileged safety information only to those contractor employees with a need to know.

(d) To assume full responsibility for its employees' actions with regard to the privileged safety information.

(e) To return or destroy, and include evidence of destruction, all privileged safety information when no longer required or when requested by the U.S. Army.

(f) That violating the terms of the nondisclosure agreement may result in suspension of access to privileged safety information and any other sanctions allowed under the law or the contract.

(g) To the rules regarding copying or otherwise reproducing the privileged safety information.

(h) To proper storage of privileged safety information in a manner to prevent unauthorized access.

(i) That privileged safety information will be used solely for meeting the requirements of its contract.

(j) To forward any requests for information provided under a nondisclosure agreement to USACRC, including FOIA and media requests.

(k) To prior nondisclosure agreements signed by all contractor employees having access to privileged safety information, mirroring the provisions of the contractor nondisclosure agreement.

(5) That is reviewed by the command's staff judge advocate or legal counsel prior to execution.

## Section VI

### Requirements for Processing and Review of Mishap Reports

#### 3-24. Safety mishap investigation report timeline

a. The timeline for completion of mishap reporting to USACRC is 90 days from the date of occurrence. This pertains to all classification reporting and in accordance with ASMIS 2.0 Mishap and Near-miss Reporting Tool (<https://mishap.safety.army.mil>).

b. Request extensions telephonically or via email at [usarmy.rucker.hqda-secarmy.list.safe-operations-offi@army.mil](mailto:usarmy.rucker.hqda-secarmy.list.safe-operations-offi@army.mil).

#### 3-25. Reviewing and processing mishap reports

a. *Command review.* The commander of the unit involved or the commander of the supervisor directly responsible for the operation, material, or persons involved in the mishap is normally the initial reviewing official.

(1) Commanders will structure reviewer protocol, based on classification of mishaps and digital or hard copy processes, to finalize/close-out safety reports as official Army records, maintained by USACRC.

(2) Reviewing officials within the chain of command will provide written acknowledgment of recommendations identified pursuant to a safety investigation, as well as responsive actions or basis for rejection.

(3) Convening authority safety staffs will ensure comprehensive staffing, regulatory compliance, and finalization of class A and B mishap safety reports for approval at ACOMs, ASCCs, DRUs, and ARNG levels.

b. *Approval authority.* Commanders of ACOMs, ASCCs, DRUs, and USARC and the CNGB (or their designated representatives) will provide written concurrence or nonconcurrence for each finding and recommendation made by the respective SIBs for all class A and class B mishaps and provide written approval for USACRC/DA-level acceptance and entry as Army safety records.

c. *Processing.* SIBs will process and present report data, including all supporting documentation, in accordance with mandatory procedures in DA Pam 385-40 and current reporting formats or applications.

(1) Installation-level and convening authority safety directors will support subordinate commands or tenant activities without assigned safety staff.

(2) Accomplish digital report transmissions by encrypted/secured means to protect personally identifiable information and privileged safety information.

#### 3-26. Amendments or corrections to mishap investigation reports

a. Report events that change the classification for previously submitted mishap reports such as injury status (increased or decreased degree of injury) or damage (increases/decreases to ACODs/ECODs). Provide substantiating documentation when requesting a downgrade.

b. Report changes to previously submitted safety reports in the interest of record accuracy, such as dates, locations, history of events, or other contributing data affecting the validity of a mishap record.

#### 3-27. Headquarters, Department of the Army mishap evaluation, review, and action

The Commander, USACRC will review all mishap reports for regulatory and technical compliance.

a. The Commander, USACRC will evaluate all DoD and DA-level findings and recommendations for entry into the recommendation and tracking system. The Commander, USACRC will—

(1) Establish and maintain a formal automated system to track actions on DA-level recommendations from mishap reports.

(2) Provide written notification to the command, organizations, or agency responsible for implementing or initiating corrective action on DA-level mishap recommendations.

b. Commanders of ACOMs, ASCCs, DRUs, USARC, PEOs, DA Staff agencies and activities, and the CNGB will—

(1) Establish and maintain formal tracking history on actions on DA-level recommendations from mishap reports for which they are responsible.

(2) Establish and maintain a formal system to track actions taken on unit level and higher-level recommendations from class A and B mishap reports for units, organizations, agencies, or activities under their respective command or control.

c. Upon receipt of written notification of recommendations, the responsible DA-level organization will provide telephonic acknowledgment within 5 working days and an initial response to USACRC within 60 calendar days as to

corrective action initiated or planned. Interim and follow-up reports are required every 90 days after initial response until the action is closed.

*d.* Return all DA-level recommendations not accepted or implemented by the responsible command, organization, agency, or activity to the Commander, USACRC with supporting rationale within 60 calendar days after the date on the letter of transmittal.

### **3-28. Maintaining mishap investigation reports**

In accordance with AR 25-400-2, USACRC will retain all mishap reports for a minimum of 10 years. All other organizations will retain safety records for the current and previous 5 FYs.

## **Chapter 4**

### **Safety and Occupational Health Audits, Assessments, and Inspections**

#### **4-1. Army-level safety and occupational health audits**

The Commander, USACRC will conduct quadrennial audits of all ACOMs, ASCCs, DRUs, and ARNG. Safety programs are audited to ensure ASOHP is integrated into the organization's mission based on federal law, DoD issuances, and Army regulations. These audits are programmatic to measure the overall effectiveness of management controls for integrating the ASOHP into their business process and mission execution based on performance indicators and metrics. Compliance issues may be used as a measure of effectiveness but are not the primary focus of the audit. The CG, USACRC will coordinate and schedule all audits. See DA Pam 385-10 for mandatory procedures.

#### **4-2. Safety and occupational health assessments**

*a.* Commanders of ACOMs, ASCCs, and DRUs and the CNGB will develop a process that ensures each subordinate organization meets the ASOHPMS criteria and is assessed by an independent external audit every 4 years and self-assessments are conducted annually.

*b.* Commanders of ACOMs, ASCCs, and DRUs and the CNGB will develop and implement a program that ensures each subordinate organization ASOHP is formally assessed by the parent command every 4 years, at a minimum. Assessment will evaluate integration of ASOHP into planning, preparation, and execution of the command ASOHP based on federal, DoD, Army, and command regulations.

#### **4-3. Safety and occupational health inspections**

*a.* Standards established by DA, DoD, and OSHA ensure personnel are provided a safe and healthful environment in which to work. Inspections are conducted at the organization level based on higher headquarters guidance and results reported through the chain of command. The command's safety office will manage the standard Army safety and occupational health inspection (SASOHI). The SASOHI identifies hazards and ensures that SOPs are developed, published, and integrated for each workplace/operation within their area of responsibility.

*b.* Qualified SOH personnel or specially trained personnel competent to conduct the inspection will conduct safety inspections at least annually using the mandatory procedures in DA Pam 385-10.

(1) Conduct announced and unannounced safety inspections to evaluate how well safety and health standards are being executed, implemented, and maintained.

(2) Inspect facilities, operations, or workplaces with higher risks or elevated mishap experience, for special emphasis programs, for changing operations or organizations, or for other events that indicate increased risk operations more frequently as determined by qualified SOH personnel.

(3) Inspect each type of Army operation that has specific safety requirements. For example, a biological defense laboratory has very specific requirements which are followed. These requirements, set forth in chapter 20, the Centers for Disease Control and Prevention (CDC)'s Biosafety in Microbiological and Biomedical Laboratories (BMBL), the National Institutes of Health (NIH) Guidelines for Research Involving Recombinant Deoxyribonucleic acid, and other federal, state, and local laws and regulations are adhered to for the various type of biological laboratories and their level of operations (see mandatory SASOHI procedures in DA Pam 385-10).

*c.* Commanders will develop a standard SOH inspection based on federal, DoD, Army, and parent unit requirements, including any potential hazards associated with specific operations. Commanders of tenant activities are responsible for conducting SOH inspections unless alternate arrangements have been codified in the installation service support agreement.

*d.* Personnel conducting these inspections will have access to diagnostic equipment and to personnel necessary to identify, document, and analyze the significance of the hazards discovered during the inspection. Make current

reference materials pertinent to the work site, such as standards, regulations, SOPs, hazard analyses and job hazard analysis (JHA), risk assessments, safety data sheets (SDSs), and technical and field manuals readily available.

*e.* A representative of the official in charge of a workplace and an authorized representative of DA Civilian employees are given the opportunity to accompany the inspector during the physical inspection of workplaces. Commanders or their designated representative may deny the right of accompaniment to any person who, in their judgment, will interfere with the inspection.

*f.* Supervisors will monitor and report progress on the abatement of hazards within their operation to the SOH manager.

*g.* The inspection team will prepare a report of their findings. This report will describe conditions of the Army operation/workplace, both positive and negative. Provide the inspection results to the commander. Upon receipt of findings commanders will manage them to correction. Record deficiencies found during inspections and not corrected on-the-spot on DA Form 4754 (Violation Inventory Log) or equivalent. The inspection team will develop abatement recommendations for groups of common deficiencies that address failures in the areas of standards, support, leadership, training, and individual.

*h.* Inspections of workplaces in contractor activities where fewer than 25 DA personnel are employed will be at the discretion of the ACOM, ASCC, or DRU commander or CNGB based on existing conditions. While no formal annual inspection is required, commanders of ACOMs, ASCCs, DRUs, and USARC and the CNGB are required to ensure the health and safety of their DA Civilians working in contractor facilities.

*i.* Commands/establishments/units located off of a military installation in a commercial rented facility will be inspected in accordance with lease agreements. But at a minimum, USOs will conduct annual operational work site inspections to ensure the health and safety of their staff. Coordination of inspections and/or findings with facility owners/managers are encouraged for shared space.

#### **4-4. Metrics**

*a.* Commanders of ACOMs, ASCCs, and DRUs will develop ASOHP metrics that include both quantitative and qualitative measures. Examples of metrics include rate of mishap occurrence, severity and cost, compliance with reporting requirements, corrective action completion rate, regular work site walkthrough inspections for safety, training program, management solicitation, and use of and feedback of ARAP comments.

*b.* Each safety office will determine the metrics most appropriate for measuring the effectiveness of its safety program.

*c.* Record data for each metric and review with the commander as part of the commander's regular oversight process.

#### **4-5. Abatement plan for corrective actions**

Commanders of each ACOM, ASCC, and DRU will develop a process for tracking and corrective actions. The safety office will use a tracking system to record deficiencies reported or identified. Analyze all hazards to determine the degree of risk using Army-approved risk assessment techniques. Assign a priority for correcting hazards. Tracking and corrective actions will include:

*a.* Assess hazards in terms of hazard severity and mishap probability and assign a RAC (see chap 6 and ATP 5-19). Consider cost of correction, future intended use of the facility, and availability of desirable alternative methods of control. F&ES and SOH personnel will coordinate to ensure that hazards identified by those organizations are entered into appropriate abatement plans according to AR 420-1.

*b.* Eliminate hazards on a worst-first basis. Prepare an abatement plan for each RAC 1 or 2 hazard whose correction will exceed 30 days. Individual deficiencies of an identical character may be grouped together into a single abatement plan or into an associated abatement project. Keep plans current by adding new projects and by placing completed projects in a completed projects section of the abatement plan. Required abatement corrections outside of command control and resourcing should be coordinated with the ISO for appropriate actions and prioritization. The command element involved will approve abatement plans.

*c.* Ensure interim control measures are being implemented.

*d.* Post copies of abatement plans.

*e.* Report violations that are the responsibility of another organization, DoD element, or outside agency to the responsible official for action.

*f.* Abatement plans are subject to review by HQDA, OSHA, and union representatives.

*g.* Report the status of the abatement plan/corrective actions to the commander upon completion of the inspection and on a regular basis thereafter until all high priority corrective actions are implemented. Brief the status of abatement

plan/corrective actions at all SOHACs until closed out if feasible. Report lesser priority corrective actions implementation progress as directed by the commander, through periodic briefings or written reports.

*h.* Hazard abatement funding will ensure:

(1) Command operating plans and budgets will include appropriate planning, programming, and resources to correct RAC 1 and 2 hazards from the abatement plan according to abatement priority numbers and any supplemental DA program guidance. When abatement projects require military construction funds or exceed local funding ceilings, the local commander will submit appropriate funding requests through command channels.

(2) Generally, funding is accomplished from local operations and maintenance monies or overhead funds in industrially funded activities. Installations that are RDT&E funded will program funding for hazard abatement.

#### **4-6. Occupational Safety and Health Administration inspections**

*a.* DOL/OSHA may conduct inspections at any time in accordance with DoDI 6055.01, 29 CFR 1960, EO 12196, and within the scope of the Occupational Safety and Health Act of 1970. OSHA officials and National Institute for Occupational Safety and Health (NIOSH) officials, acting as representatives of the Secretary of Labor, are authorized to conduct announced or unannounced inspections of all workplaces except those identified as military-unique workplaces.

*b.* Commanders, their designated representatives, or SOH managers will admit DOL representatives to conduct inspections at selected workplaces in a reasonable manner without delay during normal working hours. Inform the commander immediately upon notification of DOL visit.

*c.* DOL representatives will initially report to the host commander or designated representative and are accompanied at all times on the Army installation. They must show proof of appropriate security clearance if entry into closed areas is required. The SOH manager will arrange a closing conference with the installation or activity commander or command designee before the DOL inspector's departure. Invite employee representatives to attend the opening and closing conference.

*d.* DOL representatives will, upon request, be provided available safety and health information on worksites. Such information may include data on HAZMAT in use, copies of recent DoD inspection or survey reports, mishap reports, and abatement project information.

*e.* When DOL representatives issue OSHA 2H Form (Notice of Unsafe or Unhealthful Working Conditions), local officials should treat such notices in the same manner as similar internal notices and provide for abatement of significant deficiencies. Commands that receive an OSHA 2H Form will immediately transmit copies through command channels to the Army's DASHO, the ASA (IE&E). The OSHA 2H Form will assist in developing appropriate DA policy in the SOH program.

*f.* Response to DOL inspection reports will originate at the local level. Elevation of unresolved conflicts to higher echelons for interagency resolution will be at DOL's initiative via DOL channels. This provision, however, will not inhibit normal internal communication within command channels to appraise higher echelons of the results of DOL inspections and coordinate responses to DOL.

*g.* With respect to investigation of Army mishaps, which is solely a DoD responsibility under EO 12196, upon request provide DOL officials factual portions of pertinent mishap investigation reports as outlined in chapter 3. DOL officials, upon request, may also accompany Army mishap investigators in an observer status. Separate, duplicate DOL investigations of Army mishaps, either concurrent with or subsequent to required Army investigations, are not expected. DOL officials may, however, inspect for residual hazardous conditions at the site of an Army mishap.

*h.* Inspection of contractor workplaces by federal and state representatives are accomplished according to DoDI 6055.01 and 29 CFR 1960.

### **Chapter 5**

### **Training and Promotion Requirements**

#### **Section I**

#### **Training**

##### **5-1. Introduction**

Commanders of ACOMs, ASCCs, DRUs, and USARC and the CNGB will define the process for each organization to conduct an SOH training needs assessment and conduct an annual review to determine the adequacy of training provided and then make any necessary changes based on the review. This chapter establishes the training and

promotion requirements for safety support during Army operations. Policy and procedures for integrating an SOH training and promotion program will be prescribed in accordance with 29 CFR 1960.

*a.* SOH training programs will consist of:

- (1) Training needs assessments based on subordinate organizations mission and operational needs.
- (2) Required training in accordance with training needs assessments.
- (3) Training support packages.
- (4) Annual review to determine adequacy of training.

*b.* Promotion programs will consist of:

- (1) Safety awards.
- (2) Seasonal safety.
- (3) Employee workplace safety awareness.
- (4) Media and social communication tools (for example Public Affairs Office, websites, and posters).

## **5–2. Required safety and occupational health training**

*a.* Army leaders, commanders, directors, and managers will be provided SOH and RM training orientation and other learning experience as prescribed in paragraphs 5–2b through 5–2d to enable them to execute their SOH and RM responsibilities unique to their organization's mission. Army personnel will be trained in areas needed to safely execute their tasks. Training will include discussion on task steps, potential hazards, control measures to mitigate hazards, and PPE requirements. Initial training will be conducted prior to the employees being exposed to hazards.

*b.* Supervisors must provide training in the RM skills needed to implement the organization's ASOHP. A list of RM online training is available on USACRC website <https://safety.army.mil/training-courses/online-training> under "Training Courses." These skills include fostering a workplace where:

- (1) Hazards are identified, eliminated, or mitigated to an acceptable level.
- (2) Subordinates can identify and are aware of hazards and understand controls required to eliminate or mitigate the hazards both on and off duty.
- (3) Personnel are aware of appropriate risk acceptance levels and who has responsibility to make risk acceptance decisions as circumstances change.
- (4) Personnel are motivated to work in a safe and healthful manner.
- (5) Mishaps are promptly reported and investigated.
- (6) Personnel are provided opportunities to develop other skills needed to implement the organization's SOH program.

*c.* Supervisors hold personnel accountable for compliance with established safe work practices and procedures.

*c.* Supervisors must also ensure personnel receive all appropriate MOS and installations FC-related training for their series. Training will include discussion on work task steps, potential hazards, controls, location and use of Globally Harmonized System for Hazard Communication and SDS controls, PPE requirements, and preventive measures to mitigate work task hazards. Provide an opportunity for each employee to demonstrate knowledge and understanding of PPE requirements by properly donning, removing, and adjusting PPE (hands-on training prior to beginning task).

*d.* Supervisors will provide appropriate SOH training for employees including specialized job SOH training appropriate to the task performed by the employee (for example, clerical, printing, welding, crane operation, chemical analysis, and computer operations). SOH training will inform employees of the agency's SOH program, with emphasis on the employees' rights and responsibilities.

## **5–3. Commanders**

*a.* Commanders/directors are required to complete the Leader's Safety and Occupational Health Course (LSC). The LSC provides commanders the tools to manage a unit SOH program and to incorporate RM into all unit planning and activities. The LSC is offered through Army Training Requirements and Resources System (ATRRS) via web-based distance learning (DL) at <https://www.atrrs.army.mil> (common access card (CAC) required).

*b.* Company grade officers must complete the LSC prior to assuming command; brigade commanders or first O–6 in the chain of command will certify completion. Brigade and battalion level command designees must complete the LSC. A record of training will be retained in the training file. The USACRC is the course proponent.

*c.* Additional training is available for supervisors and managers at the Army Learning Management System (ALMS) <https://www.lms.army.mil> (CAC required).

#### **5–4. Safety and occupational health professionals**

*a.* The senior SOH FC careerist at the ACOM, ASCC, or DRU will serve as the command career program manager (CCPM). CCPMs will be appointed on orders and a copy of the orders will be provided to the SOH FC Career Field Director.

*b.* The CCPM will ensure all installations FC professionals in the agency receive installations FC education and training requirements and are provided the necessary professional, technical, management, and leadership competencies needed to provide support to commanders and management personnel. They will also be encouraged and given the opportunity to attend safety professional conferences, seminars, and so forth. This training, as a minimum, will comply with 29 CFR 1960.

*c.* Each agency will provide SOH training for SOH professionals through courses, laboratory experiences, field study, and other formal learning experiences. This training prepares SOH professionals to perform the necessary technical monitoring, consulting, testing, inspecting, designing, and other tasks related to program development and implementation, as well as hazard recognition; evaluation and control; equipment and facility design; standards; analysis of mishap, injury, and illness data; and other related tasks.

*d.* The Army goal is to have a well-trained cadre of SOH professionals providing leadership in SOH and to have Soldiers and civilian employees knowledgeable in the practical application of SOH in their jobs. The Commander, USACRC is the proponent for specialized SOH training in accordance with AR 600–3. This requirement is based on various functions within the Army's requirement for specialized training.

*e.* SOH professionals will be trained in the foundational skills for SOH with requirements, career maps and ladders, and master training plans. Installations FC careerists will meet the training, education, and credentialing requirements listed in the installations FC Army Civilian Training, Education, and Development System (ACTEDS) plan according to each job series. Supplemental SOH training is required throughout their careers and according to specific duty requirements. Each SOH manager will identify training required by personnel under their supervision, and themselves, to develop a schedule and budget to achieve the required training. Using the current installations FC ACTEDS plan as guidance, each SOH manager will identify training required by personnel under their supervision, and develop an individual development plan (IDP) to document shorthand long-term professional development goals. Selected training should enhance each employee's knowledge and understanding of SOH, with emphasis in specialty areas (for example, health physics, industrial hygiene).

*f.* Army SOH professionals provide SOH guidance, advice to leaders, and assist in the oversight of SOH within their area(s) of responsibility. They advise commanders on SOH issues and policy and have the staff function of ensuring that policies are implemented within the command. Due to the variety of functions that each SOH professional may be required to perform, it is essential that they are knowledgeable in all aspects of SOH, including changes in public law, DoD and Army regulations, and scientific findings in hazards and safe operations. SOH professionals that specialize in specific areas, such as health physics, must be the expert in their area. The current ACTEDS lists the competencies required at each GS grade level for specific SOH disciplines.

*g.* Mandatory intern training is outlined in the installations FC ACTEDS plan.

*h.* Installations FC supervisors are responsible for coaching, mentoring, and counseling their employees on individual career development.

(1) Counseling includes assisting employees in establishing realistic career goals, assessing employees' shortfalls in training and experience, and identifying training and development needs and opportunities.

(2) Supervisors should be familiar with AR 690–950 and may request assistance from CCPMs as needed.

(3) Supervisors must work with subordinates to establish an IDP within Army Career Tracker <https://act-now.army.mil/>.

#### **5–5. Unit safety officer training**

USOs are required to complete the USO course within 30 days of appointment. USAR personnel are afforded 90 days to complete the courses. The course will include RM training.

#### **5–6. Safety and occupational health training for nonsafety and occupational health personnel**

*a.* DA Pam 385–10 contains matrices that identify training required for employees, supervisors, employees working in specific environments, maintenance and facilities employees, and for emergency preparedness and response personnel. See DA Pam 385–10 for mandatory training and frequency of training.

*b.* Radiation training is as follows:

(1) The training and experience of the RSO and the alternate RSO must be commensurate with the radiation program for which they will be responsible with formal radiation training completed before assuming duties. The dynamic response aspects of the radiation SOH program require that each installation RSO will be provided radiation SOH

training annually in accordance with this regulation to ensure that the RSO is adequately trained. Annual training will be scheduled and funded by the commander in accordance with chapters 16 and 17 of this regulation and the guidance in DA Pam 385-10.

(2) Annual radiation SOH training for staff users of RAM and sources will be scheduled by the RSO and funded by the commander in accordance with chapters 16 and 17 of this regulation. Individuals who have not yet completed the training may work under the direct supervision of staff already certified as radiation workers (that is, laboratory supervisors) in accordance with chapters 16 and chapter 17.

c. Defense Centers for Public Health–Aberdeen (DCPH–A) offers several courses that provide additional SOH training to the courses in DA Pam 385-10.

d. USACRC has traffic SOH program educational material available at <https://safety.army.mil/on-duty/drivers-training-toolbox> and on request.

e. USACRC offers courses on RM located in “Training Courses Online” on the USACRC website <https://safety.army.mil/>.

f. Personnel appointed as unit SOH officer/NCO as an additional duty must complete USACRC Unit SOH Course.

g. RM training is available to bargaining unit representatives on safety committees to assist in the maintenance of a safe and healthful workplace.

h. All personnel will receive the following training in RM:

(1) Authorities and opportunities for assisting in RM.

(2) Off-duty risk, hazard awareness, and reporting.

(3) Reporting mishaps, minimum required actions related to safe work practices and procedures, and consequences for not complying.

(4) Job-related SOH information appropriate for their duties.

i. Safety committee members will be provided training related to their assigned responsibilities and the ASOHP.

## **5–7. Specialized training requirements**

The Commander, USACRC is responsible for administering a program to provide SOH training and education that meets the Army’s needs according to AR 600–3. Various functions within the ASOHP require specialized training. DA Pam 385-10 describes mandatory training as well as the ACTEDS installations FC training plan.

a. *Radiation safety and occupational health training.* Provide RSOs with training commensurate with the radiation program for which they are responsible for in accordance with chapters 16 and 17 of this regulation.

b. *Hazard communication training.* Provide HAZCOM training to all personnel who routinely work with hazardous chemicals in accordance with this regulation and 29 CFR 1910.

c. *Electrical safety and occupational health training.* All workers who work with electrical components will be trained as competent persons in accordance with this regulation and NFPA 70E.

d. *Safety engineers.* Installations FC 0803 safety engineers will comply with training, developmental, and career management requirements of the installations FC ACTEDS plan (see installations FC website).

e. *Aviation safety training.* Provide aviation safety training to those that hold the aviation safety modified table of organization and equipment (MTOE) and additional duty positions.

## **5–8. Educational material**

SOH educational materials including posters, videos, technical publications, and pamphlets are proven, cost-effective SOH awareness tools and, therefore, will be budgeted for and used at all levels of the U.S. Army to promote SOH. The USACRC has educational material that may be available at <https://safety.army.mil> or upon request.

## **Section II**

### **Promoting Mishap Prevention**

#### **5–9. Introduction**

Commanders of ACOMs, ASCCs, DRUs, and USARC and the CNGB will promote mishap prevention, using all available means, to include seasonal safety awareness; workplace, community, and operational safety awareness; and safety awards program. Typical procedures for promoting mishap prevention are placing articles in the installation and local newspapers; posting flyers/posters concerning the program, including the program in unit training opportunities (sergeant’s time, morning roll call); and making announcements in local electronic media (website, radio, and television).

## **5–10. Promoting safety awards**

Safety awards enhance Army operations and improve safety awareness by recognizing and promoting individual and organizational mishap prevention measures and successes.

## **5–11. Department of the Army-level awards**

*a. Headquarters, Department of the Army Safety Award.* This award is awarded each FY to ACOMs, ASCCs, DRUs, USARC, and NGB.

*b. Headquarters, Department of the Army Exceptional Organization Safety Award.* This award is awarded each FY to organizations below ACOM, ASCC, DRU, USARC, and ARNG level, down to battalion level. ACOMs, ASCCs, DRUs, USARC, and NGB may select one nominee for submission from the following categories: division, brigade, battalion, and garrison (or equivalent) with the most effective overall safety program.

*c. Headquarters, Department of the Army Individual Award of Excellence in Safety.* This award is awarded each FY to individuals who, in each of seven categories (field grade officer, company grade officer, warrant officer, NCO, junior enlisted, GS–7 to GS–12 DA Civilian, and GS–13 to GS–15 DA Civilian), make the most significant contribution to mishap prevention.

*d. Headquarters, Department of the Army Industrial Operations Safety Award.* This award is awarded each FY to the organization with the most effective overall industrial operations safety program.

*e. Headquarters, Department of the Army Excellence in Explosives Safety Award.* This award is awarded each FY to the organization with the most effective overall explosives safety program.

*f. United States Army Safety Guardian Award.* This award is presented by the ODASAF to individuals who, through extraordinary individual action in an emergency situation, prevent an imminently dangerous situation, prevent injury to personnel, or minimize or prevent damage to Army property. UAS operators will use this award when submitting for recognition of outstanding airmanship to minimize or prevent aircraft damage or injury to personnel during emergency situations.

*g. Army Aviation Broken Wing Award.* This award certificate and lapel pin is presented by the ODASAF to individuals who, through outstanding airmanship and while performing crewmember duties in an aircraft, minimize or prevent aircraft damage or injury to personnel during emergency situations. UAS personnel will use the United States Army Safety Guardian Award for recognition of outstanding airmanship to minimize or prevent aircraft damage or injury to personnel during emergency situations.

*h. United States Army Risk Management Safety Award.* This award is awarded by the ODASAF to organizations or individuals who have made significant contributions to Army readiness through RM.

## **5–12. Safety awards below Department of the Army level**

*a. Army Mishap Prevention Award of Accomplishment.* This award is presented to table of organization and equipment (TOE) or TDA detachments; company-sized units, battalions, or equivalent; brigades or equivalent; and divisions, installations, or activities that have completed 12 consecutive months, or a major training exercise, or an actual deployment of greater than 120 days without experiencing a class A, class B, or class C mishap.

*b. U.S. Army Aircrew Member Safety Award.* Commanders present this award to aircrew members with at least 500 mishap-free flight hours as a crewmember.

*c. Other individual and organizational awards.* Leaders at all levels will recognize safe performance of individuals and subordinate organizations. Leaders are encouraged to develop awards that are tailored to recognize the mishap prevention accomplishments within their sphere of activity, interest, or operation. Leaders may use DA Form 1119–1 (Certificate of Achievement in Safety) or are authorized to design and use locally produced certificates or trophies. Awards will be signed by the organization's leader and will include, at a minimum, the awardees' name and the contribution for which the award is given.

*d. Unit Impact Award.* Commanders are encouraged to develop and issue policies for safety impact awards to promote safety awareness through on-the-spot recognition of safety-related actions that are above and beyond what is required of an individual or organization according to AR 600–8–22. Authorized awards include medals, trophies, badges, commanders' coins, and plaques. Do not use personal use items such as gym bags, clothing items, coffee mugs, and so forth as incentive awards to promote a safety program.

*e. Army Safety Excellence Streamer.* This streamer is presented to company-sized units, battalions, or equivalent; divisions; and installations (both TOE and TDA type units) that have met prescribed eligibility criteria.

(1) Detachment/company size units that have completed 12 consecutive months without experiencing a Soldier/unit at-fault class A or B mishap and have 100 percent completion of RM training within the last 24 months at time of submission. (USACRC web-based training fulfills this requirement.)

(2) Battalions, or equivalent, that have completed 12 consecutive months without experiencing a Soldier/unit at-fault class A or B mishap and have 100 percent completion of RM training and the ARAP within the last 24 months at time of submission. (USACRC web-based training fulfills this requirement.)

(3) Brigades or equivalent that have completed 12 consecutive months without a Soldier/unit at-fault class A or B mishap.

(4) Division and installations that have completed 12 consecutive months without a Soldier/unit at-fault class A or B mishap.

(5) Eligibility for award of the Army Safety Excellence Streamer accrues from 10 March 2009. Award is not retroactive before that date. The streamer may be displayed for 1 year after award, at which time the unit must re-qualify and resubmit in accordance with eligibility criteria.

### **5-13. Unit safety certification**

Unit safety certification is used to identify units (platoon size or larger) that have achieved levels of safety that deserve recognition. When the following criteria have been certified by the commander at the next level, a certificate is issued by the local safety office recognizing the unit's achievement for the given period of time. A unit must have:

- a. Appointed in writing a safety officer who has completed the required level of training.
- b. Implemented a safety program according to this regulation.
- c. Reduced the number of mishaps, both on and off the job, by 50 percent of the previous year.
- d. Had in place a mishap tracking and reporting system that complied with the requirements of this regulation.
- e. Had in place a documented RM process demonstrating controls implementation and management of identified risks.
- f. Sustained the initiatives listed in this paragraph for a significant and established period of time, such as 1 year, 2 years, and so forth.

### **5-14. Army safety award process**

Award individuals and units based on their overall safety achievements. The standard policy staff functions are as follows:

- a. ACOM, ASCC, DRU, and ARNG award programs are an item of special interest during safety assessments conducted by DASAF.
- b. Approve and present Army safety awards in accordance with the criteria established in this regulation. Augmentation of Army safety award programs with local safety awards is encouraged.
- c. Receipt of a safety award does not preclude an individual from receiving a military award as described in AR 600-8-22 or an incentive award as described herein.
- d. Submit a nomination for an award to the appropriate approval authority within 2 years of the action or period under consideration. Nominations may be made for actions prior to the 2-year limit, but more current nominations may preclude full consideration. Prepare nominations in accordance with policy set forth in AR 25-50. Preformatted nomination sheets are available online at <https://safety.army.mil> (see DA Form 1119-1 for an example).
- e. Replacement of awards is at the discretion of the award approving authority. Proof of award and justification will accompany requests for award replacement.
- f. Maintain records of awards in accordance with AR 25-400-2. The USACRC awards manager will maintain records for DA-level awards.
- g. Additional information regarding this program is located at <https://safety.army.mil> under "Awards."
  - (1) For Army DASAF-approved awards, with the exception of U.S. Army Broken Wing nominations, contact the awards administrator at [usarmy.rucker.hqda-secarmy.list.safe-awards@army.mil](mailto:usarmy.rucker.hqda-secarmy.list.safe-awards@army.mil) or DSN 558-0043, commercial (334) 255-0043.
  - (2) For questions on the U.S. Army Broken Wing Award, contact [usarmy.rucker.hqda-secarmy.list.safe-avn-awards@army.mil](mailto:usarmy.rucker.hqda-secarmy.list.safe-avn-awards@army.mil) or DSN 558-9337, commercial (334) 255-9337, or USACRC help desk DSN 558-1390, commercial (334) 255-1390 for the current number.

### **5-15. Department of the Army-level unit awards**

A hierarchy is established that recognizes different levels of achievement with awards from lower command levels through the CSA.

a. *Headquarters, Department of the Army Safety Award.* This award is awarded each FY to ACOMs, ASCCs, DRUs, USARC, and NGB.

(1) *Eligibility requirements.* The DASAF or a designated representative will convene a panel to make recommendations for recipients of this award. The panel will consist of at least three senior safety professionals.

(2) *Submission deadline.* The submission deadline is 15 December annually.

(3) *Presentation.* The SECARMY, CSA, or their designated representative will present the award at a suitable venue to be determined.

(4) *Approval authority.* The SECARMY/CSA will be the approval authority.

(5) *Award.* The award is a standing plaque.

b. *Headquarters, Department of the Army Exceptional Organization Safety Award.* This award is competed and presented each FY by the SECARMY and/or CSA to organizations at all command echelons down to battalion that have demonstrated significant improvements, sustained excellence, and leadership in mishap prevention programs.

(1) *Recipient.* Organizations at all levels of command from battalion to ACOMs will be the recipients of the award.

(2) *Eligibility requirements.* The organization is selected by its higher levels of command (with the exception of ACOM/ASCC 4-star commands) with the most effective overall safety program. Commanders of ACOMs, ASCCs, DRUs, USARC, and the CNGB may select one nominee in each of the following categories: ACOM/ASCC 4-star commands, ASCC/DRU/3-star commands, ASCC/DRU 2-star commands, division and all other 2-star commands, DRU and all other 1-star commands, brigade/O-6 equivalent, battalion/O-5 equivalent, and garrison. Commanders of ACOMs, ASCCs, DRUs, and USARC and the CNGB are to develop policies and procedures that foster the competitive and progressive nature of this award, nominating only the best candidate in each of the applicable categories. The time frame for the award is one FY. Demonstrations of merit may be made using both subjective and objective criteria. Criteria that may be used to support the nomination are as follows:

(a) The organization's mission, location, type, and number of assigned personnel.

(b) Commander's support of higher headquarters and DA safety campaigns.

(c) Mishap statistics and experiences.

(d) Methods used to effect or sustain mishap reduction (for example, safety training or new initiatives).

(e) Major accomplishments.

(f) Objectives for the coming year.

(g) Civilian injury and illness reduction program.

(h) Workers compensation costs.

(i) Percentage of commanders who have completed the LSC in accordance with paragraph 5-3.

(j) Seatbelt usage rates.

(k) Strategies, controls, or policies that have contributed to mission and operational success. Include such information as circumstances, hazards, movements, and others that provide evidence of success and potential for command-wide applicability.

(l) Proactive measures taken to enhance RM implementation.

(m) Description of total command involvement and support of safety programs.

(n) Description of initiatives that are not required but will enhance the command safety program such as purchase of ergonomic equipment or workstations, partnering with the community, or other government activities and organizations.

(3) *Initiator.* Unit or facility commander or manager, or installation/unit safety manager can be the initiators.

(4) *Nominations.* Prepare a THRU memorandum with supporting documentation as needed in accordance with AR 25-50 through your local chain of command (brigade, division, and individual command as applicable) to the attention of the Director of Army Safety (CSSC-PA), Awards Administrator, Building 4905, Ruf Avenue, Fort Rucker, AL 36362-5363. The nomination will have narrative text and may include graphics such as tables, charts, diagrams, and/or photographs to clarify accomplishments. When printed the nomination will consist of no more than seven standard-size, single-spaced pages. The nomination will include a concise introduction which describes specific achievements that merit consideration and a summary explanation of what is being done toward continued mishap reduction and details on unique/specific initiatives. Initiator POC information will include email address and telephone number. Approved nominations may be electronically sent to usarmy.rucker.hqda-secarmy.list.safe-awards@army.mil no later than 15 December each year.

(5) *Judging.* The DASAF or a designated representative will convene a panel to make recommendations for recipients of this award. The panel will consist of at least three senior safety professionals.

(6) *Presentation.* The SECARMY, CSA, or their designated representative will present the award at a suitable venue to be determined.

(7) *Approval authority.* The SECARMY/CSA will be the approval authority.

(8) *Award.* A mounted certificate will be the award.

c. *Headquarters, Department of the Army Individual Award for Excellence in Safety.* This award is competed and presented each FY by the SECARMY/CSA to individuals who have demonstrated significant improvements, sustained excellence, and leadership in mishap prevention programs.

(1) *Recipients.* U.S. Army military personnel and DA Civilian employees will be the recipients.

(2) *Eligibility requirements.* An individual selected by levels of command through ACOMs, ASCCs, DRUs, and ARNG as having made the most significant contribution to the unit's or activity's mishap prevention effort. One mounted certificate is awarded each FY in each of seven categories (field grade officer, company grade officer, warrant officer, NCO, junior enlisted, GS-7 to GS-12 DA Civilian, and GS-13 to GS-15 DA Civilian). Commanders of ACOMs, ASCCs, DRUs, and USARC and the CNGB will develop policies and procedures that foster the competitive and progressive nature of this award, nominating only the best candidate in each of the applicable categories. The time frame for the award is one FY. Demonstration of merit may be made using both subjective and objective criteria. The following are examples of significant contributions and criteria that may be used:

(a) Through personal emphasis a commander reduces their organization's POV mishap and fatality rate by 25 percent.

(b) A DA Civilian supervisor of a GOCO munitions operating facility reduces on-the-job mishap rate by 25 percent one year through personal involvement in the plant's mishap prevention program.

(c) Discussions on the organization's mission, location, and number and type of assigned personnel as it relates to the overall safety program.

(d) An enlisted Soldier implements a command level motor pool safety program that results in sustained mishap reduction, increased safety awareness, and improved Soldier morale, which results in overall equipment readiness.

(e) An individual's achievements relating to safety and methods used to effect or sustain mishap reduction.

(3) *Initiator.* Unit or facility commander or manager, or installation/unit safety manager can be the initiators.

(4) *Nominations.* Prepare a THRU memorandum with supporting documentation as needed in accordance with AR 25-50 through your local chain of command (brigade, division, and individual command as applicable) to the attention of the Director of Army Safety (CSSC-PA), Awards Administrator, Building 4905, Ruf Avenue, Fort Rucker, AL 36362-5363. The nomination will have narrative text and may include graphics such as tables, charts, diagrams, and/or photographs to clarify accomplishments. When printed the nomination will consist of no more than seven standard-size, single-spaced pages. The nomination will include a concise introduction that describes specific achievements that merit consideration and a summary explanation of what is being done toward continued mishap reduction and details on unique/specific initiatives. Initiator POC information will include email address and telephone number. Approved nominations may be electronically sent to usarmy.rucker.hqda-secarmy.list.safe-awards@army.mil no later than 15 December each year.

(5) *Judging.* The DASAF or a designated representative will convene a panel to make recommendations for recipients of this award. The panel will consist of at least three senior safety professionals.

(6) *Presentation.* The SECARMY, CSA, or their designated representative, will present the award at a suitable venue to be determined.

(7) *Approval authority.* The SECARMY/CSA will be the approval authority.

(8) *Award.* A mounted certificate is the award.

d. *Headquarters, Department of the Army Industrial Operations Safety Award.* This award is competed and presented each FY by the SECARMY and/or CSA to the organization with the most effective overall industrial operations safety program.

(1) *Recipients.* Organizations below ACOM, ASCC, and DRU, and within the ARNG.

(2) *Eligibility requirements.* The organization as selected by its higher levels of command with the most effective overall industrial safety program. Commanders of ACOMs, ASCCs, and DRUs and the CNGB may select one nominee from division, depot, garrison, and down to company, shop, and/or section level. Commanders of ACOMs, ASCCs, DRUs, and USARC and the CNGB will develop policies and procedures that foster the competitive and progressive nature of this award, which is akin to an "HQDA Exceptional Organization Award" or "HQDA Individual Award of Excellence in Safety" competition. The timeframe for the award is based on an FY. Demonstrations of merit may be made using both subjective and objective criteria. Criteria that may be used to support the nomination include, but are not limited to:

(a) Safety policy.

(b) Preoperational planning.

(c) SOPs/JHAs.

(d) Mishap prevention plan.

(e) Emergency response plan.

(f) Training, licensing, and qualifications.

(g) PPE.

(h) Ergonomics.

(i) Machine safeguarding.

- (j) Confined space.
- (k) Lockout/tagout.
- (l) Worker compensation costs.
- (m) Injury/mishap frequency rates (exhibit time frame).
- (n) Strategies, controls, or policies that have contributed to mission and operational success, such as Lean Six Sigma and the Voluntary Protection Program. Include circumstances, hazards, movements, evidence, and potential for Armywide applicability.
- (o) Proactive measures taken to enhance RM implementation, such as evidence of a close working relationship among the safety, OH, and environmental offices.
- (p) Description of safety processes, to include incentive programs, inspection visits, training events, and so forth.
- (q) Description of total command involvement and support of safety program.
- (r) Description of initiatives that are not required but will enhance the command safety program such as partnering with the local community or other activities and organizations.
- (s) OH/industrial hygiene initiatives.
- (t) Environmental program initiatives.
- (u) Wellness initiatives (for example integration of safety and health programs (on and off duty)).
- (3) *Initiator.* ACOMs, ASCCs, or DRUs.
- (4) *Nominations.* Prepare a THRU memorandum with supporting documentation as needed in accordance with AR 25-50 through command headquarters (address through the first O-6 or equivalent) and through the ACOMs, ASCCs, DRUs, and NGB to the attention of the Director of Army Safety (CSSC-PA), Awards Administrator, Building 4905, Ruf Avenue, Fort Rucker, AL 36362-5363. The nomination will include a concise introduction, which describes specific achievements that merit consideration and summary explanation of their accomplishments. Initiator POC information will include email address and telephone number. ACOM, ASCC, DRU, and NGB approved nominations may be electronically sent to usarmy.rucker.hqda-secarmy.list.safe-awards@army.mil no later than 15 December each year.
- (5) *Documentation.* The nomination package will have narrative text and may include graphics such as tables, charts, diagrams, and/or photographs to clarify accomplishments. When printed, the package will consist of no more than seven standard-size, single-spaced pages.
- (6) *Judging.* The DASAF or a designated representative will convene a panel to make recommendations for recipients of this award. The panel will consist of at least three senior safety professionals.
- (7) *Presentation.* The SECARMY, CSA, or their designated representative will present the award at a suitable venue to be determined.
- (8) *Approval authority.* The SECARMY/CSA will be the approval authority.
- (9) *Award.* A mounted certificate is the award.

*e. Headquarters, Department of the Army Excellence in Explosives Safety Award.* This award is competed and presented each FY by the SECARMY and/or CSA to the organization with the most effective overall explosives safety program.

- (1) *Recipients.* Organizations below ACOM, ASCC, DRU, USARC (division, depot, garrison, and down to company, shop, and/or section level), and within the ARNG.
- (2) *Eligibility requirements.* The organization as selected by its higher levels of command with the most effective overall explosives safety program. Commanders of ACOMs, ASCCs, DRUs, and USARC and the CNGB may select one nominee each from division, brigade, battalion, depot/garrison/activity, down to company level. Commanders of ACOMs, ASCCs, DRUs, and USARC and the CNGB will develop policies and procedures that foster the competitive and progressive nature of this award, which is akin to an “HQDA Exceptional Organization Award” or “HQDA Individual Award of Excellence in Safety” competition. The timeframe for the award is based on FY. Demonstration of merit may be made using both subjective and objective criteria. Criteria that may be used to support the nomination include, but are not limited to:

- (a) Command emphasis on explosive safety.
- (b) RM/SOPs/JHA process.
- (c) Strategies, controls, or policies that have contributed to mission and operational success. Include circumstances, hazards, movements, evidence, and potential for Armywide applicability.
- (d) Mishap prevention planning.
- (e) Emergency response planning.
- (f) Injury/mishap frequency rates (exhibit timeframe).

(g) Proactive measures taken to enhance RM implementation, such as evidence of a close working relationship among the safety, OH, and environmental offices; continuous improvement initiatives; incentive measures; and establishment of explosives safety committee/councils.

(h) Training improvements or enhancements.

(i) Ammunition/explosives operational improvements.

(j) System safety analyses and design improvements in ammunition items and explosives safety controls.

(k) Publication of ammunition/explosives safety articles/communications.

(3) *Initiator.* ACOMs, ASCCs, or DRUs.

(4) *Nominations.* Prepare a THRU memorandum with supporting documentation as needed in accordance with AR 25-50 through command headquarters (address through the first O-6 or equivalent) and through the ACOM, ASCC, DRU, or NGB to the attention of the Director of Army Safety (CSSC-PA), Awards Administrator, Building 4905, Ruf Avenue, Fort Rucker, AL 36362-5363. The nomination will include a concise introduction, which describes specific achievements that merit consideration and summary explanation of their accomplishment. Initiator POC information will include email address and telephone number. ACOM, ASCC, DRU, and NGB approved nominations may be electronically sent to usarmy.rucker.hqda-secarmy.list.safe-awards@army.mil no later than 15 December of each year.

(5) *Documentation.* The nomination package will have narrative text and may include graphics such as tables, charts, diagrams, and/or photographs to clarify accomplishments. When printed, the package will consist of no more than seven standard-sized, single-spaced pages.

(6) *Judging.* The DASAF or a designated representative will convene a panel to make recommendations for recipients of this award. The panel will consist of at least three senior safety professionals.

(7) *Presentation.* The SECARMY, CSA, or their designated representative will present the award at a suitable venue to be determined.

(8) *Approval authority.* The SECARMY/CSA will be the approval authority.

(9) *Award.* A mounted certificate is the award.

f. *The Army Safety Guardian Award.*

(1) *Recipients.* U.S. Army military personnel and DA Civilians.

(2) *Eligibility requirement.* An individual must, through extraordinary actions or skills, react to an emergency event or an imminently dangerous situation, thereby eliminating or minimizing loss, such as damage to Army property or injury to Army personnel. Emergencies or dangerous situations resulting from enemy action are not excluded from consideration. Individuals will not be considered for the award if they had a casual role in the emergency event or dangerous situation.

(3) *Initiator.* The DASAF may initiate or the unit commander/activity director may send a request for consideration through the first O-6 (or equivalent civilian grade) in the individual's or unit's chain of command.

(4) *Nominations.* Prepare a THRU memorandum with supporting documentation as needed in accordance with AR 25-50 through the local chain of command (addressed through the first O-6 or equivalent) to the attention of the Director of Army Safety (CSSC-PA), Awards Administrator, Building 4905, Ruf Avenue, Fort Rucker, AL 36362-5363. The nomination will include a concise introduction which describes specific achievements that merit consideration and a summary explanation of their accomplishments. Initiator POC information will include email address and telephone number. Approved nominations may be electronically sent to usarmy.rucker.hqda-secarmy.list.safe-awards@army.mil.

(5) *Documentation.* Nominations will include the following:

(a) Full name, grade, and duty being performed at the time of the act.

(b) Date, time, and location of act.

(c) Personnel and equipment involved, including dollar value, if applicable.

(d) Concise description of situation necessitating the act.

(e) Specific action taken by the nominee.

(f) Lapsed time from the onset of the situation to termination.

(g) Drawings, other supporting documentation, and photographs, if available.

(h) A copy of the mishap investigation report, if applicable.

(i) The initiator's contact information, including email address and telephone number.

(6) *Judging.* The award decision is made by DASAF.

(7) *Approval authority.* The DASAF will be the approval authority.

(8) *Award.* A mounted certificate will be the award.

g. *The Army Aviation Broken Wing Award.*

(1) *Recipients.* Individuals performing authorized aircrew member flight duties on behalf of the U.S. Army while on a DoD mission are eligible to receive this award.

(2) *Eligibility requirements.* An aircrew member must, through outstanding airmanship, minimize or prevent aircraft damage or injury to personnel during an emergency situation. The aircrew member must have shown extraordinary skill while recovering an aircraft from an in-flight emergency situation. If more than one crewmember materially contributed to successful recovery from the emergency, each of those involved should be considered for nomination. Emergencies resulting from enemy action are not excluded from consideration. An emergency will not be considered for award if:

- (a) It is self-induced.
- (b) It actually occurs during a simulated emergency requiring no added skill to land the aircraft successfully.
- (c) It occurs because of noncompliance with published regulations or procedures.
- (d) It is determined that no emergency actually existed.
- (e) In the panel's opinion, a lack of discipline or aviator judgment may have induced the emergency.
- (f) The aircraft was in a phase of flight with no unfavorable circumstances to prevent a safe landing.

(3) *Initiator.* The DASAF may initiate or the unit commander/activity director may send a request for consideration through the first O-6 (or equivalent civilian grade) in the individual's or unit's chain of command.

(4) *Nominations.* Prepare a THRU memorandum with supporting documentation as needed in accordance with AR 25-50 through the local chain of command (addressed through the first O-6 or equivalent) to the attention of the Director of Army Safety (CSSC-PA), Awards Administrator, Building 4905, Ruf Avenue, Fort Rucker, AL 36362-5363. The nomination will include a concise introduction that describes specific achievements that merit consideration and a summary explanation of their accomplishments. Initiator POC information will include email address and telephone number. Approved nominations may be electronically sent to usarmy.rucker.hqda-secarmy.list.safe-avn-awards@army.mil.

(5) *Documentation.* Nominations will contain the following information:

- (a) Full name, rank, and crew duty position (for example, instructor pilot, pilot, copilot, or student pilot) and aircraft station (front seat, back seat, right seat, left seat) of the person actually on the controls during the emergency.
- (b) Date, time, location, above-ground level altitude, density altitude, wind conditions (direction and velocity), visibility, illumination, and gross weight at onset and termination of the emergency.
- (c) Mission type, design, and series of the aircraft involved.
- (d) Type of mission.
- (e) Phase of flight when the emergency occurred (for example, hover, takeoff climb, cruise, descent, and approach to landing, autorotation).
- (f) Terrain and obstructions over which the emergency occurred.
- (g) Concise description of the emergency from onset to termination to include action taken by the nominee to cope with the emergency or minimize damage or injury. The circumstance surrounding the occurrence must be documented to show the skill, knowledge, judgment, and technique required and used in recovering from the emergency.
- (h) Include total time for aircrew member and total time in mission/design/series.
- (i) Drawings, other supporting documentation, and photographs, if available.
- (j) Copy of applicable mishap report.
- (k) The initiator's contact information, including email address and telephone number.

(6) *Judging.* The DASAF will convene a panel quarterly when nominations are received. The panel will consist of the DASAF or a designated representative and at least five senior-level aviators; it may include senior enlisted crewmembers when appropriate. At least one panel member will be qualified in the mission type and design of the aircraft involved in the emergency.

(7) *Approval authority.* The DASAF will be the approval authority.

(8) *Award.* A Broken Wing Award plaque, certificate, and lapel pin will be the awards.

*h. Director of Army Safety Risk Management Award.*

(1) *Recipients.* Individuals or organizations.

(2) *Eligibility requirements.* An individual or organization must have demonstrated exemplary leadership or made significant contribution to Army readiness through RM.

(3) *Initiator.* The DASAF may initiate or the unit commander/activity director may send a request for consideration through the first O-6 (or equivalent civilian grade) in the individual's or unit's chain of command.

(4) *Nominations.* Prepare a THRU memorandum with supporting documentation as needed in accordance with AR 25-50 through the local chain of command (addressed through the first O-6 or equivalent) to the attention of the Director of Army Safety (CSSC-PA), Awards Administrator, Building 4905, Ruf Avenue, Fort Rucker, AL 36362-5363. When printed, the nomination will consist of no more than seven standard-size, single-spaced pages.

The nomination will include a concise introduction, which describes specific achievements that merit consideration and a summary explanation of their RM accomplishments. Initiator POC information will include email address and telephone number. Approved nominations may be electronically sent to usarmy.rucker.hqda-secarmy.list.safe-awards@army.mil.

(5) *Documentation.* The following documentation is required:

- (a) Name of individual or organization.
- (b) Date or time period of achievement.
- (c) Achievement relating to safety.
- (d) Any other pertinent data.

(6) *Judging.* The award decision is made by DASAF.

(7) *Approval authority.* The DASAF will be the approval authority.

(8) *Award.* A mounted certificate is the award.

## **5–16. Army command, Army service component command, direct reporting unit, Army National Guard, and organization level awards**

a. *DA Form 5775.* Use DA Form 5775 (Army Accident Prevention Award of Accomplishment in Safety) for submissions of awards as follows:

(1) *Recipients.* TOE or TDA detachments; company size units, battalions, or equivalent; brigades or equivalent; and divisions, installations, or activities are the recipients.

(2) *Eligibility requirements.* To be eligible, an organization must complete 12 consecutive months or complete a major training exercise or compete an actual deployment of greater than 120 days without experiencing a class A, B, or C mishap attributable to human error (see para 3–7 for mishap classes). For the purpose of this award, a major training exercise is considered as an operation conducted at no less than an O–6 level. Only property damage will be considered in determining class C mishaps. Class C mishaps that do not meet damage costs in paragraph 3–7 will not be considered as disqualifying. If an organization considers a mishap on its record to have been unpreventable it may request an eligibility determination from their ACOM, ASCC, DRU, USARC, or NGB safety director or USACRC. Awards will not be approved for overlapping time frames. Commanders of ACOMs, ASCCs, DRUs, and USARC and the CNGB may establish specific criteria for this award. Subsequent years of eligibility may be the basis for a repeat of this award or for an award as developed by the ACOM, ASCC, DRU, or ARNG (2nd year, 3rd year, and so on).

(3) *Initiator.* Organization commander or manager, or organization safety manager.

(4) *Nominations.* Nominations will be submitted through the unit's chain of command to the ACOM, ASCC, DRU, or USARC commander or the CNGB for screening and verification of the unit's performance.

(5) *Documentation.* Each level of command must endorse the request and verify that the unit is eligible for the award.

(6) *Judging.* The judging is determined by commanders of ACOMs, ASCCs, DRUs, and USARC and the CNGB.

(7) *Approval authority.* Commanders of ACOMs, ASCCs, DRUs, and USARC and the CNGB will be the approval authorities.

(8) *Award.* The Army Mishap Prevention Award of Accomplishment certificate will be the award. A template is located at USACRC website <https://safety.army.mil> under "Awards." Commanders of ACOMs, ASCCs, DRUs, and USARC and the CNGB are encouraged to modify this template or design a suitable replacement certificate or plaque. Certificates should be framed for presentation.

b. *United States Army Aircrew Member Safety Award.*

(1) *Recipients.* U.S. Army military personnel, DA Civilians, and Army contracted employees who perform aerial flights as aircrew members will be the recipients.

(2) *Eligibility requirements.* To be eligible, a nominee must complete at least 500 flight hours as an aircrew member in a U.S. Army aircraft without having a contributing role in a human-factor-related class A, B, or C aviation mishap (see DA Pam 385–40 for mishap classes). Subsequent awards will be in increments of 500 hours.

(3) *Initiator.* Organization commanders or their representative will be the initiator.

(4) *Nomination.* Nominations will be made in accordance with organization SOPs and will include a statement that the unit ASO has verified safety records by checking the nominee's DA Form 759 (Individual Flight Record and Flight Crew Certificate—Army (Flight Hours)).

(5) *Judging.* Judging will be done in accordance with unit SOP.

(6) *Approval authority.* The approval authority belongs to the appropriate aviation unit commander.

(7) *Award.* Commanders are authorized to substitute a unit certificate for DA Form 1119–1.

c. *Other awards.* Leaders at all levels will recognize safe performance displayed by individuals within their organization. Leaders are encouraged to develop awards that are tailored to recognize the mishap prevention

accomplishments within their sphere of activity, interest, or operation. Leaders may use DA Form 1119-1 or are authorized to design and use locally produced certificates or trophies in place of DA Form 1119-1. Awards will be signed by the organization's leader and will include, at a minimum, the awardees' name and the contribution for which the award is given.

*d. Unit Impact Award.*

(1) *Purpose.* Impact awards support the safety strategy of the U.S. Army to further mission readiness through risk reduction and management.

(2) *Strategy.* Commanders are encouraged to develop and issue policies for safety impact awards to promote safety awareness through on-the-spot recognition of safety-related actions which are above and beyond what is required of an individual or organization and which would normally go unnoticed.

(3) *Awards.* Impact award items should convey safety information that supports the organization's safety mission, rather than agency logos or general agency slogans.

*e. Army Safety Excellence Streamer.*

(1) *Recipients.* TOE or TDA detachments; company-sized units, battalions, brigades, or equivalent; installations and divisions are the recipients.

(2) *Eligibility requirements.*

(a) Detachments/company-sized units that have completed 12 consecutive months without experiencing a Soldier/unit at-fault class A or B mishap and have 100 percent completion of RM training within the last 24 months at time of submission. (The USACRC web-based RM training fulfills this requirement.)

(b) Battalions or equivalent that have completed 12 consecutive months without experiencing a Soldier or unit at-fault class A or B mishap and have 100 percent completion of RM training and completion of the ARAP within the last 24 months at the time of submission. (The USACRC web-based training fulfills this requirement.)

(c) Brigades or equivalent that have completed 12 consecutive months without a Soldier/unit at-fault class A or B mishap.

(d) Divisions and installations that have completed 12 consecutive months without a Soldier/unit at-fault class A or B mishap.

(3) *Awarding of the Army Safety Excellence Streamer.* Awarding of the Army Safety Excellence Streamer is effective immediately for organizations meeting eligibility requirements. The streamer may be displayed by the organization for 1 year after the award of the streamer, at the expiration of which the unit must requalify and resubmit a request for the streamer under the eligibility criteria of paragraph 5-16e(2).

(4) *Approval authority.* The O-6 or above level commanders of TOE or TDA organizations award the Army Safety Excellence Streamer to units under their command meeting eligibility criteria. This authority may not be further delegated lower than the O-6 level commander.

(5) *Nominations.* Nominations will be submitted through the unit's chain of command to the appropriate level of command for screening, verification, and approval.

(6) *Judging.* Each level of command must endorse the request and verify that the unit is eligible for the streamer.

(7) *Award.* The Army Safety Excellence Streamer will be the award.

(8) *Compliance.* Local safety offices are responsible for ensuring compliance with established eligibility and display criteria in conjunction with the conduct of SOH inspections.

(9) *Oversight.* The Army Safety Office will verify compliance with eligibility and display criteria during command safety audits.

## **Chapter 6**

### **Hazard Analysis and Countermeasures**

#### **6-1. General**

Hazard analysis and countermeasures are processes that collect, review, and analyze data from various sources to identify trends, systemic deficiencies, and profiles for use in establishing program initiatives and priorities to develop proactive measures in mitigating risk of accidental losses of Army personnel, material, facilities, and equipment. These processes include RM, design reviews, mission analysis, safety releases, JHA, operation hazard analysis, and preventive/predictive maintenance. Army operations, whether they involve military situations including tough, realistic training, combat operations, contingency basing, or the industrial base supporting research, development, testing, and production, are demanding and complex. Army operations are inherently dangerous and each has the potential to jeopardize Soldiers and DA Civilians, resulting in the needless loss of limited resources. Managing risks related to such operations requires educated judgment, situational knowledge, demonstrated experience, and professional competence.

## 6–2. Risk management

*a.* RM is the Army's primary process for assisting organizations and individuals in making informed risk decisions which reduce or eliminate risk, thereby increasing effectiveness and the probability of mission success. Commanders and leaders at all levels must incorporate hazard awareness and RM into their daily processes and mission planning. The basic concepts of RM apply to all Army operations and functional areas. However, ATP 5–19 establishes the methodology for integrating the RM process into the military decision-making process and troop leading procedures. ATP 5–19 contains the RM five-step process, tools, and techniques. ATP 5–19 also contains descriptions, diagrams, and matrices associated with the five-step process.

*b.* Army leaders will integrate RM into aspects of military missions and operations, industrial planning, research and development, systems, equipment, procurement, testing, construction, and processes to increase efficiency and effectiveness by eliminating or controlling adverse and risky conditions that will degrade their execution and value to the U.S. Army. Apply RM to Soldiers, DA Civilians, and the total lifecycle of missions, systems, operations, equipment, and facilities, from conception to completion or disposal. Apply RM cyclically and continuously (see fig 6–1).

*c.* Soldiers and civilians should integrate the RM process into activities both on and off duty.

*d.* Document the deliberate RM process, with the exception of deviations from AE or chemical agent safety standards, using DD Form 2977 (Deliberate Risk Assessment Worksheet) or a locally produced form. DA Form 7632 is mandatory for waivers, exemptions, and deviations from AE or chemical agent safety standards. DA Form 7632 instructions are in DA Pam 385–64.

*e.* A hazard identification and analysis system based on the requirements of paragraph 4–5 and mandatory procedures in DA Pam 385–10 will be implemented to systematically identify basic and unforeseen safety and health hazards, evaluate their risks, and prioritize and recommend methods to eliminate or control hazards to an acceptable level of risk.

*f.* Tables 6–1 through 6–4 categorize risk in terms of the probability and severity associated with a hazard.

*g.* Commanders of ACOMs, ASCCs, and DRUs and the CNGB will establish and publish approval authority for acceptance and decision making for their command.

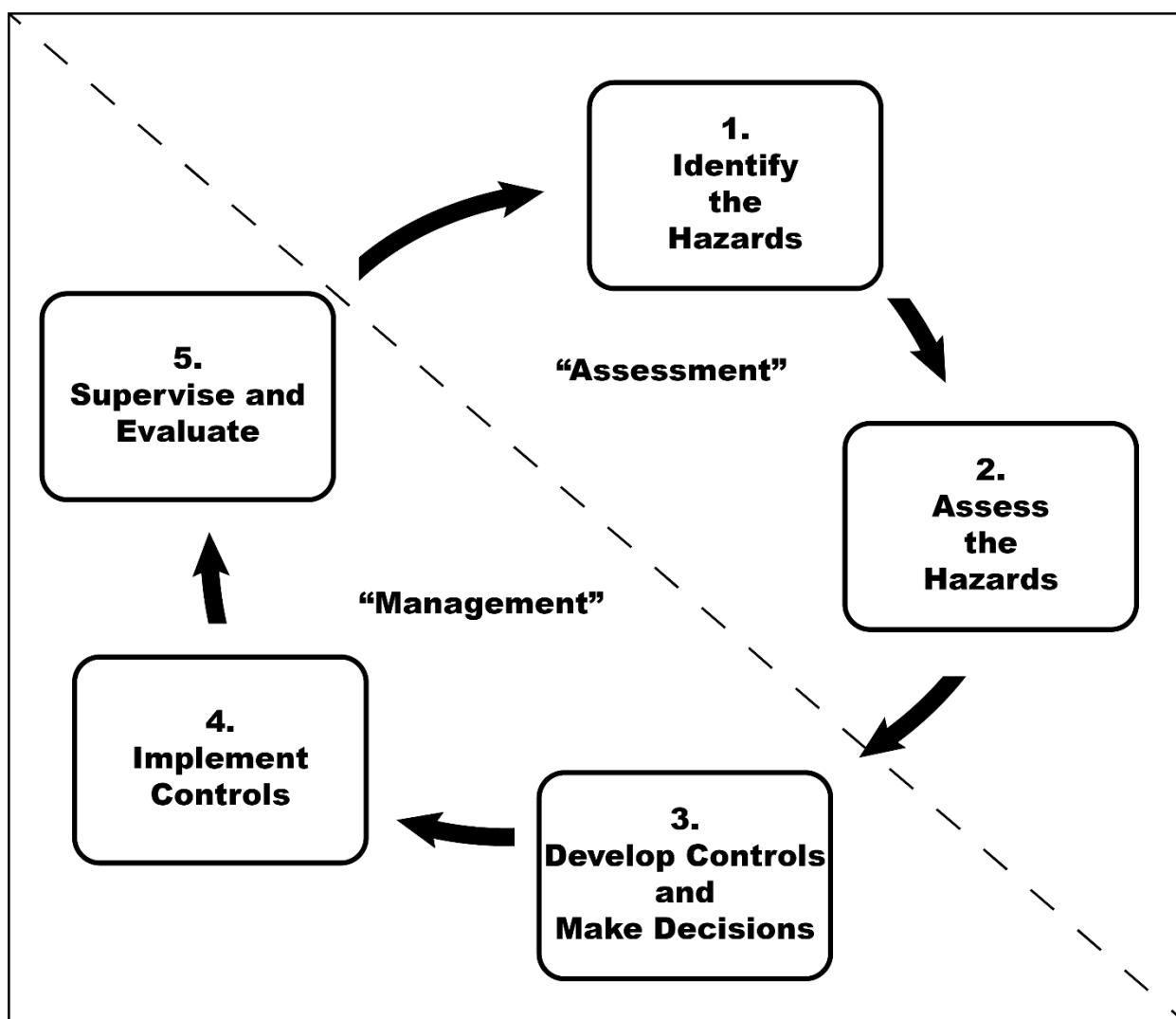


Figure 6–1. Five-step cycle of risk management

Table 6–1  
Risk management probability categories

Probability	Symbol	Definition
Frequent	A	Continuous, regular, or inevitable occurrences
Likely	B	Several or numerous occurrences
Occasional	C	Sporadic or intermittent occurrences
Seldom	D	Infrequent occurrences
Unlikely	E	Possible occurrences but improbable

**Table 6–2**  
**Risk management severity categories**

Severity	Symbol	Quantitative Value: Injury or Illness <sup>1</sup>	Quantitative Value: Dollars <sup>1</sup>	Definition
Catastrophic	I	One or more death or permanent total disability	Loss equal to \$2.5 million or more	Death, unacceptable loss or damage, mission failure, or unit readiness eliminated
Critical	II	One or more permanent partial disability or hospitalization of at least three personnel	Loss equal to or greater than \$600 thousand but less than \$2.5 million	Severe injury, illness, loss, or damage; significantly degraded unit readiness or mission capability
Moderate	III	One or more injury or illness resulting in lost time	Loss equal to or greater than \$60 thousand but less than \$600 thousand	Minor injury, illness, loss, or damage; degraded unit readiness or mission capability
Negligible	IV	One or more injuries or illnesses requiring first aid or medical treatment	Loss equal to or greater than \$25 thousand but less than \$60 thousand	Minimal injury, loss, or damage; little or no impact to unit readiness or mission capability

Notes:

<sup>1</sup> Quantitative values are based on definitions for class A through D mishaps.

**Table 6–3**  
**Standardized Army risk matrix for probability (expected frequency)**

Severity (expected consequence)	Frequent: Continuous, regular, or inevitable occurrences	Likely: Several or numerous occurrences	Occasional: Sporadic or intermittent occurrences	Seldom: infrequent occurrences	Unlikely: Possible occurrences but improbable
	A	B	C	D	E
I. Catastrophic: Death, unacceptable loss or damage, mission failure, or unit readiness eliminated	EH	EH	H	H	M
II. Critical: Severe injury, illness, loss, or damage; significant degraded unit readiness or mission capability	EH	H	H	M	L
III. Moderate: Minor injury, illness, loss, or damage; degraded unit readiness or mission capability	H	M	M	L	L
IV. Negligible: Minimal injury, loss, or damage; little or no impact on unit readiness or mission capability	M	L	L	L	L

Legend:

EH = extremely high risk

H = high risk

M = medium risk

L = low risk

**Table 6–4**  
**Risk matrix codes and descriptions**

Symbol	RAC	Description
EH	1	Extremely High
H	2	High

**Table 6-4**  
**Risk matrix codes and descriptions—Continued**

Symbol	RAC	Description
M	3	Medium
L	4	Low

### 6-3. Hazard analysis

SOH personnel or those specially trained personnel will perform task-, system-, or process-based hazard analyses to identify hazards of routine jobs, tasks, and processes in order to recommend adequate hazard controls. Acceptable techniques include, but are not limited to, JHA and process hazard analysis (PHA). JHA is an assessment of an individual's occupation, whereas PHA is based on a process or task. SOH personnel or those specially trained personnel will—

- a. Conduct hazard analyses on routine jobs, tasks, and processes that:
  - (1) Have written procedures.
  - (2) Have had injuries/illnesses associated with them or have experienced significant incidents or near misses.
  - (3) Are perceived as high-hazard tasks; in other words, they could result in a catastrophic explosion, electrocution, radiation, or chemical overexposure.
  - (4) Are recommended by other studies and analyses for more in-depth analysis.
  - (5) Are required by a regulation or standard.
  - (6) Warrant hazard analysis when determined by any Army personnel.
- b. Conduct hazard analysis of significant changes that include nonroutine tasks (for example, performed less than once a year) or new processes, materials, equipment, and facilities to identify uncontrolled hazards prior to the activity or use and implement hazard elimination or control. Conduct hazard analyses of nonroutine or new tasks if they become routine.
- c. Conduct or update a JHA or PHA annually or when a worksite acquires new equipment, chemicals, facilities, or significantly different operations or procedures that affect employee SOH.
- d. Review and document hazard analyses to:
  - (1) Consider both OH and safety hazards.
  - (2) Identify the steps of the task or procedure being analyzed, hazard controls currently in place, recommendations for needed additional or more effective hazard controls, dates conducted, and responsible parties.
  - (3) Use in training safe job procedures, modifying workstations, equipment or materials, and future planning efforts.
  - (4) Update the environment, procedures, or equipment change, or errors found that invalidate the most recent hazard analyses.

### 6-4. Facility design review requirements

- a. Qualified safety, fire, industrial hygiene, and radiation safety professionals will—
  - (1) Review facility designs (to include support structures and facilities, administrative buildings, recreational facilities, explosive storage facilities, firing ranges and/or weapons training facilities).
  - (2) Review design plans (to include, but not limited to, support structures and facilities) to ensure that safety requirements are adequately addressed prior to new construction, modification, or renovation of all facilities including administrative buildings, recreational facilities, explosive storage facilities, firing ranges, and/or weapons training facilities.
  - (3) Conduct final safety acceptance surveys before occupancy to ensure the facility meets safety, health, and fire protection standards.
- b. Facility design and construction will include the application of the hazard analysis principles contained in chapter 19 of this regulation and mandatory procedures in DA Pam 385-16.

### 6-5. Hierarchy of controls

Commanders of ACOMs, ASCCs, and DRUs and the CNGB with industrial-based operations will implement the appropriate hierarchy of controls to eliminate hazards in Army operations:

- a. *Elimination*. Physically remove the hazard.
- b. *Substitution*. Replace the hazard.
- c. *Engineering controls*. Isolate people from the hazard.

- d. Administrative controls.* Change the way people work.
- e. Personal protective equipment.* Protect the worker with PPE.

## **6–6. Acquisition of materials, equipment, facilities, and systems**

- a. Acquisition of materials, equipment, facilities, and systems* will comply with the requirements of this regulation, 29 CFR 1910, 29 CFR 1926, the National Fire Protection Association (NFPA), the National Electric Code (NEC), and applicable consensus standards.
- b. The acquisition of materials, equipment, facilities, and systems* will maximize the use of engineering design to mitigate residual risks when design changes to remove risks are not feasible.

# **Chapter 7**

## **Occupational Health**

### **7–1. Overview**

OH consists of occupational illness and injury prevention programs and services and assists human resources and line management by evaluating workers to determine if they are medically and physically able to perform the assigned duties without substantial risk of harm to themselves, others, or the mission (fitness for duty examinations) or whether the workplace is causing workers injury or illness due to an occupational exposure (medical surveillance examinations). OH programs test and track workers to determine excess exposure to hazardous chemicals, dust, and other workplace health hazards. OH also supports general public health efforts for all Army personnel, regardless of their position, and may seek to maximize worker productivity through health promotion efforts. Professional disciplines, including industrial hygienists, OH providers, and nurses provide these programs and services. The overall goal is to anticipate, identify, assess, communicate, mitigate, and control occupational disease and injury threats to Army personnel.

### **7–2. Authorities**

AR 40–5 and DA Pam 40–11 outline the core public health objectives and services for OH executed by Army MEDCOM assets funded under Budget Activity Group 3 of the Defense Health Program. Such public health OH assets work closely with other SOH stakeholders (for example human resources and safety assets) to ensure effective execution of the overall OH mission.

### **7–3. Coordination**

Safety professionals will meet with local public health activity leaders (as well as with other OH stakeholders) on a regular basis to ensure effective cooperation, collaboration, and synchronization of OH efforts. AR 40–5 and DA Pam 40–11 provide additional process information on OH responsibilities.

# **Chapter 8**

## **General Workplace Safety and Occupational Health**

### **8–1. Introduction**

- a. This chapter prescribes policy and responsibilities for implementing the OSHA program mandated by federal or state regulations and to reduce the risk of accidental losses, injuries, and occupational illness to the military and DA Civilian workforce. Army operations (CONUS and outside the United States) will comply with OSHA programs except for military-unique operations as defined in this chapter.*

- b. OSHA programs and national consensus standards are applicable to and integrated into all Army equipment, systems, appropriate operations (for example other than those under JP 3–0), and workplaces (CONUS and outside the United States).*

- (1) Military design, specifications, and deployment requirements will comply with OSHA standards where feasible. When standards do not exist for a military application or the application is not feasible, the Army component will apply RM.*

- (2) Military and DA Civilian officials at each management level will promote strong SOH programs, safe working conditions, and safe performance to prevent mishaps, injuries, and occupational illnesses.*

### **8–2. Uniquely military equipment, systems, and operations**

- a. The term “uniquely military equipment, systems, and operations” is defined in 29 CFR 1960.2 (see glossary).*

*b.* The term uniquely military equipment, systems, and operations excludes DoD workplaces and operations comparable to those of industry in the private sector such as vessel, aircraft, and vehicle repair, overhaul, and modification (except for equipment trials); construction; supply services; civil engineering or public works; medical services; and office work.

### **8-3. Operational planning**

*a.* Operational planning will identify hazards that may affect personnel SOH and operations and the measures used to eliminate or control them.

*b.* Leaders, SOH personnel, and those trained personnel use RM to identify and mitigate hazards and manage the associated risk with that activity. This requires that risk assessment, risk decision making, and implementation of effective risk controls be part of the operational SOH plan. Operational plans will incorporate preoperational SOH briefings and training requirements as part of the plan. Operational planning will incorporate briefings and training requirements to address identified hazards and their impact on operations.

### **8-4. Notices of violations**

Record standard Army SOH inspections notices of violations for RAC 1 and RAC 2 hazards on DA Form 4753 (Notice No. \_\_\_\_ of Unsafe or Unhealthful Working Condition) or equivalent and provide to the responsible commander. All posted notices will describe the nature and severity, probability, and associated risk of the violation, the substance of the RM plan, and interim protective measures.

*a.* The official in charge of the workplace and any participating employee representative will receive copies of each notice of unsafe or unhealthful conditions.

*b.* Post notices in a prominent place where all affected personnel will readily see it when it is not practical to post the notice at or near the hazard.

*c.* Delivery and posting will take place within 15 days of detection for safety violations and 30 days for health violations unless more stringent timelines are required by regulatory authorities.

*d.* The notices will remain posted for 3 working days or until correction of hazards is complete, whichever comes later.

### **8-5. Written reports of violations**

Provide written reports of violations resulting from standard Army SOH inspections to the head of the activity or the commander of the unit inspected. These reports will cite hazards and SOH management deficiencies and will recommend corrective actions.

### **8-6. Army employee hazard reporting**

*a.* Leaders and SOH personnel establish procedures for employees to report unsafe or unhealthful hazards or working conditions in accordance with 29 CFR 1960.28 and 29 CFR 1960.46. Use DA Form 4755 (Employee Report of Alleged Unsafe or Unhealthful Working Conditions) to report these conditions. Investigate anonymous reports in the same manner as signed reports. Submit reports directly to the appropriate SOH personnel or through supervisory and command channels. Designated SOH officials will post OSHA 3165 Publication in a prominent area.

*b.* Names of people submitting signed reports who request anonymity will not be revealed by the organization SOH official to anyone other than necessary members of their staff.

*c.* For submitted reports that appear to involve imminent danger, the inspector will—

(1) Notify the immediate supervisor and activity head as soon as possible.

(2) Provide technical advice to the supervisor on the scene, who will correct the condition or cease operation and withdraw personnel from exposure.

(3) Notify SOH personnel if the hazard is not immediately eliminated. SOH personnel will determine adequate appropriate measures to prevent employee exposure and immediately notify the commander or an authorized representative.

(4) Follow the procedures in 29 CFR 1960.28.

*d.* SOH personnel will investigate all reports and provide written results of the investigation to the originator of the hazard report within 10 working days of receipt. If the 10-workday suspense cannot be met, SOH personnel will provide an interim response.

(1) If it is determined that a hazard exists, the reply will include a summary of the actions taken and the anticipated date for corrective action. Procedures for inspections outlined in this paragraph will apply, if appropriate.

(2) If it is determined that a hazardous condition does not exist, the reply to the employee will include the basis for that determination. Inform the individual of their right of appeal as outlined in paragraph 8-6e. Make every effort to

include consulting with a regional OSHA office and requests for technical advice from MEDCOM or USACRC to resolve the originator's questions or dissatisfaction.

(3) If a hazard report also involves a grievance action, the local SOH manager will determine if there is a need for priority action for safety or health reasons.

e. If the originator is dissatisfied with the SOH response, the originator may appeal to the organization's commander. The commander will review the finding and take appropriate action. If the originator is dissatisfied with the senior commander's response, the originator may appeal to the ACOM, ASCC, DRU, or NGB SOH official. Transmit appeals through channels to the ACOM, ASCC, or DRU commander or the CNGB, who will review the finding, investigate as necessary, and verify the appropriateness of the installation-level response. If the report of hazard is judged unfounded, a reply to the originator rejecting the appeal will explain the basis for the rejection and will advise him or her of their right to appeal to the Army DASHO. Upon receipt of an appeal, the DASHO will review the case and reply to the originator with a statement of findings. For rejected appeals, the reply will advise the originator of their right to further appeal according to 29 CFR 1960 to the DoD-designated occupational safety and health official.

f. Although personnel have the right to report hazards directly to DOL, they are encouraged to report to their chain of command.

g. Copies of reports submitted under the Army employee hazard reporting system will be retained at the safety office in accordance with AR 25-400-2 and a Federal Record Retention Center for at least 5 years following the end of the calendar year to which they relate.

## **Chapter 9** **Army Hazard Communication Program**

### **9-1. Introduction**

The Army HAZCOM Program is established to comply with DoDI 6050.05. The Army HAZCOM Program prescribes policy and procedures to ensure that information on all hazardous chemicals in Army workplaces, facilities, and operations are disseminated to affected employers and exposed employees. The Army HAZCOM Program is established to protect Army personnel who may be exposed to hazardous chemicals under normal operating conditions or in foreseeable emergencies. Army components will establish and implement HAZCOM policies and procedures in accordance with 29 CFR 1910.1200, DoDM 6055.05, DA Pam 710-7, and AR 700-141. HAZCOM policies and procedures will include written plans, hazard determination, SDSs, labeling, training, and the data management system. Commanders may also use HAZCOM for all other employees at their discretion. Use RM and/or JHA to assist commanders in determining the appropriate course of action. All labels, SDSs, HAZCOM training, and data management systems will be aligned with the Globally Harmonized System.

### **9-2. Safety data sheets**

a. Maintain SDSs on all required hazardous chemicals in the workplace. SDSs that are received with incoming shipments of hazardous chemicals will be maintained and be readily accessible during each work shift to Army personnel when they are in their work areas. All SDSs will include 16 sections, in accordance with 29 CFR 1910.1200(g)(2):

- (1) Identification.
- (2) Hazard(s) identification.
- (3) Composition/information on ingredients.
- (4) First aid measures.
- (5) Firefighting measures.
- (6) Accidental release measures.
- (7) Handling and storage.
- (8) Exposure controls/personal protection.
- (9) Physical and chemical properties.
- (10) Stability and reactivity.
- (11) Toxicological information.
- (12) Ecological information.
- (13) Disposal considerations.
- (14) Transportation information.
- (15) Regulatory information.
- (16) Other information, including date of preparation or last revision.

- b. Obtain the SDS from the chemical manufacturer distributor or importer as soon as possible if not provided in the shipment.
      - c. Maintain SDSs in any form to include within an SOP for groups of hazardous chemicals in a work area where appropriate to address the hazards of a process rather than individual hazardous chemicals.
      - d. SDSs for RAMs are required per FED-STD-313 with input into HMIRS.

### 9–3. Labels

- a. All Army leaders will ensure that labels remain intact on incoming containers of hazardous chemicals. Label, tag, or mark each container of hazardous chemicals in the workplace with all of the following six parts:
  - (1) *Product identifier.* This can be (but is not limited to) the chemical name, code number or batch number as decided by the manufacturer, importer, or distributor. The same product identifier must be both on the label and in section 1 of the SDS.
  - (2) *Signal word.* The signal word indicates the relative level of severity of the hazard and alerts the reader to a potential hazard. Only two words are used as signal words. “Danger” is used for the more severe hazards; “Warning” is used for the less severe hazards within a specific hazard class. Only one signal word is allowed on the label no matter how many hazards a chemical may have. If one of the hazards warrants a “Danger” signal word and another warrants the signal word “Warning,” then only “Danger” will appear on the label.
  - (3) *Hazard statement(s).* Hazard statement(s) describe the nature of the hazard(s) of a chemical, including, where appropriate, the degree of hazard. For example: “Causes damage to kidneys through prolonged or repeated exposure when absorbed through the skin.” All applicable hazard statements must appear on the label. Hazard statements may be combined where appropriate to reduce redundancies and improve readability. The hazard statements are specific to the hazard classification categories and users should always see the same statement for the same hazards no matter what the chemical is or who produces it.
  - (4) *Pictogram(s).* Pictogram(s) are graphic symbols used to communicate specific information about the hazards of a chemical. On hazardous chemicals being shipped or transported from a manufacturer, importer, or distributor, the required pictograms consist of a red square frame set at a point with a black hazard symbol on a white background, sufficiently wide to be clearly visible. A square red frame set at a point without a hazard symbol is not a pictogram and is not permitted on the label.

and is not permitted on the label.

(5) *Precautionary statement(s)*. Precautionary statement(s) describe recommended measures that should be taken to minimize or prevent adverse effects resulting from exposure to the hazardous chemical or improper storage or handling. There are four types of precautionary statements: prevention (to minimize exposure), response (in case of accidental spillage or exposure emergency response and first aid), storage, and disposal. For example, a chemical presenting a specific target organ toxicity (repeated exposure) hazard would include the following on the label: "Do not breathe dust/fume/gas/mist/vapors/spray. Get medical advice/attention if you feel unwell. Dispose of contents/container in accordance with local/regional/national and international regulations."

(6) Name, address, and telephone number of the chemical manufacturer, importer, or other responsible party. Self-explanatory.

b. Use signs, placards, process sheets, batch tickets, operating procedures, or other such written materials in lieu of affixing labels to individual stationary process containers, as long as the alternative method identifies the containers to which it is applicable and conveys the information required by paragraph 9-3a. Written materials will be readily accessible to the Army personnel in their work area throughout each work shift.

c. Labeling is not required for portable containers into which hazardous chemicals are transferred from labeled containers and which are intended only for the immediate use of the Army personnel who performs the transfer.

*d.* Labels or other forms of warning will be legible, in English, and prominently displayed on the container or readily available in the work area throughout each work shift. For Army personnel who are not proficient in English, supervisors will add the information in their language as well. Supervisors should contact the Army's foreign language proponent Office of the Deputy Chief of Staff, G-2 (DAMI-OP), 1000 Army Pentagon, Washington, DC 20310-1000 for assistance with identifying translation resources or to contract for translation services.

e. Radiation items must be labeled in accordance with NRC, OSHA, DOT, and Army regulations.

## 9–4. Training requirements

a. Provide Army personnel effective information and training on hazardous chemicals in their work area at the time of their initial assignment and whenever introducing a new chemical hazard to the work area. Design information and training to cover categories of hazards (such as flammability, carcinogenicity) or specific chemicals. Chemical-specific information must always be available through labels and SDSs. Army personnel will be informed of the requirements of 29 CFR 1910.1200, this chapter, local requirements, any operations in their work area where

hazardous chemicals are present, and the location and availability of the written HAZCOM program, including the required list(s) of hazardous chemicals and SDSs.

*b.* HAZCOM training will include the following and is required for RAMs in addition to the requirements of 49 CFR 172 Subpart H:

(1) Methods and observations that may be used to detect the presence or release of a hazardous chemical in the work area (such as monitoring conducted by the employer, continuous monitoring devices, visual appearance or odor of hazardous chemicals when being released, and so forth).

(2) The physical, health, simple asphyxiation, combustible dust, and pyrophoric gas hazards, as well as hazards not otherwise classified, of the chemicals in the work area.

(3) The measures employees can take to protect themselves from these hazards, including specific procedures the employer has implemented to protect employees from exposure to hazardous chemicals, such as appropriate work practices, emergency procedures, and PPE to be used.

(4) The details of the command/organization HAZCOM program including an explanation of the labels received on shipped containers, workplace labeling system used by their employer, the SDS including the order of information and how employees can obtain and use the appropriate hazard information.

(5) SDS requirements to include how to read the SDS and the definitions of all 16 sections of the SDS.

(6) Labeling requirements and the definitions of the six parts of the chemical labels. This also includes identification of the different types of symbols and pictograms.

## **Chapter 10** **Industrial and Base Operations Safety and Occupational Health**

### **Section I**

#### **General**

##### **10–1. Introduction**

*a.* SOH requirements codified in 29 CFR 1910 are applicable to Army industrial and base operations. 29 CFR 1910 requires the development and management of programs specifically addressing requirements and responsibilities for the control of hazardous energy, permit-required confined space entry, and fall protection, as outlined in this chapter. See also chapter 23 for electrical safety program requirements.

*b.* Construction SOH requirements are codified in 29 CFR 1926.502 and USACE EM 385–1–1.

##### **10–2. Hierarchy of controls**

Commanders of ACOMs, ASCCs, and DRUs and the CNGB with industrial-based operations will implement the appropriate hierarchy of controls to eliminate hazards in Army operations:

- a.* Elimination and substitution.
- b.* Engineering controls.
- c.* Administrative controls.
- d.* PPE.

##### **10–3. Acquisition of materials, equipment, facilities, and systems**

*a.* Acquisition of materials, equipment, facilities, and systems will comply with the requirements of this regulation, 29 CFR 1910, 29 CFR 1926, the NFPA, the NEC, and applicable consensus standards.

*b.* The acquisition of materials, equipment, facilities, and systems will maximize the use of engineering design to mitigate residual risks when design changes to remove risks are not feasible.

### **Section II**

#### **Control of Hazardous Energy (Lockout/Tagout)**

##### **10–4. Introduction**

The Army Lockout/Tagout Program assists commanders, directors, managers, and supervisors to reduce the risk of Army employees' exposure to hazardous energy. A lockout/tagout program refers to specific practices and procedures to safeguard employees from the unexpected energization or startup of machinery and equipment, or the release of hazardous energy during service or maintenance activities. Lockout devices provide protection by preventing machines or equipment from becoming energized because they are positive restraints that no one can remove without a

key or other unlocking mechanism, or through extraordinary means such as bolt cutters. Serious or fatal injuries can occur if serviced or maintained machinery unexpectedly energizes, starts up, or releases stored energy. In accordance with 29 CFR 1910.147, 29 CFR 1910.269, 29 CFR 1910.333, this regulation, and applicable consensus standards, all Army leaders will develop and implement lockout/tagout procedures in their area of responsibility as applicable.

## **10–5. Lockout/tagout written program**

- a.* Lockout/tagout written programs will—
  - (1) Include a statement on how to use the procedures.
  - (2) Include procedural steps to shut down, isolate, block, and secure machines that include locations where energy-control devices are to be applied and how potential energy sources are to be brought to a zero-energy state.
  - (3) Include specific steps designating the safe placement, removal, and transfer of lockout/tagout devices and identifying who has responsibility for the lockout/tagout devices.
  - (4) Include specific requirements for testing machines to determine and verify the effectiveness of lockout devices, tagout devices, and other energy-control measures.
  - (5) Address all energy sources.
  - (6) Include specific steps for machinery having more than one energy source.
- b.* The sequence of lockout or tagout system is:
  - (1) Notify all affected employees that a lockout or tagout system is in place and why. The authorized employee will know the type and magnitude of energy that the machine or equipment utilizes and will understand the hazards thereof.
  - (2) If the machine or equipment is operating, shut it down by normal stopping procedures (for example, depress stop button, open toggle switch, and so on).
  - (3) Operate the switch, valve, or other energy-isolating devices so that the equipment is isolated from its energy source. Stored energy (for example, in springs, elevated machine members, rotating flywheels, hydraulic systems, and air, gas, steam, or water pressure) must be dissipated or restrained (for example, by positioning, blocking, or bleeding down).
  - (4) Lockout and/or tagout the energy-isolating devices with assigned individual locks or tags.
  - (5) After ensuring that no personnel are exposed, and as a check on having disconnected the energy sources, operate the push button or other normal operating controls to make certain the equipment will not operate. Caution—return operating controls to “neutral” or “off” after the test.
  - (6) The equipment is now locked or tagged out.
  - (7) Tagout alone is not permitted unless it can be demonstrated the requirement of equivalent protection as lockout can be achieved. In work areas where multiple employers are present, the equivalent protection requirements are unlikely to be achieved and therefore tagout is prohibited.
- c.* To restore machines or equipment to normal production operations:
  - (1) After the servicing and/or maintenance is complete, and equipment is ready for normal production operations, check the area around the machines or equipment to ensure that no one is exposed.
  - (2) Remove all tools from the machine or equipment, reinstall guards, and ensure employees are in the clear.
  - (3) Remove all lockout or tagout devices.
  - (4) Operate the energy-isolating devices to restore energy to the machine or equipment.
- d.* For processes in paragraph 10–5*b*, if more than one individual is required to lockout or tagout equipment, each will place their own personal lockout device or tagout device on the energy-isolating device. When an energy-isolating device cannot accept multiple locks or tags, a multiple lockout or tagout device (hasp) may be used. If lockout is used, use a single lock to lockout the machine or equipment. Place the key in a lockout box or cabinet that allows the use of multiple locks to secure it. Each employee will then use their own lock to secure the box or cabinet that allows the use of multiple locks to secure it. As personnel no longer need to maintain lockout protection, that person will remove their lock from the box or cabinet.

## **10–6. Special inspections requirements**

- a.* Annual organizational workplace inspections will include the lockout/tagout program as part of the inspection when applicable.
- b.* Supervisors will conduct periodic inspections to ensure personnel are familiar with their responsibilities and continue to implement energy-control procedures properly. The periodic inspection of lockout procedures must include a review of each authorized personnel’s responsibilities under the energy-control procedure inspected. The periodic tagout inspection will include affected personnel because of the increased importance of their role in avoiding

accidental or inadvertent activation of the machinery. Inspection certification in accordance with 29 CFR 1910.147(c)(6)(ii) will include:

- (1) Machine or equipment.
- (2) Date of the inspection.
- (3) Names of personnel included in the inspection.
- (4) Name of the person who performed the inspection.

## **10–7. Training requirements**

Training must ensure that authorized, affected, and other personnel understand the purpose, function, and restrictions of the energy-control program as it pertains to them.

*a.* Authorized personnel are those responsible for implementing the energy-control procedures or performing the service or maintenance activities. They need the knowledge and skills necessary for the safe application, use, and removal of energy-isolating devices. They also need training in the following:

- (1) Hazardous energy source recognition.
- (2) The type and magnitude of the hazardous energy sources in the workplace.
- (3) Energy-control procedures, including the methods and means to isolate and control those energy sources.

*b.* Affected personnel (usually machine operators or users) operate the relevant machinery or are required to be in the area where service or maintenance occur. These personnel do not service or maintain machinery or perform lock-out/tagout activities. Affected personnel must receive training in the purpose and use of energy-control procedures as well as:

- (1) Recognizing when the energy-control procedure is used.
- (2) Understanding the purpose of the procedure.
- (3) Understanding the importance of not tampering with lockout or tagout devices and not starting or using locked or tagged out equipment.
- (4) Understanding keys should be removed from locks to prevent unauthorized opening.

*c.* All other personnel whose work operations are in an area where energy-control procedures are used must receive instruction regarding the energy-control procedure and the prohibition against removing a lockout or tagout device and attempting to restart, reenergize, or operate the machinery.

*d.* Trainers will conduct initial training before starting service and maintenance activities and must provide re-training as necessary. The supervisor will document all provided required training including names and dates of persons trained. Re-training is required for all authorized and affected employees whenever there is a change in any of the following:

- (1) Job assignments.
- (2) Machinery and/or processes that present a new hazard.
- (3) Energy-control procedures.
- (4) Whenever a periodic inspection reveals, or an employer has reason to believe, that shortcomings exist in an employee's knowledge or use of the energy-control.

## **10–8. Lockout/tagout devices**

In accordance with 29 CFR 1910.147, lockout or tagout devices must be the only devices the supervisor uses in conjunction with energy-isolating devices to control hazardous energy.

*a.* The supervisor will singularly identify and provide these devices and ensure they are not used for other purposes.

*b.* Supervisors will ensure lockout or tagout devices have the following characteristics:

- (1) Durable enough to withstand workplace conditions.
- (2) Standardized according to color, shape or size, print and format, and understandable by all personnel.
- (3) Substantial enough to minimize the likelihood of premature or accidental removal.
- (4) Labeled with the identity of the authorized employee who applied the lockout device.

*c.* In accordance with 29 CFR 190.147, the host and the contractor will share information related to their lockout programs.

## **Section III**

### **Confined Spaces**

#### **10–9. Introduction**

This section provides procedures to protect personnel from the hazards of entry into permit-required and/or nonpermit-required confined spaces in accordance with 29 CFR 1910.146. Many work areas and operations contain “confined” spaces because their configurations hinder the activities of Army personnel who must enter into, work in, or exit from them. In many instances, personnel who work in confined spaces also face increased risk of exposure to serious physical injury from hazards such as entrapment, engulfment, and hazardous atmospheric conditions. Confinement itself may pose entrapment hazards and work in confined spaces may keep Army personnel closer to hazards such as machinery components than they would be otherwise. The Directorate of Public Works or equivalent or command designated activity will maintain a list of all known permit-required and nonpermit-required confined spaces in order to prevent injury and possible death.

- a. A confined space is a space that is large enough and configured for an individual to enter and perform work, has limited or restricted means to enter or exit and perform work, and is not designed for continuous employee occupancy.
- b. A permit-required confined space is a confined space that has any one of the following characteristics:
  - (1) Contains, or has the potential to contain, a hazardous atmosphere.
  - (2) Contains a material that has a potential for engulfing an entrant.
  - (3) Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section.
  - (4) Contains any other recognized serious safety or health hazard.
- c. Confined spaces include, but are not limited to, boilers, cupolas, degreasers, furnaces, pipelines, pits, pumping stations, septic tanks, sewage digesters, sewers, manholes, silos, storage tanks, utility vaults, vats, tunnels, cells, ducts, or similar type enclosures.

#### **10–10. Confined space program**

- a. Leaders, through their SOH personnel, will establish a written comprehensive confined space program, evaluation process, and training for each confined space in accordance with 29 CFR 1910.146.
- b. The program will include:
  - (1) Roles and responsibilities (for example, safety, F&ES, supervisors, attendants, and authorized entrants).
  - (2) Permit procedures.
  - (3) Training requirements.
  - (4) Designated permit-required confined spaces.
  - (5) Emergency procedures.
  - (6) Required protective equipment.
- c. Supervisors will provide emergency procedures and training for personnel assigned to a confined space entry job.
- d. Atmospheres within confined spaces must be tested and analyzed prior to entry. The local industrial hygiene section, F&ES, safety office, Directorate of Public Works, or other personnel who have the proper equipment and training to conduct occupational air monitoring of the confined space will perform tests and analyses.
- e. Permit-required confined space site-specific entry permits are developed locally and are to be available/posted at each permit-required confined space throughout the permit-required confined space operation. The permit should state the duration of the permit and be signed by entry personnel, attendant, and confined space competent person.

#### **10–11. Comprehensive confined space plan**

- a. The written comprehensive confined space plan for each space will—
  - (1) Implement necessary measures to prevent unauthorized entry.
  - (2) Identify and evaluate permit space hazards before allowing employee entry.
  - (3) Test atmospheric conditions in the permit space before entry operations and monitor the space during entry.
  - (4) Perform appropriate testing for the following atmospheric hazards in this sequence: oxygen, combustible gases or vapors, and toxic gases or vapors.
  - (5) Establish and implement the means, procedures, and practices to eliminate or control hazards necessary for safe permit space entry operations.
  - (6) Identify employee job duties.

(7) Require, provide, and maintain, at no cost to the employee, PPE and any other equipment necessary for safe entry.

(8) Ensure that at least one attendant is stationed outside the permit space for the duration of entry operations.

(9) Coordinate entry operations when employees of more than one employer are working in the permit space.

(10) Implement appropriate procedures for summoning rescue and emergency services and preventing unauthorized personnel from attempting rescue.

(11) Establish and implement a system for the preparation, issue, use, and cancellation of entry permits.

(12) Review established entry operations annually and revise the permit space entry program as necessary.

(13) Implement the procedures that any attendant who is required to monitor multiple spaces will follow during an emergency in one or more of those spaces.

*b.* The confined space plan will establish the means, procedures, and practices to eliminate or control hazards necessary for safe permit-required space entry operations. These may include:

(1) Specifying acceptable entry conditions.

(2) Isolating the permit space.

(3) Providing barriers.

(4) Verifying acceptable entry conditions.

(5) Purgung, making inert, flushing, or ventilating the permit space.

*c.* Contracting officers or CORs will inform all contractors coming to the Army facility to perform work when permit-required confined spaces exist in their work areas. The COR will verify contractor's permit-required confined space plan is complaint with 29 CFR 1910.146 and will include contractor's responsibility to provide their own capable on-site rescue team independent of installation F&ES.

## **10-12. Confined space evaluations**

*a.* Supervisors, with support from SOH personnel or individuals trained in confined space recognition as outlined in the written comprehensive confined space program (see para 10-10), will—

(1) Determine if confined spaces meet the definition of permit-required confined spaces and require equipment necessary for safe entry.

(2) Develop an inventory list of all permit-required and nonpermit confined spaces.

(3) Evaluate nonpermit confined spaces when changes occur in their use or configuration and reclassify them as permit-required spaces where appropriate.

*b.* Army leaders must take effective measures to prevent unauthorized entry into prohibited permit-required spaces.

*c.* A space with no potential to have atmospheric hazards may be classified as a nonpermit confined space only when all hazards are eliminated in accordance with the standard. If entry is required to eliminate hazards and obtain data, the employer must follow specific procedures in the standard.

*d.* Entry supervisors will evaluate permit-required confined spaces to include:

(1) Respiratory equipment.

(2) Protective clothing.

(3) Safety line.

(4) Body harness.

(5) Communication equipment.

(6) Air monitoring equipment.

(7) Air testing equipment.

## **10-13. Confined space entry training requirements**

*a.* Before the initial work assignment begins and annually thereafter, supervisors must provide proper training for all workers who are required to work in permit-required spaces. Coordinate all entry training with the supporting F&ES. All training will be certified, documented, kept on file, and provided to the employee upon request.

*b.* After the training, supervisors must ensure that their personnel have knowledge, skills, and abilities to safely perform their duties. Additional training is required when:

(1) The job duties change.

(2) A change occurs in the permit space program or the permit space operation presents any new hazard.

(3) An employee's job performance shows deficiencies.

*c.* Rescue team members require additional training in cardiopulmonary resuscitation (CPR) and first aid.

## **10-14. Confined space entry process for permit-required confined spaces**

*a.* The following process will be followed in accordance with 29 CFR 1910.146. An entry supervisor will—

- (1) Verify the appropriate entries to the permit before entry into a permit-required confined space.
- (2) Complete and post permits at entry of confined space.
- (3) Perform testing and monitoring in the following manner:
  - (a) The tests performed will be conducted in the following order: oxygen content, flammability, and toxic materials. These tests will verify OSHA standards and include upper explosive limit and lower explosive limit readings.
  - (b) Prohibit entry into a confined space for any type of hot work when tests indicate the concentration of flammable gases in the atmosphere is greater than 10 percent of the lower flammability limit.
  - (c) Equipment for continuous monitoring of gases and vapors will be explosion-proof and equipped with an audible alarm or danger signaling device that will alert employees when a hazardous condition develops.
  - (d) The percentage of oxygen for entry into a confined space will be no less than 19.5 percent nor greater than 23.5 percent.
- (4) Label and post in the following manner:
  - (a) Print all warning signs in both English and in the predominant language of the workers who do not read English. Supervisors can contact the Army's foreign language proponent in Office of the Deputy Chief of Staff, G-2 (DAMI-OP), 1000 Army Pentagon, Washington, DC 20310-1000 for assistance with identifying translation resources or to contract for translation services.
  - (b) All entrances to any permit-required confined space will be posted; signs will include, but not necessarily be limited to, the following information: DANGER-CONFINED SPACE ENTRY BY PERMIT ONLY.
  - (c) When a specific work practice is performed or specific safety equipment is necessary, an applicable statement will be added (for example, RESPIRATOR REQUIRED FOR ENTRY, LIFELINE REQUIRED FOR ENTRY, HOT WORK PERMITTED).
  - (d) Post emergency procedures, including phone numbers for F&ES, conspicuously within the immediate area of the confined space or by the telephone from which help would be summoned.

b. In accordance with 29 CFR 1910.132(d), a written PPE assessment must be performed on all confined space entry activities. PPE should take the following into consideration:

- (1) Eye and face protection.
- (2) Head protection.
- (3) Foot protection.
- (4) Body protection: gloves, aprons, and over-suits.
- (5) Hearing protection.
- (6) Respiratory protection. (The use of respiratory protection will be determined by the entry supervisor.)
- (7) Hand protection.

c. Processes for rescues and retrievals must be put into place to ensure in the event of a mishap in the confined space personnel can be promptly and safely removed. This action includes, but is not limited to:

- (1) Annual mock rescue training for those responsible for performing confined space rescues, including onsite F&ES.
- (2) Annual mock rescue training for those using a self-retrieval system to remove personnel in the space.
- (3) Validation that confined space attendants carry valid first aid and CPR certifications.
- (4) Written agreements between the onsite F&ES and outside contractors who are relying on onsite F&ES for confined space rescue duties.

## **Section IV**

### **Fall Protection Program**

#### **10-15. Introduction**

This section prescribes policies and responsibilities for Army-owned and/or Army-operated permanent facilities with open-sided floors, platforms, or unprotected edges 4 feet or higher and for construction work with a fall protection threshold height of 6 feet. Fall protection is required where there is a possibility of a fall from any height onto dangerous equipment, into a hazardous environment, or onto an impalement hazard.

#### **10-16. Authority**

A competent person qualified in delivering fall protection training, use of fall protection systems/equipment, and the recognition of fall hazards will train all Army personnel exposed to fall hazards before using fall protection equipment. Competent persons must—

- a. Be qualified in the fall hazards in the work area.

*b.* Be qualified in the correct procedures for erecting, maintaining, disassembling, and inspecting the fall protection systems. Use and operation of guardrail systems, personal fall arrest systems, safety net systems, warning line systems, safety monitoring systems, controlled access zones, and other protection to be used will be in accordance with 29 CFR 1910.21 through 29 CFR 1910.30, and ANSI Z359.2.

*c.* Conduct competent person refresher training at least every 2 years to stay current with the fall protection and rescue educational industry requirements or when new fall protection systems are used, installed, or new fall hazards are encountered.

*d.* Include RM in fall protection plans and training and conduct risk assessments prior to start of work on all operations.

## **10-17. Rescue process**

Leaders will prepare and maintain a rescue plan in accordance with ANSI Z359.2 when workers are working at heights and using fall protection equipment. Note OSHA requires that fall protection be provided at elevations of 4 feet in general industry workplaces, 5 feet in shipyards, 6 feet in the construction industry and 8 feet in longshoring operations.

## **10-18. Guardrail systems**

All personnel will use guardrail protection systems in accordance with 29 CFR 1910.28 and 29 CFR 1910.29 to protect personnel from falls as appropriate.

## **10-19. Fall protection systems**

All personal fall arrest systems will meet the requirements contained in ANSI Z359.1.

## **10-20. Conditions where fall protection is used in construction operations**

Personnel will be protected from falling while working in construction operations in accordance with 29 CFR 1926.502 and USACE EM 385-1-1.

## **10-21. Training**

*a.* Fall protection training will include, but not be limited to, the following:

(1) The role of each individual in the safety monitoring system when this system is used.

(2) Limitations on the use of mechanical equipment during the performance of roofing work on low-sloped roofs.

(3) The correct procedures for the handling and storage of equipment and materials and the erection of overhead protection.

(4) The role of personnel in the activity's fall protection plan.

(5) End user training in the safe use of protection equipment prior to use. The competent person for fall protection will conduct hands-on training and practical demonstrations for the end user. Provide re-training as necessary for employees to maintain an understanding of these subjects.

(6) For Army personnel who may be in a situation that requires climbing involving the use of fall arrest systems, the end user training will also include practical climbing in a controlled situation in the presence of a competent person. Additionally, train end users in rescue and self-rescue equipment and procedures.

(7) Train all Army architects, engineers, and in-house designers involved in planning and designing buildings, facilities, and structures to incorporate fall protection and prevention control measures into their design work to help contractors during the construction phase and provide protection to Army personnel performing their work during normal operation and maintenance phase. The training should emphasize eliminating fall hazards and, if not, provide a mechanism or control measure for protecting workers from such hazards.

(8) All Army architects, engineers, and other inspectors conducting inspection, investigation, and assessment work on existing roof systems will be trained prior to accessing the roof and to take precautionary measures to protect themselves and other members of the inspection team from fall hazards.

(9) PM, qualified person, competent person end user (authorized person), authorized rescuers, as well as any associated fall protection trainers will be as prescribed in ANSI/ASSE Z359.2. All fall protection training including refresher/update training should also conform to the requirements of ANSI/ASSP Z490.1.

(10) Personnel exposed to fall hazards will receive refresher/update training on the safe use of fall protection equipment and rescue. End user, competent person for fall protection, and authorized rescuer (person who conducts rescue) will conduct required update/refresher training at least every 2 years to stay current with the fall protection and rescue educational requirements.

(11) Provide re-training in relevant topics to the end user when:

- (a) The end user has been observed using fall protection equipment in an unsafe manner.
- (b) The end user has been involved in a mishap or a near miss incident.
- (c) The end user has received an evaluation that reveals that he or she is not using the fall protection equipment properly.
- (d) The end user is assigned a different type of fall equipment or methods change during the course of new work practices that reduce the risk of a person falling (for example, erecting warning lines or designated areas, restricting access to certain areas, or posting warning signs).
- (e) A condition in the workplace changes in a manner that could affect the safe use of the fall protection equipment that the end user is to utilize.

(12) Provide re-training, as necessary, for workers to maintain an understanding of these requirements.

- b. Commander/director/supervisor responsible for Army personnel that require fall protection will verify worker training by a written certification record identifying the worker trained, the dates of the training, and the signature of the trainer and trainee.
- c. Training of Army personnel involved in the fall protection program—program administrators/PMs, qualified persons, competent persons, end users (for example, authorized persons), authorized rescuers, as well as any associated fall protection trainers—will be as described in ANSI/ASSE Z357.
- d. Fall protection training will be a minimum of 24 hours, with a combination of at least 16 hours of formal classroom training and 8 hours of practical application. Training will conform to the requirements of ANSI/ASSP Z490.1.

## **Chapter 11** **Public, Family, Child and Youth, Off-Duty Recreation, and Seasonal Safety**

### **11-1. Introduction**

As in all aspects of military planning and operations, RM applies to public and recreational activities. Injuries and fatalities occurring during off-duty time are detrimental to combat effectiveness; therefore, Soldiers will use RM when planning off-duty activities. It is highly recommended that DA Civilians do the same. Integrate RM in all nonduty community operations and activities to reduce risk of accidental losses. An integral part of this is training and inspections of public recreation areas and facilities to ensure that safety procedures and equipment are used. SOH messages will include appropriate topics for the season and upcoming holidays.

### **11-2. Family safety plan**

a. The SOH program will consist of guidelines for developing family safety plans and promoting community safety awareness (see DA Pam 385-10). All families are encouraged to develop safety plans intended to keep the family safe during normal activities as well as during unplanned events and/or emergency situations. The safety plan should address such critical safety areas as:

- (1) How to exit from the home during fire or other emergencies and how to establish rendezvous points to verify that all members have exited the home. When children are younger, the plan should include who is responsible for assisting the younger children in evacuation.
- (2) The placement and proper use of safety monitors (smoke detectors, carbon monoxide detectors, and similar devices) and regular maintenance (for example, battery replacement) of these devices.
- (3) Procedures for ensuring sports, hunting, or kitchen knives and firearms are secured and not accessible by children or other unauthorized persons.
- (4) Proper use and storage of household products (cleaning material, automotive products, gas, oil, antifreeze, batteries, medicines, vitamins, lotions, and other beauty products) so that they are not accessible by young children.
- (5) Backup plans when adults are not able to contact children (procedures may be to contact a trustworthy neighbor or police officer, to remain at school, or other appropriate safe action).
- (6) How to use emergency 911 or other specific emergency numbers to summon help.
- (7) How to seek shelter during seasonal or bad weather, such as tornadoes.
- (8) Location of emergency supplies, such as flashlights and tools, and when and how they should be used. Emergency supplies are properly monitored to ensure that they are current and in useable status.
- (9) The correct way to use safety equipment (for example, seat belts, helmets, pads, or hearing and vision protection).
- (10) The use of lights and reflective clothing in low visibility conditions.
- (11) Avoid obstruction of hearing by radio or other devices that may mask sounds of traffic or safety signals.
- (12) Off-road driving training and PPE requirements.
- (13) Avoid alcohol use while performing activities involving travel and vehicular safety.

(14) Street safety that includes the correct way to walk on a road without sidewalks, observing crosswalks, and signs for safe travel.

*b.* Recreational safety planning for the family should address such areas as:

(1) Explaining the rules of each game or activity.

(2) Protective equipment required, to include hearing and/or vision protection, and how to use it.

(3) How to travel safely to and from play sites.

(4) Heat illness prevention to include signs and symptoms of heat exhaustion, stroke, cramps, and so forth and how to respond.

(5) Inclement weather.

### **11-3. Public safety**

*a.* The Army goal is to show the public that a well-organized professional organization is in place. Ensuring public safety is a critical step in achieving this goal.

*b.* When the public has access to facilities under the control of the U.S. Army, precautions must be in place to assure a reasonable level of safety. Precautions that must be in place include:

(1) Signs with procedures for parking, paths to be used to access open areas, and hazard warnings.

(2) Enforcement of protective equipment use (both personal and general).

(3) Proper maintenance of area (such as parks, playgrounds, parade ground, commissary) into which the public is allowed.

(4) Notices posted on how to seek emergency assistance.

### **11-4. Volunteer safety**

Volunteers, both statutory and Army Community Service, are valuable assets that provide beneficial human resources to the installation. Volunteers provide needed support to many Army activities both recreationally and work-related. Assure the safety of volunteers in activities conducted on base, either directly for government-sponsored activities or through appropriate agreements with private organizations. Apply Army safety policy or regulation including the local ASOHP and SOPs to personnel in volunteer positions used in lieu of an equivalent paid government position. Report any mishap to a volunteer and capture in OSHA 300 Form (see chap 3). Planners will conduct RM for government-sponsored activities.

### **11-5. Seasonal safety and occupational health campaigns**

Develop promotional programs and procedures to increase awareness of the specific hazards associated with the change of seasons and celebration of holidays. These programs and procedures will emphasize the application of RM and responsible behavior in planning for outings, celebrations, travel, recreational activities, motor vehicles, and consumption of alcohol. Immediate supervisors will conduct safety briefings prior to holidays and long weekends to emphasize the use of RM and hazard mitigation.

### **11-6. Recreational boating**

Garrison commanders will develop, publish, post, and enforce rules and regulations for all on-installation boating activities (for example, sailing, canoeing, skiing, personal watercraft, fishing) addressing boating speed limits, alcohol consumption, right-of-way requirements, approved personal flotation devices, required safety training, mishap reporting, and boating operator licensing according to federal, state, and local laws.

### **11-7. Installation recreation areas**

Garrison commanders will develop, post, and enforce SOPs to ensure public and military personnel safety at all recreational facilities and areas (camping, hunting, and picnic areas; baseball and multi-recreational sport facilities; equestrian centers; automotive shops; arts and craft centers). SOPs will include safety procedures, requirements, and rules pertaining to the facility and area, training required, emergency reporting, and any other additional information necessary to maintain a safe and healthful environment.

### **11-8. Child, Youth, and School Services Program and facilities**

*a.* The garrison safety officer will—

(1) Conduct precertification and annual recertification inspections of FCC homes in accordance with AR 608-10.

(2) Conduct annual comprehensive safety inspections of all child and youth programs in accordance with the annual HQDA Executive Order.

- (3) Monitor the safety of child, youth, and school (CYS) services facilities as a special hazard area and conduct required inspections.
- (4) Verify corrective action for deficiencies identified during safety inspections.
- (5) Conduct additional inspections and monitoring as needed to verify corrective actions are maintained over time, conduct staff training, and provide requested staff assistance.
- (6) Provide safety training with emphasis on high-risk populations and provide requested staff assistance.
- (7) Provide training and monitor performance of a program-appointed safety officer for the purpose of monitoring safety standards within the program. Review monthly safety inspection reports of program-appointed safety officers and periodically verify the validity of inspections.
- (8) Serve as a member of the installation multidisciplinary team inspection of child and youth programs in accordance with the annual HQDA Executive Order.
- (9) Input CYS facilities and FCC homes into installation hazard abatement programs as necessary.
- (10) Consult on CYS coordinator SOPs to ensure that CYS staff apply RM to their daily planning, field trip events, and other activities.
  - b. CYS services facilities will meet the requirements of this regulation, AR 40-5, and CYS services safety-related standards.
  - c. The garrison safety officer will assist the CYS coordinator in the development of daily safety monitoring checklists for CYS services facilities, playgrounds, FCC homes, sports fields, equipment, and toys.
  - d. AMC-IMCOM safety officers will review and provide feedback to HQDA on child and youth safety inspection standards and guidance.
  - e. Fifteen-passenger vans will not be used to transport children and youth.

### **11-9. Privately-owned weapons**

SOH programs will include information regarding privately-owned weapons. Proper handling of privately-owned weapons off duty is just as critical as the proper handling of military weapons on duty. Not all weapons operate in the same manner and proficiency with an assigned military weapon does not make an individual an expert on all weapons. Commanders should encourage Soldiers to read their owner's manual and seek training for their privately-owned weapons. Privately-owned weapons mishaps commonly occur in social settings where alcohol is present. Never handle weapons while or after consuming alcohol. Information and training materials for privately-owned weapons are available at USACRC website at <https://safety.army.mil/off-duty/privately-owned-weapons>.

## **Chapter 12**

### **Tactical Operations**

#### **12-1. Introduction**

Commanders with a tactical mission will implement a tactical safety program that integrates SOH principles, theories, and concepts into the command's tactical operations (tactical equipment and facilities, contingency, exercise, field environments, and so forth). The program will prescribe policy, procedures, and processes for integrating SOH and RM in planning, preparation, and execution of the command's operational process as stated in AR 11-35, ADP 5-0, ADP 6-0, and ATP 5-19. SOH requirements that are not met will be identified during the military decision-making process and RM principles will be applied. The program will include the organization's RM process, risk decision authority, OEH RM, mishap reporting procedures, SOH personnel planning, SOH training requirements, operation orders (OPORDs) SOH review process, SOH augmentation detachment process, force mobilization, common hazards and countermeasures in tactical environments, SOH procedures for participating in field operations/bivouac areas, and force after action reporting (see mandatory procedures in DA Pam 385-10).

#### **12-2. Risk management**

Commanders with a tactical mission will integrate RM principles into planning, preparation, and execution of the OPORD process of all tactical and contingency operations in accordance with AR 11-35, ADP 5-0, ADP 6-0, and ATP 5-19. Analyze all expected tactical threat-based and accidental hazard-based vulnerabilities to determine associated risk.

#### **12-3. Safety and occupational health personnel planning**

Commanders with a tactical mission will establish written procedures to provide guidelines for unit SOH personnel responsibilities prior to contingency and tactical operations that include:

- a. Process for reviewing the OPORD and its SOH implications and coordinate responsibilities.
- b. Establish coordination between parent and subordinate organizations to meet periodically during the training, contingency, and tactical operations to share experiences and lessons learned.
- c. Ensure that the means of contacting each safety individual is in place.

#### **12-4. Safety and occupational health training**

SOH professionals will provide SOH training in those areas needed for safe and efficient execution of the operation. This training will specifically address:

- a. The PPE required.
- b. General SOH requirements peculiar to the contingency and tactical operations.
- c. Special SOH requirements.
- d. Lessons learned from previous contingency and tactical operations.
- e. The pre-mishap plan including procedures for reporting and responding to mishaps.

#### **12-5. Hazards in tactical environments**

DA policy is to conserve the Army's fighting strength by minimizing or preventing disease and injury through force health protection programs. All personnel are responsible for maintaining their health and fitness. History has repeatedly shown that noncombat losses have played a significant role in the outcome of military operations. While mission requirements will dictate unit policies, commanders must evaluate the effects of OEH hazards on their ability to complete the mission. Assess the following OEH hazards (in coordination with preventive medicine personnel) using RM, document actual risk to personnel, and implement appropriate actions to eliminate or minimize the risk:

- a. Accidental or deliberate release of weaponized or nonweaponized toxic industrial chemicals (TICs)/toxic industrial materials (TIMs), ionizing and nonionizing radiological hazards, physical hazards (such as noise, heat, cold, and altitude), and the hazards/residue from the use of chemical, biological, radiological, nuclear, and explosives (CBRNE).
- b. Food, water, vector, and arthropod borne threats, endemic diseases, zoonotic diseases, residues, or agents naturally occurring or resulting from previous activities of U.S. forces or other concerns, such as non-U.S. military forces, local national governments, or local national agricultural, industrial, or commercial activities.
- c. TICs/TIMs or hazardous physical agents (such as hazardous noise levels, blast over pressure, and ionizing and nonionizing radiation) currently being generated as a byproduct of the activities of U.S. forces or other concerns (including pre-deployment activities), such as non-U.S. military forces, local national governments, or local national agricultural, industrial, or commercial activities.

#### **12-6. Seats out operations on Army aircraft (manned)**

a. Authorizations to remove seats and/or seatbelts will be for operational/training necessity only and never for convenience.

b. Crewmembers will wear a properly adjusted seat belt and shoulder harness while performing crew duties. Approved alternate restraining harness is authorized for crewmembers when required to perform specified crew tasks in accordance with aircrew training module.

c. Missions that require the removal of seats or alternate restraint methods (other than approved Airworthiness Release) must be considered higher risk to passengers. These missions are outlined in TC 21-24.

(1) *Risk management.* Authorization to remove seats and seat belts does not negate the responsibility of leaders to further risk mitigate seats out operations. Requestors and approval authorities must carefully weigh the mission/training benefits of seats out operations against the increased risk these operations create for passengers.

(a) Static load rehearsals of door strap removal, individual restraint release, and aircrew offload signal followed by passenger offload must be rehearsed prior to mission execution.

(b) Passengers will be secured by seat belts, individual alternate restraints, and/or door straps as applicable. Alternate restraints are intended to replicate a seat belt as much as possible; therefore, they must be of a length and type that mitigates injuries by limiting passenger movement and preventing ejection during a hard landing, crash, or rollover sequence. Where the device attaches to the aircraft must also be considered and briefed to passengers.

(2) *Infiltration/exfiltration techniques.* The conduct of paradrop, rappelling, helocast, caving (Jacobs) ladder, special purpose insertional extractions, short tactical airborne operations, and fast rope infiltration and extractions with seats removed/stowed when required by an approved mission-essential task list or approved U.S. Army Aviation Center of Excellence program of instruction/training support package can be performed without seats installed. No special approval or waiver is required for the passengers. Mission passengers will be secured per paragraph 12-6c(1)(b) from before takeoff until the pre-coordinated and briefed individual restraint and/or door strap release point/time.

(3) *Airland*. Operations including air assault, tactical air transport operations, and patients not restrained in accordance with AR 95-1 (for example, casualty evacuation) require acceptance of risk for removal of seats and seat belts and is the responsibility of the passenger's chain of command. Airland operations (air assault or tactical air transport) passengers will be secured per paragraph 12-6c(1)(b) from before takeoff until after the aircraft is safely on the ground and the aircREW signals clear to offload.

(4) *Approval authority*. For airland seats out operations in Army aircraft, approval authority is the first O-7 in the passenger's chain of command. Army aircraft are defined as any U.S. Army, ARNG, or USAR aircraft.

(a) The approval authority must accept the additional risk to their personnel and acknowledge the risk in the authorization via memorandum. Verbal orders of commanding officer authorization are authorized but will be documented via memorandum as soon as practicable.

(b) For operations in support of training, approvals to remove seats and seat belts will be granted on a case-by-case basis only and are limited to specific missions or training events. Blanket approvals are not authorized.

(c) For operations in support of overseas contingency operations, approval to remove seats and seat belts may be granted for a specific period of time (such as number of days, specific operation, and so forth). The approval authority will document and disseminate that decision. Seats out operations will not be approved for extended or open-ended operations.

(d) Once a passenger's chain of command accepts the risk, the aviation mission approval process is completed per AR 95-1. Aviation risk assessments will not automatically be considered as high risk when passenger seats/seat belts are removed.

(5) *Army special operations forces considerations*. ARSOF personnel will follow USSOCOM manuals and USASOC regulations when conducting seats out operations.

## **12-7. Tactical water safety operations**

Commanders of units conducting water operations or conducting operations in or around water hazards should develop and implement standard procedures to identify visually weak and nonswimmers and provide water survival training appropriate to their mission on the most likely water hazards that personnel may encounter. Additional guidance is in ATP 7-22.01.

## **12-8. Demobilization/reintegration (force mobilization)**

With continued deployments and redeployments of Soldiers, all leaders will mitigate risks by ensuring that every Soldier knows his or her role and remains focused on the inherent dangers. Leaders are responsible to reduce the likelihood of at-risk behavior during post deployment, reintegration, and reconstitution. A primary consideration should be to reset each individual's risk acceptance threshold. Use the following to expedite the refamiliarization and reconstitution process:

a. Schedule briefings. Returning personnel may not have driven on congested U.S. highways or been involved in social drinking situations for several weeks or months. Therefore, briefings will include seatbelt use; safe driving factors such as speed limits, rest stops, and focus of attention; alcohol consumption and driving, swimming, boating, and operating other recreational vehicles; alcohol use and domestic violence; Army substance abuse policy; and POV safety.

b. Review the last risk reduction quarterly statistics received prior to deployment for indications of at-risk behaviors and the interventions needed to reduce the likelihood of reoccurrence. Plan to incorporate those interventions during reconstitution.

c. Develop and use an individual risk assessment, which should begin during redeployment and continue through reconstitution.

d. Soldiers returning from deployments must be reintroduced into their nondeployment roles as Soldiers, husbands, wives, mothers, fathers, and citizens so that they readjust to the new stressors and different demands. Develop strategies and procedures to—

(1) Complete DD Form 2796 (Post Deployment Health Assessment (PDHA)).

(2) Assess, treat, and document adverse or potentially adverse exposures or negative health-related behaviors during mobilization and demobilization.

(3) Provide health threat briefings to educate spouses on health-related symptoms and myths, to include information on identifying potential signs and symptoms of distress and treatment options.

e. Upon return, the process continues during a set number of days offering classes, additional medical screening, and information to Soldiers and their Families prior to the Soldier taking leave. This helps smooth the reunion process for Soldiers and their Families by recognizing and establishing realistic expectations about the reunion. They will learn to spot symptoms of stress and learn about sources of assistance and the importance of communication.

- f. Provide briefing and education on changes in relationships, single Soldier parent issues, and child behaviors.
- g. Provide training in suicide awareness and prevention, individual and family communication, and a medical threat brief.
- h. Battalion or equivalent-level commanders will initiate enrollment into the ARAP within 90 days of assuming command as part of their Army Force Generation Reset phase.
  - (1) Commanders will register to take ARAP.
  - (2) Commanders will review ARAP results.
  - (3) Brigade and division or equivalent-level commanders will review the results as authorized.

## **12–9. Department of the Army Civilian safety and occupational health personnel deployment**

DA Civilian SOH personnel deployments will comply with AR 690–11. Additional information is available in the Leader’s Guide to the Tactical Safety Professional at <https://safety.army.mil/cp-12/resources/leaders-guides>.

## **Chapter 13**

### **Motor Vehicle Mishap Prevention**

#### **13–1. Introduction**

This chapter establishes requirements for implementing a motor vehicle mishap prevention program.

#### **13–2. Motor vehicle mishap prevention program requirements**

Commanders will develop and maintain a motor vehicle safety program to reduce risk of motor vehicle-related mishap losses. The program will include policy and procedures prescribing the following as appropriate:

- a. Selecting, training, testing, and licensing Army motor vehicle operators according to AR 600–55.
- b. Conducting required Army motor vehicle preventive maintenance checks and services (PMCS) in accordance with Army regulations, technical manuals, and operator’s manuals.
- c. Authorities and responsibilities for supervisors, senior occupants, vehicle commanders (VCs), motor vehicle operators, and assistant drivers (see responsibilities and mandatory procedures in DA Pam 385–10).
- d. Training, education, familiarization, or motivation programs to prevent motor vehicle mishaps. (These programs should encompass the onand off-duty operation of motor vehicles.)
- e. Training in rollover and other emergencies for tactical and combat vehicles.
- f. Occupant protection.
- g. Prevention of operator fatigue.
- h. Impaired driving prevention to include training and education on underage drinking, developing a working relationship with appropriate local authorities, and suspending driving privileges for persons convicted of impaired driving.
  - i. Safety equipment requirements.
  - j. Ground guides requirements.
  - k. Safety requirements for COTS utility vehicles (referred to as specialty vehicles such as Segway HT, M-Gators, Gators, “Mule” utility vehicle, aircraft tugs, and low-speed vehicles such as golf carts) in garrison or tactical environments.
  - l. Safe movement of personnel.
  - m. Motorcycle safety.
  - n. Pedestrian safety.
  - o. Autonomous vehicle technologies.

#### **13–3. General motor vehicles safety standards**

- a. Maintain Army motor vehicles in a safe and serviceable condition in accordance with this regulation, AR 750–1, mandatory procedures in DA Pam 385–10, DA Pam 750–8, and appropriate maintenance manuals and vehicle technical manuals.
- b. Ensure all trailers are equipped with serviceable lights and safety chains or similar devices and properly connected to the prime mover to prevent breakaway trailer mishaps.
- c. Ensure vehicles that make frequent stops (for example, police, garbage detail, trail vehicles, and so forth) are equipped with fully operational rotating warning lights, either portable or permanently mounted and visible for 360 degrees.

- d. Ensure vehicles and trailers are equipped in accordance with the applicable federal motor vehicle safety standard (FMVSS), 49 CFR 571, and state motor vehicle safety standards and manufacturer requirements.
- e. Commercial type passenger carrying Army motor vehicles, as defined in AR 58-1, which are purchased, leased, or rented by the U.S. Army for use in the United States (see definition in glossary), will meet all applicable requirements of 49 CFR 571.
- f. Nondevelopmental item (NDI) vehicles built to government-modified manufacturers' specifications will also meet applicable requirements of FMVSS, unless the U.S. Army Tank-Automotive and Armaments Command (TACOM) (designated by the DCS, G-4 as the lead agent for wholesale logistics management) issues a written waiver.
- g. Foreign-built commercial vehicles purchased, leased, or rented for use outside the United States will meet all applicable safety requirements of the country in which they are registered or assigned. Prior to procuring foreign-built commercial vehicles, commanders of outside the United States ACOMs will review the motor vehicle safety standards for acceptability. The review will include all standards applicable to the make, model, and year of manufacture for each type of vehicle. Vehicles intended for export to the United States must comply with U.S. safety import standards.
- h. Tactical and combat vehicles designed to contract specifications may be exempt from FMVSS if such compliance would unacceptably degrade essential military characteristics. Commanders responsible for establishing design characteristics will follow MIL-STD-1180B(1). TACOM can provide the latest version of the military standard.
- i. Ensure all Army motor vehicles other than tactical and combat vehicles are equipped with restraint systems unless TACOM issues a waiver.
- j. Ensure Army motor vehicles have rollover protection or vehicle roof structure crush protection that conforms to 49 CFR 571.216 unless TACOM issues a waiver.
- k. Provide test participants with appropriate restraint systems and/or rollover protective structures during vehicle developmental testing.

### **13-4. Tactical vehicle safety**

- a. *General tactical vehicle safety standards (applies to all tactical and combat vehicles).*
  - (1) Commanders or their representatives will ensure that drivers perform the appropriate safety checks before, during, and after vehicle operation PMCS. In addition to the PMCS, operators will inspect for the following conditions:
    - (a) Improper functioning of lights, windshield wipers, horn, warning signals, side or rearview mirrors, occupant restraint devices, and other safety devices.
    - (b) Improper condition of windshield, windows, mirrors, lights, reflectors, or other safety devices that are broken, cracked, discolored, or covered with frost, ice, snow, dirt, mud, or grime. Glass will not have posters, placards, stickers, or nontransparent materials that impair the operator's vision or create a hazard.
    - (c) Any condition not specifically mentioned in the preventive maintenance tables of the operator manual likely to cause injury to personnel or failure of a component. Examples are torn sheet metal with exposed sharp edges, damaged or missing exhaust shields, leaks from exhaust systems, or inoperative doors that prevent occupant egress from vehicle.
    - (d) Improperly secured loads or vehicles that are loaded beyond design load limits.
  - (2) Operators are responsible for bringing any vehicle deficiency to the supervisor's attention. Faults listed in paragraph 13-4a will render a vehicle administratively nonmission capable in accordance with DA Pam 750-8. Commanders may "circle X" administratively nonmission capable vehicles allowing for one-time operation or mission, providing risk mitigation procedures are in place to prevent unnecessary risk for vehicle occupants.
  - (3) Before starting a vehicle in an assembly area, a crewmember will walk completely around the vehicle to ensure that no one is in danger and the area is free of obstructions or material that present a hazard.
  - (4) Tactical vehicle operators will keep service drive lights on at all times when on public roadways outside military installations except where SOFA or local laws prohibit using headlights during daylight (sunrise to sunset) hours.
  - (5) Tactical vehicles operated on public highways will not exceed posted speed limits or speed restrictions addressed in the vehicle's operator manual, whichever is less. Additionally, operate tactical vehicles at speeds appropriate for the environmental conditions.
  - (6) Personnel will not expose more than their head and shoulders (nametag defilade) while riding in tactical vehicles that have hatches or turrets, except when actively engaging targets or to ensure clearance in congested areas and/or hazardous terrain.
  - (7) Personnel exposed to eye hazards will wear appropriate eye protection.
  - (8) Personnel will not wear rings or bracelets while conducting vehicle operational duties or when performing vehicle maintenance.
  - (9) At a minimum, commanders will require ground guides in accordance with paragraph 13-10.
  - b. *Fording operations.* Implement proper training, mission planning, and RM before conducting any water fording operations.

*c. Rollover drills and emergency training.*

(1) Train personnel riding in Army tactical and combat vehicles in crew rollover, fire, and emergency egress drills. Conduct drills prior to gunnery, field training exercises, tactical training, actual deployment, or combat missions.

(2) Exposed gunners and air guards will utilize and drill with approved restraint systems.

*d. Tactical vehicle movement in bivouac and assembly areas.*

(1) Use vehicle ground guides in and around clearly designated and marked sleeping areas. Select sleeping areas protected by natural obstacles when possible.

(2) Post a guard where access to bivouac or an assembly area is restricted to road entry to warn vehicle crews that troops are on the ground.

(3) Prior to leaving a motor pool or assembly area in tactical environments, the track commander or VC will walk completely around the vehicle to check for personnel clearance and/or other hazards in the vicinity of the vehicle.

*e. Army combat vehicle safety guidelines.*

(1) Each Army combat vehicle (ACV) will have a track commander or VC who will occupy the commander's position within the vehicle. The track commander or VC will receive vehicle-specific training on the vehicle's capabilities and limitations.

(2) Operators will not start ACVs unless the portable and fixed fire extinguishers are present and in operating condition.

(3) Moving an ACV without a track commander or VC and a working intercom or dismounted ground guide is prohibited.

(4) The track commander or VC will use the positive safety-locking pin to fasten open hatches to avoid unintentional closing during movement of the vehicle.

(5) Personnel in ACVs will wear protective headgear. The crew will wear operational combat vehicle crewmember helmets or approved ballistic helmets with the chinstrap fastened.

(6) Personnel will not position themselves between an ACV and another vehicle or fixed object while the vehicle is moving or being slaved (started with jumper cables).

(7) When vehicles and dismounted personnel are training together during darkness, the dismounted personnel will notify vehicle operators and track commanders or VCs of their location.

(8) At railroad crossings without electric signal lights or road guards, operators of ACVs will stop and check the clearance in both directions before crossing.

### **13-5. Occupant protection**

*a. All military personnel on or off the installation and all other individuals on the installation will wear occupant protective devices.*

*b. Individuals will not ride in seats where manufacturer-installed occupant restraints, including airbags, were removed or rendered inoperative.*

*c. For utility vehicles that do not meet the design requirements for public roadway use, operators and passengers will adhere to the manufacturer's PPE and operating recommendations as well as federal, state, or HN regulations.*

*d. Use child safety seats on all Army installations. Ensure installation traffic safety programs are in accordance with state or local child safety seat laws or HN requirements and AR 190-5/OPNAV 11200.5D/AFI 31-218(1)/MCO 5110.1D/DLAR 5720.1. If there is no local requirement, the installation traffic safety program will specify age, weight, seating placement, or other criteria for child safety seat use.*

### **13-6. Operator fatigue**

To reduce the potential for traffic mishaps caused by operator fatigue, commanders will establish and enforce specific rest and duty hour limits for Army motor vehicles operators.

*a. Provide operators with at least 8 consecutive hours of rest during any 24-hour period.*

*b. An operator will not drive more than 10 hours in a duty period (including rest and meal breaks). Commanders will assign a qualified assistant driver to each vehicle when more than 10 hours are required to complete operations.*

*c. Other operations may require the assistance of an occupant to help the driver in higher risk driving environments. Often times, the assistant is senior ranking to the driver, and these individuals are responsible for ensuring the safe operation at all times. At a minimum, these assistants are familiar with the vehicle operations and trained on ground guide duties. Other operations that require the assistance of a passenger include:*

*(1) More than 4 hours of driving during darkness are expected.*

*(2) Wearing mission-oriented protective posture equipment is anticipated.*

*(3) Using night vision goggles during the mission.*

*(4) Travel over unfamiliar terrain will require detailed en route navigation.*

- (5) Conditions requiring use of the ground guide are anticipated.
- (6) Deteriorating weather or road conditions are expected.
- (7) Transporting high-value or mission-critical weapon systems or equipment.
- (8) Restricted driver field of view.
- (9) Other unusually difficult mission conditions are expected.
- d. Provide vehicle operators with a 12-hour period that is as free of duties as possible when preceding a prolonged work or duty period.
- e. Provide fatigued operators with an alternate means of transportation or designated rest stops until they are sufficiently rested to operate a motor vehicle if a relief driver is not available.

### **13–7. Safe movement of personnel**

*a. General movement of personnel.* Leaders will ensure the following safety precautions are in place before transporting troops in vehicles:

- (1) Operators will follow passenger carrying capacities for tactical and administrative vehicles in accordance with the appropriate vehicle technical manual.
- (2) Passengers must be wholly seated within the body of the truck using properly installed seating.
- (3) When transporting large numbers of Soldiers for training purposes, use only approved semitrailers (such as vans and personnel carriers for 80 passengers). No other types of semitrailers are considered safe to transport personnel.
- (4) Prohibit riding on tactical vehicle and ACV exteriors except where an Army technical or field manual allows.
- (5) Seated personnel will wear occupant restraints, unless specifically exempted in the unit SOP or by the commander after completing RM for the mission.

*b. Movement of personnel in cargo trucks.*

(1) The following safety precautions must be in place before transporting passengers in the cargo beds of tactical and administrative trucks off the installation:

- (a) The cargo body is equipped with stakes or sideboards, properly installed troop seat kit, tailgate, rear safety strap, and a tailgate step or ladder.
- (b) Canvas tops are in place with the sides rolled down and secured to sides of cargo bed.
- (c) Prior to starting the vehicle, the operator must ensure all passengers are safely seated, tailgate is secure, and safety strap is in place.
- (d) When transporting personnel in cargo trucks with cargo, the operator ensures personnel are seated in fixed seats and the cargo is adequately secured.

(e) The operator must possess a valid operator's permit or DA Form 5984–E (Operator's Permit Record (EGA)) when transporting personnel in cargo trucks. Prospective operators with learner's permits may not transport personnel in the rear cargo bed of trucks.

*(f) Do not carry passengers in the cargo bed area of the last vehicle in a convoy.*

(2) The following safety precaution applies to transporting troops in cargo beds solely on the installation:

- (a) Transport passengers for short distances on the installation without installed troop seat kit, providing passengers remain seated and wholly within the body of the vehicle, the tailgate is secure, and safety strap is in place.

(b) Transporting troops in the bed of dump trucks will only occur on an emergency basis and with extreme caution. Transport troops in dump trucks only with installed fixed seating and using positive locking devices to prevent unintentional activation of lift controls.

*c. Transportation in 15-passenger vans.*

(1) Fifteen-passenger vans do not meet the federally mandated safety standards required for school buses and cannot be used to transport pre-primary, primary, or secondary school age children to and from school. The use of 15-passenger vans to transport children to and from childcare facilities and youth service centers is prohibited.

(2) Operators of 15-passenger vans should be:

- (a) Experienced operators with good driving records.
- (b) Trained on the hazards and handling characteristics associated with 15-passenger vans.

(3) Daily transport of students to and from school using multifunctional school activity buses is prohibited. Use multifunctional school activity buses whenever transportation is required for after school activities, field trips, and so forth. Multifunctional school activity buses provide a safer means of transportation than the 15-passenger van (see HSPG Number 17). Leaders will develop provisions to reduce the danger of death or injury to children while transporting them to and from school or related activities in DoD vehicles.

(4) In CONUS, DoD school buses will be marked, equipped, operated, and maintained consistent with AR 58–1 and 49 CFR 571.

(5) Contractors will comply with HN or state and local requirements in addition to any contractual requirements imposed by the applicable Army installation.

### **13-8. Prohibited practices**

Commanders will emphasize the increased mishap potential caused by distracting activities such as using handheld and hands-free cell phones, eating, drinking, and operating entertainment systems and global positioning systems. Commanders will enforce the following prohibited activities, while operating any motor vehicle on an Army installation and while operating military vehicles off the installation.

*a.* Wearing portable headphones, earphones, or other listening devices (except for hearing aids, single ear-piece hands-free phone devices, ACV helmets, and motorcycle helmets equipped with intercom systems) while operating a motor vehicle.

*b.* Using cellular phones or other handheld electronic devices except when safely parked or using a hands-free device. This prohibition includes text messaging using handheld devices.

*c.* Using government-supplied electronic equipment for text messaging, Global Positioning System (GPS), or other handheld devices while driving any vehicle whether or not on official government business. The only exceptions to this prohibition are emergency responders (such as military police, ambulance, F&ES, EOD, and HAZMAT responders) while in the performance of their official duties.

*d.* Operating a vehicle for at least 8 hours after consuming intoxicating beverages or longer if residual effects remain.

*e.* Vehicles carrying flammable or explosive materials will not use or carry flame producing items, this includes flares, e-cigarettes, lighters, and matches.

### **13-9. Safety equipment**

*a.* Occupants of combat or tactical vehicles will wear Army-approved eye protection (military combat eye protection, Authorized Protective Eyewear List (see <https://www.peosoldier.army.mil/equipment/eyewear/>) or ANSI/ISEA Z87.1 approved safety goggles or spectacles with side shields) when exposed to eye hazards. Occupants of tactical vehicles with windshields are not required to wear eye protection unless the commander deems eye protection necessary due to environment hazards or for training purposes. High visibility apparel will comply with ANSI/ISEA 107, class 2 requirements, as a minimum, and will be worn by all Army personnel exposed to vehicular or equipment traffic.

*b.* Occupants will wear head protection (combat vehicle crew, approved ballistic helmet, or flight helmet as appropriate) when operating or riding as a passenger in Army tactical vehicles as determined by the commander.

*c.* Army motor vehicles operating over public roads will be equipped with highway warning triangles.

*d.* Emergency, repair, and utility servicing vehicles, truck tractors designed to haul oversized slow-moving loads, truck wreckers, and other vehicles that frequently deviate from or obstruct normal traffic patterns will be equipped with rotating or flashing warning signal lamps, as required by federal, state, and local law. Emergency response vehicles will only use these devices when responding to emergency calls, required to warn traffic of emergency vehicles stopped at the scene of a mishap or breakdown, or in the pursuit of offenders.

*e.* Use rotating or flashing amber lights for cranes (wreckers), oversized or overweight vehicles, snow removal equipment, and other highway maintenance vehicles.

*f.* Do not use rotating or flashing amber lights when their operation is a hazard to other traffic.

*g.* Mount rotating lights or beacons so that the lights are not a hazard or nuisance to the operator or to other vehicle operators.

*h.* Mount convoy signs, as well as rotating or flashing amber warning lights, on the first and last vehicle in a convoy. (HN agreements may require additional vehicles in the convoy to use these lights.)

### **13-10. Ground guides**

*a.* Operators must use a dismounted ground guide when moving tactical vehicles in congested areas (motor pools, parking areas, assembly areas, and so forth), bivouac and sleeping areas, or when traversing hazardous terrain. Guides will use flashlights/chemlights to direct vehicles when visibility is reduced. Front and rear ground guides are required when backing in congested areas.

*b.* Commanders, supervisors, and senior leaders will ensure ground guides are trained in accordance with TC 3-21.60, TC 21-305-20/AFMAN 24-306(I), and TC 21-306.

*c.* Engineer vehicles operating outside of supervised or controlled access construction sites will use the ground guide standards for tactical or combat-wheeled vehicles. Operators of graders, bulldozers, and other engineer vehicles will walk around the vehicle before starting the engine to ensure that the area is clear of obstructions.

*d.* Provide a signal person at the point of operation (includes area of load travel and area immediately surrounding the load placement) when:

- (1) Backing or maneuvering in controlled access construction sites.
- (2) Not in full view of the vehicle, machine, or equipment operator.
- (3) Backing vehicles more than 100 feet.
- (4) Terrain is hazardous.
- (5) Two or more vehicles are backing in the same area.

*e.* When operating a vehicle, machine, or equipment within a controlled access construction site and the point of operation is in full view, the operator may back without the assistance of a signal person or spotter provided:

- (1) The operator walks behind the vehicle, machine, or equipment to view the area for possible hazards.
- (2) An audible reverse signal alarm is activated above the surrounding noise level according to 29 CFR 1926.602.

### **13-11. Vehicles equipped with radio antennas**

*a.* Operators of vehicles equipped with radio antennas will be familiar with the fire and electrocution hazards associated with antennas contacting overhead power lines.

*b.* When operating vehicles in areas with overhead power lines, clip antennas under the antenna-retaining clip. To reduce the risk of electrical shock, if the antenna tie down fails, operators should not park under power lines.

*c.* When operating tracked and wheeled vehicles in areas with overhead power lines, secure antennas to a height between 8 and 13 feet. Blunt antenna ends with an antenna tip assembly or antenna ball.

*d.* Remove and store antennas inside the vehicle before loading onto a railcar or semitrailer for transport.

### **13-12. Fire prevention**

*a.* Do not operate Army vehicles with gasoline, jet-propellant 8, or class III diesel leaks.

*b.* Smoking is prohibited within 50 feet of vehicles loaded with flammable or combustible liquids, flammable gases, or explosives and in the presence of flammable vapors such as those present when fueling vehicles or examining or repairing vehicle engines or fuel systems.

*c.* During fueling, drivers will turn off the engine, put the transmission in low gear (or park position if automatic), and use the parking brakes. Chock wheels when low temperatures prevent setting the parking brakes. For refuel-on-the-move operations, follow safety precautions provided in ATP 4-43.

*d.* Using cellular phones is prohibited (within 50 feet) during fueling operations or when flammable vapors are present.

*e.* Offload fuel cans from the vehicle and place on the ground for filling to avoid static electricity buildup or discharge.

*f.* Ensure required fire extinguishers are onboard off-road Army vehicles per applicable system technical manual or technical bulletin.

*g.* Mount fire extinguishers in vehicles responding to calls for assistance (such as fire, police, and security protection), material handling equipment and vehicles carrying valuable equipment or materials on a mission requiring special protection.

*h.* Require positive bonding connections between fuel tank trucks when filling or offloading to minimize the danger of fire or an explosion caused by static sparks. Require grounding of tank trucks before approaching the fuel tank.

*i.* Train vehicle crews on the use of onboard fire suppression systems and any hazards associated with operation of the system.

### **13-13. Carbon monoxide poisoning precautions**

*a.* Do not operate vehicle engines in maintenance facilities longer than needed to move vehicles in or out. Use an exhaust ventilation system that adequately dissipates vehicle engine gases when operating vehicles in a maintenance facility.

*b.* Ventilate maintenance facilities and other enclosed areas used for vehicles adequately at all times to prevent overexposure to exhaust gases from vehicle engines or space heaters.

*c.* Prohibit sleeping in parked vehicles with the engine heater or externally mounted generator running. Carbon monoxide poisoning may result from exhaust gases entering the vehicle.

*d.* When the power train, cooling, and exhaust systems are separated from the crew by engine access panels, the operator will ensure that the panels seal properly to prevent carbon monoxide from entering the crew compartment in accordance with the appropriate technical manual.

### **13–14. Specialty vehicles**

Commanders or leaders are responsible for overseeing specialty vehicle safety.

*a.* Commanders will develop SOPs which integrate RM into techniques and training when a unit utilizes motorcycles, mopeds, motor scooters, and all-terrain vehicles (ATVs).

*b.* Driver qualification and training will be in accordance with AR 600–55.

*c.* Establish “operational work areas” to limit the travel of nontactical specialty vehicles routinely used on Army installations.

*d.* Maintain manufacturer-installed safety equipment in working order.

*e.* Do not drive tactical specialty vehicles such as the M-Gator and MRZR on installation or public roads except to cross the roadway at designated crossing points or with a road guard.

*f.* Operators will not exceed the recommended load carrying capacity, personnel capacity, or maximum safe vehicle speed. Secure cargo items as necessary to prevent tipping.

*g.* Occupant protective devices will be worn when installed by the manufacturer.

*h.* Adequate head protection is required for operators and passengers operating or riding in tactical specialty vehicles, and for operators and passengers of nontactical vehicles operated outside of the designated operational work areas.

(1) For Segway Personal Transporter, the minimum head protection standard for installation and operations is an approved bicycle helmet.

(2) Operators of tactical specialty vehicles will wear approved head protection (helmet) that at a minimum conforms to FMVSS 218 or equivalent, protective goggles or face shield, full-fingered gloves, long-sleeved shirt or jacket, long trousers, and over-the-ankle boots. Commanders may authorize the use of helmets that offer ballistic protection in lieu of FMVSS 218 when the tactical situation dictates such use.

(3) Operators and passengers of nontactical vehicles that are not equipped with manufacturer-installed rollover protection will wear approved head protection (helmet) that at a minimum conforms to FMVSS 218 motorcycle safety standards or equivalent when operated on installation or public roads that are outside the designated operational work area. Commanders may authorize the use of helmets that offer ballistic protection in lieu of FMVSS 218 when the situation dictates such use.

*i.* Nontactical specialty vehicles that are allowed to operate outside a controlled work area and on installation streets, roads, and highways will meet the minimum vehicle safety standards according to 49 CFR 571.5, to include rollover protection, occupant protective devices, and placement of “Slow Moving Vehicle” emblems where required.

### **13–15. Periodic motor vehicle inspection requirement**

*a.* All Army motor vehicles, including nonappropriated fund vehicles and GOCO vehicles, will pass a safety inspection at least annually.

*b.* Conduct inspections in accordance with HSPG Number 1, AR 58–1, and DoDI 6055.04. This will be in addition to the dispatch inspections.

(1) The inspection will evaluate systems and components for vehicle performance (such as occupant restraint devices, lighting, glazing, exhaust system, wipers, horn, brake systems, steering systems, suspension, tires, and wheel assemblies).

(2) The inspection will ensure that exhaust emissions do not exceed any applicable federal, state, municipal, or HN requirements for GOCO nontactical vehicles.

### **13–16. Motorcycle and all-terrain vehicles safety**

*a. Licensing.*

(1) Operators of government-owned motorcycles and military personnel on or off installations are required to be properly licensed or have the proper learners permit when operating on public roadways except where not required by the applicable SOFA or local laws.

(2) Motorcycle riders who operate motorcycles on post must comply with the skills training, licensing, and permit requirements of the state, HN, or SOFA.

(3) Installations will align licensing requirements for operating privately-owned motorcycles, motorized bicycles (mopeds), motor scooters, ATVs, or recreational off-road vehicles with state and local laws.

(4) Operating minibikes, pocket bikes, and similar vehicles is prohibited on installation roads. Senior commanders may authorize operation in areas not on installation roadways.

(5) All individuals that are properly licensed to ride a motorcycle are not required to receive Service-sponsored training or prove that they have taken other motorcycle training in order to operate a motorcycle on a DoD installation.

*b. Motorcycle equipment.* When operated on any DoD installation, in both on and off-road modes, all government privately-owned motorcycles, mopeds, motor scooters, and ATVs must have:

(1) Headlights (when equipped) turned on at all times, except where prohibited by military mission, SOFAs, or local laws.

(2) Both a left and right-hand rearview mirror mounted on the handlebar or fairing.

*Note.* Government-owned off-road motorcycles on tactical missions or training are exempt from this requirement.

(3) Operational front and rear brakes.

*c. Motorcycle and all-terrain vehicle rider protection.* Commanders will ensure that all individuals covered by this regulation wear the following PPE while operating motorcycles, off-road vehicles, and ATVs on the installation and by all Soldiers who ride motorcycles and ATVs at any time on or off Army installations.

(1) *Helmets.* Helmets will—

(a) In the United States, meet FMVSS 218, United Nations Economic Commission for Europe Standard, BS 6658, or Snell Standard according to DoDI 6055.04. The DOT symbol is on the outside back of the helmet, near the bottom.

(b) Outside the United States, meet the HN standards. If the HN has no standard, helmets must meet at a minimum DOT FMVSS.

(c) Be properly fastened under the chin.

(2) *Eye protection.* Eye protection must meet or exceed ANSI/ISEA Z87.1 for impact and shatter resistance (includes goggles, wraparound glasses, or a full-face shield (properly attached to a helmet)). A windshield or fairing does not constitute eye protection.

(3) *Foot protection.* Foot protection includes sturdy over-the-ankle footwear that affords protection for the feet and ankles (durable leather or ballistic-type fabric athletic shoes that cover the ankles are acceptable).

(4) *Protective clothing.* Protective clothing includes long-sleeved shirt or jacket, long trousers, and full-fingered gloves or mittens made from leather or other abrasion-resistant material. Motorcycle jackets and pants constructed of abrasion-resistant materials (such as leather, Kevlar®, or Cordura®) and containing impact-absorbing padding are strongly encouraged. Riders are encouraged to select PPE that incorporates fluorescent colors and retro-reflective material.

*d. Tactical motorcycle and government-owned tactical all-terrain vehicle rider protection.* In addition to the PPE listed in paragraph 13–16c, PPE for government-owned motorcycle and ATV operators during off-road operations should also include knee and shin guards and padded gloves.

(1) Unit commanders may authorize using combat helmets for operating tactical vehicles (for example, motorcycles, ATVs, and recreational off-highway vehicles) during operations and training based on an operational risk assessment.

(2) Provide operators of government-owned tactical ATVs and motorcycles with initial training for motorcycles as required in paragraph 13–17a(1) and with training tailored to satisfy specific mission requirements. ATV operators will complete the Specialty Vehicle Institute of America-based course or equivalent course.

*e. Can-Am Spyders®, three-wheeled motorcycles, other three-wheeled vehicles and auto-cycles.*

(1) Powered non-enclosed three-wheel vehicles are considered motorcycles if determined by the state or HN.

(a) All motorcycle PPE requirements are applicable to three-wheeled variants that the state or HN has classified as motorcycles.

(b) The requirement for motorcycle training will be determined based on classification of the vehicle.

(2) Powered enclosed three-wheeled vehicles are considered auto-cycles if determined by the state or HNs.

(3) Vehicles with side-by-side seating are not considered motorcycles unless the state or HN so designates.

(4) At a minimum, all operators are required to familiarize themselves with and follow the manufacturer's instructions and safety precautions pertaining to their vehicle.

(5) The minimum PPE required for vehicles such as the Slingshot is a DOT-approved motorcycle helmet.

## **13–17. Motorcycle training program**

*a.* The Army Progressive Motorcycle Program is mandatory for Soldiers operating a privately-owned motorcycle to sustain or enrich rider skills. The Army standard basic motorcycle rider's course is an appropriate Motorcycle Safety Foundation (MSF), MSF-based, state-approved or DoD component approved curriculum for motorcycle operators' safety training. Training will be conducted by certified or licensed motorcycle rider coaches and include classroom instruction on technical and behavioral subjects, hands-on training, and an evaluation on a riding skills and knowledge. Installations will accept the completion cards of any MSF, MSF-based, state-approved or DoD component approved course that includes written and riding evaluations as proof of successful completion of the required training. The program consists of the following courses: Basic Rider Course (BRC), Experienced Rider Course (ERC)/Basic Riders

Course-II (BRC-II), Military Sports Bike Rider Course (MSRC), Advanced Rider Course (ARC), Motorcycle Refresher Training (MRT), and sustainment training.

(1) *Initial training.* Prior to operating any two or three-wheeled vehicle that requires the operator to be licensed with a motorcycle endorsement in the state or HN, soldiers will successfully complete BRC. Training may be accomplished on a contractor-provided motorcycle or the individual's own motorcycle. If approved by the commander, the Soldier may ride a motorcycle to the training site or location.

(2) *Intermediate training.* Within 1 year, based on the type of motorcycle owned or operated, Soldiers are required to complete an ERC, MSF BRC-II, state-approved, or DoD component approved course or an MSRC, MSF ARC, state-approved, or DoD component approved course for motorcycle operator intermediate level training.

(3) *Motorcycle refresher training.* MRT is required for any (motorcycle-licensed and endorsed) Soldier owning a motorcycle and returning from a deployment greater than 180 days. A Soldier must attend MRT prior to operating his or her motorcycle on a public or private street or highway with the exception of riding to the training site or location. MRT will be conducted on the individual's own motorcycle to confirm ability to safely handle his or her motorcycle. Training will be provided at the unit level utilizing USACRC MRT digital video disk (DVD), which is available online at <https://safety.army.mil> or by request. Based on MRT performance, commanders can refer motorcycle riders back to the Progressive Motorcycle Program for re-training if they question the operator's safe riding skills.

(4) *Sustainment training.* Within 5 years of completing intermediate training, inactivity, or the acquisition of a new or change in motorcycle(s), operators will complete the appropriate intermediate training course. Soldiers are encouraged to take sustainment training after a major geographical change. Sustainment training consists of the appropriate intermediate training course or other Army-approved motorcycle safe riding courses at no expense to the U.S. Government. Commanders are not authorized to waive or defer sustainment training.

(5) *Civilians.* DoD civilian employees who operate Army motorcycles in the performance of their duties will complete the initial training requirement as outlined in paragraph 13-17a(1).

(6) *Others.* Military retirees and military Family members/dependents are not permitted to attend Army-sponsored training.

(7) *Army special operations forces.* ARSOF personnel will follow USSOCOM/USASOC guidance.

*b.* Commanders may authorize properly licensed or permitted operators that have completed initial training and are scheduled for intermediate training within 30 days to ride on or off the installation subject to any restrictions imposed by such a permit.

*c.* Personnel who operate privately-owned mopeds, motor scooters, ATVs, or dirt bikes should complete appropriate operator safety training such as the Specialty Vehicle Institute of America or MSF scooter course.

*d.* Conventional motorcycles with sidecars are regarded as two-wheeled motorcycles with BRC requirements. (Sidecars are generally a removable component, leaving the motorcycle operable in a conventional manner.)

*e.* If commanders elect to allow personnel to operate privately-owned off-road motorcycles or ATVs on the installation, they will require proof of additional performance-based training on that vehicle prior to allowing access to the installation.

## **13-18. Driver education**

*a. Army Traffic Safety Training Program.* All Army Soldiers will receive private motor vehicle training. The following training comprises the regulatory requirement to provide all Soldiers under age 26 with 4 hours of drivers training as soon as possible upon initial entry into military service:

(1) *Introduction to Drivers Training Course.* This 1-hour course introduces Soldiers to the Army's Driver Safety Program during first permanent unit of assignment.

(2) *Local hazards briefing.* The garrison safety office will ensure newly assigned Army personnel receive a local hazards briefing.

(3) *Intermediate Drivers Training Course.* Newly assigned Soldiers less than 26 years of age will receive this course. Training will be provided by contractor where available and by exportable training package available from IMCOM at installations where there is no contractor support.

(4) *Recordkeeping.* Commanders will document training in the Digital Training Management System (DTMS).

*b. Driver improvement/remedial drivers training.* Driver improvement/remedial drivers training will consist of an 8-hour, behavioral-based, classroom-taught, instructor-led course designed to reduce aggressive driving and reduce repeat offenses. The intent of the remedial driver training is to effect a behavioral change in participants that results in reduction of motor vehicle mishaps. To reinforce positive driving behaviors:

(1) Commanders will provide Army-approved driver improvement courses to military or civilian personnel who, while operating a government motor vehicle, are convicted of a moving traffic violation or determined at fault in a traffic mishap.

(2) Commanders will require individuals, inside or outside normal duty hours, to attend the courses or lose installation driving privileges. Use state-approved driver improvement programs to fulfill the requirement in absence of an Army standardized course.

(3) Commanders may direct Soldiers to attend remedial driver's training based on a determination of high-risk driving activity or accumulation of traffic points over a 12-month period. Examples of high-risk driving activities may include:

(a) The accumulation of 5 or more traffic points over a 12-month period (see AR 190-5/OPNAV 11200.5D/AFI 31-218(1)/MCO 5110.1D/DLAR 5720.1).

(b) Warning traffic citation(s) for moving and nonmoving infraction(s).

(c) Letter(s) of counseling or reprimand for driving.

(d) Confirmed witness statements of driving infraction(s).

### **13-19. Use of personal protective equipment on installation roadways**

a. Units will provide and require use of fluorescent or reflective PPE to personnel exposed to traffic hazards as part of their assigned duties; for example, marching, running, and jogging troops (not in a formation), road guards, traffic control personnel, road construction crews, personnel conducting police call, electricians, or telephone repair personnel working on outside overhead lines.

b. Troop formations, during periods of reduced visibility, should post front and rear guards 30 meters in front and to the rear.

c. Units will provide flashlights with a wand or luminescent chemical lights to troop formations moving on roadways during periods of darkness.

## **Chapter 14**

### **Cargo Operations Safety**

#### **14-1. General**

This chapter establishes safety requirements for cargo operations using all transport modes to assist commanders in mitigating risk associated with cargo operations.

#### **14-2. Maximizing safety in cargo transport operations**

a. Commanders will ensure cargo preparation operators are trained in material compatibility rules, packaging procedures, and package marking and labeling appropriate to the material and transport mode.

b. Cargo loading operators will be trained in:

(1) Controlling transport unit weight and balance.

(2) Cargo securing techniques appropriate to the material, packaging configuration, transport unit being loaded, the transport mode, and the materials appropriate to the job.

c. Personnel handling HAZMAT cargo will—

(1) Be certified in properties and hazards of HAZMAT, the procedures to take in the event of a leak or spill, and specific details of their duties according to the transportation modes.

(2) Be assigned duties only for which they are specifically trained.

(3) Perform duties according to the applicable national or international transportation mode regulations for the operation. Within the United States, 49 CFR applies. Outside the United States, international regulations and HN regulations apply. Commanders must ensure that individuals assigned HAZMAT tasks have ready access to current regulations required to perform their duties. Generally, the governing regulations are:

(a) 49 CFR for transports within the United States.

(b) The IMDG Code for sea transport.

(c) AFMAN 24-604/TM 38-250/NAVSUP PUB 505/MCO P4030.19J/DLAI 4145.3 for military air transport.

(d) International Air Transport Association Dangerous Goods Regulations for commercial air transport.

(e) ICAO Doc 9284 for the safe transport of dangerous goods by air.

(4) Package, mark, label, load, and placard the transport unit according to the applicable mode regulation.

(5) Ensure RAMs are compatible, secured, and braced against movement. Ensure outside the United States radioactive items are radio frequency (RF) tagged for outside the United States shipments of individually controlled radioactive commodities. Ensure the vehicle driver has a transport document with emergency contacts and procedures as required by federal and Army regulations. RAMs that are transported outside the United States are subject to international regulations and requirements and may be forbidden without specific licensing or permit.

*d.* Commanders do not have the authority to risk assess statutory requirements concerning vehicle loads, especially concerning HAZMAT. Obtain approval or an exemption from a competent authority prior to using alternative procedures.

*e.* Vehicle drivers have the authority to refuse a load they believe violates any safety provision for which they may be held liable during the operation.

*f.* For assistance contact SDDC and the U.S. Army Defense Ammunition Center.

(1) The SDDC provides guidance supporting cargo loading at <https://www.sddc.army.mil>.

(2) The U.S. Army Defense Ammunition Center provides certification training and computer-based HAZMAT familiarization training at <http://www.dactces.org/> (CAC required).

### **14-3. Rail, port, and escort operations**

*a. Specific operations.* Commanders and other leaders who are planning or conducting the operations outlined in this paragraph will use RM to help them assess hazards and risks.

*b. Simultaneous operations.* Many operations require maneuvering in tight spaces with multiple simultaneous operations in the immediate vicinity. Personnel assigned to operate vehicles and materials handling equipment will be trained, licensed, and experienced. Ground guides will be used and will be conspicuous by illumination device or high visibility clothing.

*c. Rail operations.*

(1) *Railhead operations.*

(a) The commander or responsible leader will appoint a railhead safety officer and safety NCO.

(b) Commanders will implement a railhead qualification program for units assigned to rail loading operations, with assistance of local movement control or rail personnel. Only qualified rail loading personnel will conduct loading.

(c) In addition to the commander's qualification training, all railhead personnel will successfully complete the Railhead Safety interactive multimedia training located at <https://scoe.ellc.learn.army.mil> (CAC required).

(d) Railhead operations will comply with procedures in TM 4-14.21 and SDDC Transportation Engineering Agency MI 55-19 (available at <https://www.sddc.army.mil/sites/tea/publications/pages/default.aspx>).

(e) Rail safety information can be obtained from the Transportation Regimental Safety Office (Combined Arms Support Command) Fort Lee, VA via email at [usarmy.lee.tradoc.mbx.rail-safety@army.mil](mailto:usarmy.lee.tradoc.mbx.rail-safety@army.mil).

(2) *Train and engine operations/track maintenance/locomotive, railcar maintenance.*

(a) All locomotive engineers/conductors, as well as crewmembers, will be certified in accordance with AR 56-3, 49 CFR 240, and 49 CFR 242.

(b) Track safety standards will comply with UFC 4-860-03.

(c) Locomotive/railcar maintenance will comply with TM 55-203.

(d) All rail operations will comply with 49 CFR Subtitle B Chapter II, General Code of Operating Rules, AR 56-3, TC 55-88-1, and TM 4-14.21.

(e) All installations with rail activities will create a railroad timetable specific to their location.

(f) Rail safety information can be obtained from the Transportation Regimental Safety Office, Combined Arms Support Command (Rail), Fort Lee, VA via email at [usarmy.lee.tradoc.mbx.rail-safety@army.mil](mailto:usarmy.lee.tradoc.mbx.rail-safety@army.mil).

*d. Port operations.*

(1) The commander or responsible leader will appoint a port operations safety officer and safety NCO.

(2) Personnel involved in port operations will be trained in their respective duties and the hazards involved in the operating area.

*e. Escort operations.* Escorts will not climb on equipment loaded on railcars once the car has been prepared for movement.

### **14-4. Department of Defense military munitions transport requirement excerpts for continental United States transport**

*a.* Vehicles used to transport AE must either be a completely enclosed van type vehicle with a separate passenger compartment or be equipped with side stakes with the cargo protected by a tarpaulin or canvas top that completely covers the load.

*b.* Cargo must be secured against movement in any direction.

*c.* Army vehicles transporting AE will be equipped with at least two class 2-A 10BC or equivalent fire extinguishers.

*d.* Vehicle brakes will be set and at least one wheel chocked during all loading, unloading, and tie down operations.

*e.* Mandatory procedures in DA Pam 385-64 and FM 4-30 will be used in transporting captured enemy ammunition.

f. Emergency response information for AE (CONUS shipments only) will follow instructions on DD Form 2890 (DoD Multimodal Dangerous Goods Declaration) in the event of a mishap involving HAZMAT. For materials shipped from CONUS to outside the United States and from outside the United States to CONUS, emergency response will be according to the IMDG Code. Emergency contact phone numbers for transportation information will be indicated on the shipping documents.

g. Transporting AE outside the United States is subject to additional and/or different international regulations and HN requirements.

#### **14-5. Biological agents and toxins transport requirements for continental United States transport**

a. Transporting select IAT on DoD installations will be kept to a minimum and will be according to this regulation, mandatory procedures in DA Pam 385-69, 42 CFR, 49 CFR 173, 9 CFR 121, 7 CFR 331, as well as applicable DOT regulations and guidance pertaining to shipping containers, supporting documentation, and placarding of transportation vehicles.

b. Select IAT will be secured or in the direct control of a biological personnel reliability program-certified individual while awaiting transportation.

c. Transport outside the United States is subject to additional and/or different international regulations and HN requirements and may be forbidden without specific permit.

### **Chapter 15** **Maritime Activities**

#### **15-1. Introduction**

Leaders and managers will use the RM process to establish and operate an effective maritime activity safety program to include water operations, water activities, and civil work maritime activities. Specific requirements for each of these program areas are provided in this chapter.

#### **15-2. Water operations**

Operators will follow applicable federal, state, and local laws; U.S. Coast Guard (USCG) regulations; and/or USACE (most stringent) regulations to safely maneuver Army-owned, -operated, or -leased vessels and watercraft.

#### **15-3. Civil work maritime activities**

Watercraft, engineer-peculiar equipment, and operations under jurisdiction of USACE (including dredging, navigation maintenance, survey, and park ranger waterborne patrol operations) will meet the requirements in EM 385-1-1, ER 385-1-91, and EP 1130-2-500. For vessel design, USACE-owned and operated vessels, plant, and equipment will be of a design accepted by the USACE Maritime Design Center, maintained in a seaworthy state, and equipped according to the original design, USCG regulations, and USACE requirements found in EM 385-1-1 and EP 1130-2-500.

#### **15-4. Operator qualification**

Operators of Army vessels will be licensed according to AR 56-9 and, where applicable, by USCG and USACE EM 385-1-1 for the specific type of vessel or equipment. Commanders may impose more restrictive licensing requirements, as needed.

#### **15-5. Protective equipment**

a. Personnel aboard Army vessels and floating plants or working on/over water will wear personal flotation devices prescribed by USCG, OSHA, and/or USACE complying with 46 CFR, 29 CFR, and EM 385-1-1, respectively. Personal flotation devices used during tactical water operations will comply with the mission commander's guidance.

b. Lifesaving devices (ring buoys, life rings, and so forth) will be provided on all vessels and floating plants according to applicable federal, state, and local laws, USCG, and EM 385-1-1.

#### **15-6. Inspections**

Qualified personnel, as designated by AR 56-9 and as applicable to USACE and respective commands, will inspect all vessels as defined in AR 56-9 and floating plants at least annually for seaworthiness and safe operating condition. The Transportation Corps Branch Safety Office, Maritime Safety Division will survey the same vessels triennially.

USACE regulation dictates frequency and scope of inspections for USACE vessels. Records of these inspections and surveys will be retained for no less than 3 years.

### **15–7. Pre-mishap or pre-emergency planning**

Prior to vessel or plant deployment, the commanders will prepare plans for response to maritime emergencies such as fire, sinking, grounding, flooding, severe weather, man overboard, HAZMAT incidents, and any other critical risks specific to the mission as outlined in AR 56–9, USCG guidance, or USACE EM 385–1–1. Commanders will conduct drills and exercises of these plans stated in applicable federal, state, and local laws.

### **15–8. Investigations**

*a. Notifications.* In addition to notification and reporting required by chapter 3, the commander will report as follows:

(1) *Maritime—underway/maritime—not underway.* Grounding that creates a hazard to navigation, the environment, watercraft safety, or an occurrence that affects the watercraft's seaworthiness or fitness for service. Such notifications, which include fire, flooding, or damage to fixed fire extinguisher systems, lifesaving equipment, or bilge pumping systems will be telephonically reported to USACRC (CSSC–O), Fort Rucker, AL 36362–5363, DSN 558–2660 or commercial (334) 255–2660 within 24 hours of the occurrence.

(2) *Maritime –diving.*

(a) *Diving operations/training.* See AR 611–75 for qualification and notification requirements. Report incidents that result in Type II decompression sickness or pulmonary over inflation syndromes telephonically to USACRC (CSSC–O), Fort Rucker, AL 36362–5363, DSN 558–2660 or commercial (334) 255–2660 within 24 hours of the occurrence. USACE activities will report incidents per engineer regulations.

(b) *Army special operations forces diving.* Report incidents that result in Type II decompression sickness or pulmonary over inflation syndromes (as defined in U.S. Navy Dive Manual, Volume I) telephonically to the Commander, U.S. Naval Safety Center, Norfolk, VA, DSN 564–3520 or commercial (757) 444–3520 within 24 hours of the occurrence.

(3) *Other diving mishaps.* Report all other diving mishaps to the U.S. Naval Safety Center and USACRC as soon as possible. USACE activity commanders will report incidents per engineer regulations.

(4) *Recompression treatment.* Report dives that require recompression treatment or that result in the diver being away from work for 24 hours or longer by message, per OPNAVINST 5102.1D, to Commander, U.S. Naval Safety Center, Norfolk, VA. The Commander, USASOC (AOOS) will be an information addressee on the message. This message is required in addition to telephonic notification. USACE activity commanders will report incidents per engineer regulations.

*b. Recordkeeping.*

(1) The master/coxswain, person in charge of any watercraft involved in a mishap, or person responsible for records custody will retain voyage records that are normally maintained by the watercraft and make them available to mishap investigators.

(2) Provide the following records pertinent to the dive or hyperbaric exposure:

(a) Completed operation and emergency procedures that document the status of all equipment and systems relevant to the dive and/or hyperbaric exposure.

(b) Diving log worksheet.

(c) Recompression chamber treatment log.

(d) Diver's medical records for the past 5 years (if available).

(e) DD Form 314 (Preventive Maintenance Schedule and Record) (or automated equivalent) for the equipment being used.

## **Chapter 16**

### **Army Radiation Safety and Occupational Health Program—Ionizing Radiation**

#### **16–1. Introduction**

NRC regulates the use of RAMs which are controlled through the issuance of NRC licenses. NRC RAM licenses govern Army radioactive sources and ARAs govern some Army radioactive sources not covered by NRC and includes RAMs and RGDs. The Army Radiation Safety and Occupational Health Program (ARSOHP) ensures safe use of RAMs and RGDs to support the U.S. Army mission. The Army must have accountability of the RAM. The goal of the ARSOHP is to keep radiation exposures as low as reasonably achievable (ALARA) to Soldiers, civilians,

contractors, and the general public in accordance with 10 CFR 20.1003 and 29 CFR 1910.1096, while meeting applicable environmental requirements. This regulation applies except in an operational setting where JP 3-11 applies. Proper training and procedures must be in place to use RAMs and RGDs efficiently, effectively, and safely. Training includes proper handling of RAMs and RGDs, inventorying, surveying with calibrated equipment, performing leak tests with calibrated equipment for accurate results, audits of the program, proper movement of materials, proper disposal procedures, proper procedures to decontaminate, and decommission areas that stored, maintained, and demilitarized RAMs and RGDs.

## **16-2. General**

*a.* AR 70-1 and mandatory procedures in DA Pam 385-16 apply to the acquisition of developmental and non-developmental materiel containing radioactive sources, including COTS equipment. Reevaluate the equipment in accordance with DA Pam 70-3 and DA Pam 40-11 if substantial modifications between the initial evaluation and final acceptance or adoption occur.

*b.* Compliance with NRC regulations, NRC licenses, Army reactor permits, ARAs, and Army radiation permit (ARP) conditions is required. Provide copies of the licenses, authorizations, and permits to DCPH-A for archiving and post documents on the DA RSO website, unless restrictions apply.

(1) Army personnel using radiation sources, including RAMs and RGDs, will comply with applicable NRC regulations and conditions of applicable NRC licenses; DOT, Food and Drug Administration (FDA), OSHA, and U.S. Environmental Protection Agency (EPA) regulations; ARAs; ARPs held by their command or by another ACOM; requirements of this regulation.

(2) Holders of NRC licenses, ARAs, and ARPs will have programs in place to ensure personnel using radiation sources, to include emergency responders that may encounter radiation, are aware of applicable regulations and conditions as appropriate.

(3) OSHA governs radiation exposures when more restrictive than or not governed by NRC, except for emergency or operational exposures under JP 3-11. For Army radiation exposures, the dose limits of this regulation apply when more restrictive than OSHA regulations.

*c.* Commanders will appoint the RSO in writing. Designate an alternate RSO to ensure program continuity and command and control of RAM in the absence of the RSO. The RSO will be qualified prior to appointment or within 90 days of appointment when operational circumstances interfere with the required qualification training. The RSO will be either a Soldier or DA Civilian employee.

*d.* A qualified expert is required to design, review, and test shielding barriers and controls for access to radiation areas, high radiation areas, and very high radiation areas. The qualified expert must perform these procedures per applicable regulations and guidelines before routinely using RAMs or RGDs within the area. Each design for high radiation and very high radiation areas must receive an independent review by a qualified expert (for example, American Board of Health Physics certified health physicist) designated by the ARSO or radiation safety staff officer (RSSO). Forward requests for determination of whether a certain individual is a qualified expert through command channels to the ACOM, ASCC, or DRU RSSO as necessary. Forward these requests to the ODASAF for further evaluation as necessary.

*e.* Adopt no practice and conduct no operation involving planned exposure of personnel to ionizing radiation in excess of the applicable exposure standards of tables 16-1 and 16-2, other than deployment operations governed by operational exposure guidance. Paragraph 16-29 covers deviations in exposure limits for ionizing and nonionizing radiation.

*f.* Comply with environmental requirements for use and management of RAMs and RGDs in accordance with 40 CFR and AR 200-1, and prepare required environmental documentation in accordance with 32 CFR 651.

*g.* Outside the United States control of RAMs and RGDs will be in accordance with HN regulations, SOFAs, ARs, international agreements, NRC licenses, and ARAs, as applicable.

*h.* Inspect the RSP at least annually or as determined by NRC license or ARA. An independent outside organization will review the program at least once every 3 years.

## **16-3. Army Radiation Safety and Occupational Health Program responsibilities**

*a. Army radiation safety officer.* The ARSO—

(1) Chairs the Army Radiation Safety Council (ARSC) on behalf of the DASAF.

(2) Develops, manages, and promulgates Army radiation policy and guidance on behalf of the DASAF.

(3) Promulgates federal and Army radiation personnel exposure standards within the U.S. Army in coordination with TSG radiological hygiene consultant.

(4) Provides HQDA oversight of the DoD lead agency for low-level radioactive waste, to include matters concerning depleted uranium (DU) on behalf of the ASA (IE&E).

(5) Resolves radiation SOH issues among HQDA as necessary.

(6) Promotes good radiation SOH practices throughout the U.S. Army.

(7) Provides radiation SOH consultation to the ARSTAF; commanders of ACOMs, ASCCs, DRUs, and USARC; CNGB; and staffs.

(8) Serves as HQDA radiation SOH POC with other DoD and federal agencies.

(9) Represents HQDA on DoD working groups and panels.

(10) Provides technical input to HQDA-level radiation SOH plans and responses to radiation emergencies, mis-haps, and incidents.

*b. Chief, Army Dosimetry Center.* The Chief, ADC in accordance with 10 CFR 20.1501, procedures in DA Pam 385-10, and this regulation—

(1) Provides ionizing radiation services that meet the requirements of 10 CFR 20.1501 and paragraph 16-10 of this regulation in accordance with CG, AMC responsibilities paragraph in chapter 2.

(2) Publishes instructions for starting, maintaining, and ending personnel dosimetry services.

(3) Maintains the Army's CDRR. The CDRR archives comprehensive dosimetry records for Army personnel and for other personnel who use Army dosimetry services. Records must meet the requirements of 10 CFR 20.2106, 10 CFR 20.2110, and OSHA Standard 1910.1096. Records include results of bioassays, administrative dose assignments (including copies of documents that make the assignments), and supplementary occupational dose equivalent information (for example, dosimetry information resulting from off-duty employment) that RSOs report. In particular, the ADC must meet the requirements of 10 CFR 20.2106(f) for long-term retention of these records.

(4) Provides personnel dosimetry records (automated dosimetry report (ADR)) to RSOs for personnel who received dosimetry services during the previous issue period (month, quarter, and so forth). These reports enable supported RSOs to meet recordkeeping requirements in 10 CFR 20.2106.

(5) Provides reporting services that enable RSOs to meet requirements of 10 CFR 19.13, 29 CFR 1910.1096(n), 29 CFR 1910.1096(o), and 29 CFR 1926.53.

(6) Provides reporting services that meet the requirements of 10 CFR 20.2206.

(7) Immediately notifies (by telephone or message) the RSO, the TSG radiological hygiene consultant, the command RSSO, and the ARSO when dosimetry results indicate that any Army personnel ionizing radiation exposure standard may have been exceeded (see table 16-2).

*c. Army Low-Level Radioactive Waste Disposal Program.* The Army Low-Level Radioactive Waste Disposal Division, U.S. Army Joint Munitions Command, Safety/Rad Waste Directorate (AMSMJ-SF), Rock Island, IL 61299-6000 provides low-level radioactive waste disposal services to the U.S. Army in accordance with DoDI 4715.27. The CG, U.S. Army Joint Munitions Command (JMC)—

(1) Establishes procedures for implementing the Army's responsibility as DoD lead agency for unwanted RAM disposal.

(2) Maintains records of Army radioactive waste disposal by burial or recycling.

(3) Maintains a deployable capability to advise and assist ACOMs with the retrograde of radiologically contaminated equipment in accordance with AR 700-48.

*d. Executive Director, U.S. Army Test Measurement and Diagnostic Equipment Activity.* The Executive Director, U.S. Army Test Measurement and Diagnostic Equipment Activity administers the Army radiation test, measurements, and diagnostic equipment program and:

(1) Provides Army radiation test, measurement, and diagnostic equipment program and accredited radiation instrument calibration services (see AR 750-43 and TB 750-25).

(2) Provides radiological and nuclear counting services.

(3) Manages radiation processing facilities outside the United States to support the JMC mission in accordance with AR 750-43.

*e. Radiation safety staff officers.* The ACOM, ASCC, and DRU RSSOs—

(1) Recommend, implement, and oversee command radiation SOH policies for their respective area of responsibility; these persons should have an area of concentration (AOC) 72A nuclear medical science officer or GS-1306 health physicist for those commands with NRC licenses. The RSSO serves as the headquarter command's top radiation safety SME for ACOMs (AMC, AFC, FORSCOM, and TRADOC), ASCCs, and DRUs. Oversees the command RSP for the commander, establishes the radiation safety policy for the headquarters, and ensures the implementation of Army radiation safety policy across the command. The RSSO provides radiation safety consultation to his or her headquarters command and leadership chains, staffs, and to subordinate commanders and staffs. The RSSO

coordinates reporting of mishaps and/or incidents involving radiation, to include when applicable, coordination with the NRC licensee(s).

(2) Provide radiation SOH consultation to their respective command and leadership chains, staffs, and to subordinate commanders and staffs. Provide guidance to the command staff in the event of a radiological or nuclear event.

(3) Serve as their command radiation SOH program POC. Provide guidance to the command staff in the event of a radiological or nuclear event. Coordinate reporting of radiation mishaps and incidents involving RAMs or RGDs with the NRC applicable licensee or ARA holder.

(4) Ensure compliance to NRC licenses/ARAs including performing inspections, audits, and assistance visits.

(5) Report lost, stolen, damaged, and improperly shipped RAMs to the NRC license RSO.

(6) Provide peer review of the annual liabilities estimates and maintain supporting documentation to support financial statement auditability, including initial estimate development and annual revisions pertaining to activities, facilities, and commodities under an NRC license, ARA, or Army reactor permit.

*f. Army service component command radiation safety staff officer.* In addition to the responsibilities in paragraph 16-3e, the ASCC RSSO—

(1) Serves as the principal advisor to the ASCC commander and staff on radiation SOH program issues.

(2) Provides centralized, theater-level oversight and guidance to health physics/radiation safety personnel and/or radiological response teams.

(3) Manages transition-to-war and transition-to-peace radiation SOH issues involving radioactive commodities, RGDs, radiation survey instrument calibration, radiation safety training, DU training, radiation dosimetry, laser safety, and EMF safety.

(4) Monitors the oversight of and guidance on DU issues, to include friendly fire incidents, battle-damaged vehicle recovery, and contamination.

(5) Provides guidance on damaged radioactive commodities and coordination with CONUS-based NRC license holders.

(6) Evaluates reports from health physics and radiation SOH personnel and radiological response teams and provides guidance to the command staff in the event of a radiological or nuclear event.

(7) Ensures radiological detection equipment, sampling equipment, and personnel dosimetry are used, stored, and maintained in accordance with applicable technical manuals and guides.

(8) Designs and directs the implementation and execution of the radiation survey program (other than situations where JP 3-11 would apply).

(9) Conducts comparisons of radioactive survey sampling results against preset action levels and communicates survey results and analyses to the command staff.

(10) Provides guidance on radiation SOH redeployment issues involving radioactive commodities, unwanted RAM, radiologically contaminated vehicles and equipment, and foreign radioactive sources.

(11) Coordinates with medical support on the identification and follow up of Soldiers potentially contaminated with radioactive sources to include DU.

(12) Ensures compliance to NRC licenses/ARAs including performing inspections, audits, and assistance visits.

(13) Reports lost, stolen, damaged, and improperly shipped RAMs to the NRC license RSO.

*g. Nuclear Regulatory Commission license radiation safety officers.*

(1) Each NRC license RSO will be a designated 72A nuclear medical science officer or GS-1306 health physicist, or meet NRC requirements to be the appointed NRC license RSO assigned to manage the command's NRC license.

(2) The authority of RSOs on NRC commodity licenses for Army radioactive commodities extends to other commands and Services using those radioactive commodities. Commands and Services will allow the NRC license RSO or designee to inspect units using those radioactive commodities as required to ensure compliance with NRC license conditions.

(3) NRC license RSO duties include:

(a) Provide oversight in implementing NRC license conditions for a particular licensed device.

(b) Prepare NRC license applications and amendments for submission to NRC.

(c) Determine the proper radiological controls to assure ALARA.

(d) Perform inspections, audits, and assistance visits to ensure compliance with NRC license and ARAs.

(e) Coordinate with various level RSOs, to include different commands and other Services to ensure license compliance and provide technical assistance.

(f) Coordinate with other AMC LCMCs and PM offices to ensure proper demilitarization.

(g) Hold the authority to suspend, limit, or terminate operations.

(h) Develop annual liabilities estimates and maintain supporting documentation to support financial statement audibility, including initial estimate development and annual revisions pertaining to activities, facilities, and commodities under an NRC license, ARA, or Army reactor permit.

*h. Radiation safety officer.*

(1) The commander will designate an RSO in writing when any of the following is true:

(a) An NRC license, Army reactor permit, ARA, or applicable technical publication requires an appointed RSO.

(b) Personnel in the command are required to wear ADC-issued dosimetry (see para 16-10).

(c) Personnel in the command are required to participate in a bioassay program (see para 16-10).

(d) A unit possesses radioactive commodities or radiation emitting equipment that requires the implementation of an Army ionizing RSP (which may include leak testing, radiation postings, shipping requirements, and storage locations).

(2) An RSO provides the following functions for radiation sources within their organization's responsibility:

(a) Performs, or is responsible for, radiation SOH functions that are applicable to federal, and DoD, Army regulations; NRC licenses; Army reactor permits; and ARA condition requirements.

(b) Properly documents, stores, retains, and preserves Army RSP records, including annual physical inventories, radiation survey reports, and contamination survey reports to ensure availability during decontamination and decommissioning. Place documentation into ARIMS and provide a copy to DCPH-A to archive the data.

(c) Establishes plans and procedures for handling credible emergencies involving RAMs and RGDs. This includes coordination with civilian and military emergency response organizations as necessary.

(d) Coordinates with supporting medical personnel to ensure that personnel receive appropriate OH surveillance (see AR 40-5).

*i. Level 4 radiation safety officer.* Level 4 RSOs are 72A nuclear medical science officers or GS-1306 health physicists who manage NRC licenses (appointed as NRC license RSOs) and major ARSOHPs involving RAMs, RGDs, and energized sources, to include lasers, HIOS, and EMF sources. The Level 4 RSO can perform the duties of the Level 1 through 3 RSO listed in paragraphs 16-3j and 16-3k.

*j. Level 3 radiation safety officer.* Each RSO managing an installation or equivalent level organization radiation SOH program—

(1) Establishes and directs the installation or organizational radiation program (to include a written radiation program document).

(2) Assists units, tenants, civilian activities, and contractors on the installation or within the organization to meet requirements of NRC licenses, radioactive commodities, NRC generally licensed (GL) materials, ARAs, lasers (class 3B, 4, and military-exempt lasers), HIOS, EMF sources that can exceed the Zone 0 (unrestricted environment) exposure reference levels (ERLs) and dosimetric reference levels (DRLs), and NRC license-exempt materials.

(3) Assists units, tenants, and organizational elements with radiation safety training support.

(4) Reports radiation mishaps involving tenant activities, units, or organizational elements to the applicable NRC licensees or ARA holder and the command RSSO, as appropriate.

(5) Advises on appropriate radiation source inventory control and security of RAM.

(6) Manages decommissioning efforts when a building or area that currently or formerly contained radioactive commodities is scheduled for demolition, is being modified, or no longer contains radioactive commodities, and notifies the affected mission commander and the AMC RSSO. This process provides stakeholders with appropriate notification for decommissioning actions as necessary.

(7) Administers the installation or organizational RSP (to include maintaining records of ARP applications and ARPs issued by the garrison commander, when appropriate).

(8) Administers the installation or organizational Radiation Safety Council (RSC), if applicable.

(9) Documents, stores, retains, and preserves installation or organizational radiation SOH program records properly, including radiation contamination survey reports in accordance with AR 25-400-2, to ensure availability during decontamination and decommissioning of facilities.

(10) Coordinates as necessary with RSOs, medical officials, and emergency response personnel (both military and civilian, if appropriate) to establish plans and procedures for responding to credible radiation emergencies on the installation.

(11) Coordinates with the medical authority on occupational monitoring requirements for radiation workers.

(12) Provides training, guidance, and technical support to security forces and F&ES with fixed or portable radiation detection systems, or mobile imaging systems used for force protection purposes.

(13) Maintains a low-level radioactive waste consolidation point, as needed.

*k. Level 1 or 2 radiation safety officer.* Level 2 RSOs are at units or sites that have a need for a basic radiation safety understanding and specialized radiation safety training to include medical radiation safety, density moisture

testers, tactical radiation calibrators, or RGDs that have specific radiation safety requirements, including depots and arsenals where industrial x-rays are used. Level 1 RSOs are at units or facilities that are responsible for AMC commodities or NRC GL items. Level 1 or 2 RSOs—

- (1) Receive instruction on the types of radioactive commodities, RGDs, lasers, HIOS, and EMF sources.
- (2) Provide user-level training in the radiation SOH aspects of radioactive commodity use, RGDs, laser safety, and EMF safety or ensures users receive required training.
- (3) Develop and maintain a unit SOP for storage, inventory, tracking, and leak testing of radioactive commodities, materials, or sources, and response to radioactive source incidents. Develop and maintain an SOP for safe operation, storage, inventory, tracking, mishap reporting, and disposal requirements for lasers (class 3B, class 4, and military-exempt lasers), HIOS, and EMF sources that could potentially exceed the Zone 0 (unrestricted environment) ERL as needed.
- (4) Document and provide to the installation RSO the history of past commodity uses, contamination events, and commodity inventories for the areas and facilities under their control (see para 16–24).
- (5) Oversee the inventory of radioactive commodities, RGDs, lasers (class 3B, class 4, and military-exempt lasers), HIOS, and EMF sources that could exceed Zone 1 (restricted environment) ERLs and establish controlled areas as required.
- (6) Validate annually or as required by NRC license conditions or other regulatory requirements, physical inventories of RAM and lasers (class 3B, class 4, and military-exempt lasers) and forward the inventories upon request to their commander, applicable ARA manager, applicable NRC licensee, and the installation RSO.
- (7) Ensure the serialization officer enters applicable transactions into the DoD Radiation Source Tracking System database in accordance with AR 710–3. While deployed, tracking per AR 710–3 is not required.
- (8) Store and secure RAM, the location properly posted and away from flammables and explosives, ventilated, and easily decontaminated. While deployed, the RSO stores and secures RAM consistent with mission, enemy, terrain, troops, time, and civil considerations.
- (9) Conduct surveys of storage areas as required by the appropriate NRC license, ARA conditions, or other regulatory requirements.
- (10) Perform (or have performed by direct support units) periodic leak tests, as required.
- (11) Establish and maintain a personnel dosimetry program per this regulation when required.
- (12) Conduct radiation surveys of class 7 RAM packages prepared for shipment and ensure a person trained in accordance with DOT and DTR 4500.9–R–Part II Chapter 204 completes the shipping papers.
- (13) Provide shipping information, to include appropriate exposure rate and contamination levels, to the transportation officer or HAZMAT officer prior to shipment.
- (14) Investigate and report mishaps involving lost, stolen, broken, or damaged radioactive commodities, materials, and sources or malfunctioned safety devices of radioactive commodities and improperly shipped RAM.
- (15) Coordinate with medical authorities to follow up on possible personnel exposure to RAM or RGD.
- (16) Secure and store damaged radioactive commodities, materials, and sources properly.
- (17) Report mishaps to the commander, installation RSO, RSSO, and the affected NRC license RSO.
- (18) Report lost, stolen, or damaged radioactive commodities, materials, and sources in accordance with this regulation and use the radiation mishap report format in paragraph 16–17 as required.
- (19) Initiate requests for disposal of damaged device(s) through the installation RSO, RSSO, and NRC license RSO with the support of the AMC, JMC.
- (20) Maintain Army radiation program records per paragraph 16–24.
- (21) Maintain “ACTIVE” (health and safety calibrated) radiation detection, indication, and computation instruments required to perform mandated surveys.
- (22) Utilize the Defense Occupational and Environmental Health Readiness System (DOEHRS) to the extent possible for aspects of the ARSOHP.
- (23) Ensure proper turn in through item manager, demilitarize in accordance with item manager instruction, secure RAM and item storage area, and report improperly shipped RAM.
- (24) Ensure storage area is ventilated and easy to decontaminate.
- (25) Properly post bulk storage of radioactive commodities with a caution RAMs sign. Contact the specific Army NRC license RSO for proper posting requirements.
- (26) Perform contamination surveys on areas in accordance with NRC license conditions. NRC license conditions take precedence over technical bulletins or technical manuals.

*l. Users of Nuclear Regulatory Commission licensed radioactive commodities.* Responsibilities of users of NRC-licensed radioactive commodities include:

- (1) Perform only authorized maintenance on equipment containing licensed (specific or GL) RAM. Maintenance involving the radioactive sealed source is prohibited.
- (2) Have knowledge of technical manuals, technical bulletins, and manufacturer's operating manuals for all radioactive commodities, regardless if they are under a specific license, GL, or exempted by NRC.
- (3) Use safe handling procedures at all times when using radioactive commodities as prescribed in operating manuals and technical manuals.
- (4) Recognize and report damage to radioactive commodities or non-illumination for tritium commodities.
- (5) Follow the emergency and reporting procedures in accordance with this regulation when there is a mishap or emergency. Consider a lost, stolen, or damaged device an incident that requires immediate notification to the commander, installation/organizational RSO, Army NRC license RSO, command RSSO, and ARSO.
- (6) Segregate radioactive commodities from nonradioactive devices when possible.

#### **16-4. Radiation training requirements**

*a.* An RSO designated in accordance with this regulation will have completed a formal course of instruction addressing the following topics:

- (1) Basic radiation interactions.
- (2) Radioactivity.
- (3) Terms and units.
- (4) Biological effects.
- (5) Radiation detection and measurement.
- (6) Radiation and contamination control.
- (7) Radiation dosimetry.
- (8) Specific training for Army radioactive commodities or RGDs for which they are responsible.

*(9)* If NRC-licensed material is involved, ensure applicable NRC Form 313 (Application for Materials License) requirements, item 8 and item 10, of the RSP are met.

*b.* The U.S. Army Chemical, Biological, Radiological, and Nuclear School (USACBRNS), Medical Center of Excellence, DCPH-A, NGB, and AMC offer courses for Army RSOs. Paragraphs 16-4d and 16-4e provide additional information on courses to satisfy requirements for each level. Commercial courses with similar course material may be acceptable if they meet NRC license requirements and are approved by the ARSO in coordination with the NRC license RSO or NRC commodity RSO.

*c.* Any individual who ships RAM must complete training required by 49 CFR 173.1 and DTR 4500.9-R-Part II. Personnel involved in radioactive shipments will be trained in accordance with 49 CFR 172, Subpart H. Army health physicists (AOC 72A or GS-1306) are authorized to provide this training using approved Radioactive Commodity Identification and Transportation training curriculum offered by U.S. Army Communications-Electronics Command (CECOM) and found on the DA RSO website.

*d.* RSOs for activities that possess only chemical detection equipment, fire control devices, DU armored tanks, DU ammunition, DU tank combustor liners, or GL equipment are trained in person or virtually through TRADOC, NGB, AMC, locally, or by computer-based training modules. This training must be documented and provide an understanding of the hazards of the material, appropriate control measures, and necessary mishap response actions and notifications.

*e.* Training requirements for Army radiation SOH professionals are as follows:

*(1) Level 4 radiation safety officer.* A Level 4 RSO is a 72A nuclear medical science officer or GS-1306 health physicist. Level 4 RSOs have the educational background per Office of Personnel Management AOC standards. DA military and civilian health physicists require developmental courses and periodic training to maintain proficiency at Level 4. The installations FC 1306 ACTEDS plan provides recommended training that should be tailored to the command mission.

*Note.* RSOs on a medical license may require additional training to meet the 200-hour training requirement for NRC medical licensees prior to assignment as the medical license RSO. Individuals who meet the basic standard for a health physicist, but occupy a different career field, may also meet Level 4 qualifications if they have a minimum of 80 hours radiation SOH training in the topics listed in paragraph 16-4a.

*(2) Level 3 radiation safety officer.* The Level 3 RSO must complete the USACBRNS 1-week basic RSO course (phase 1) with source-specific radiation SOH training or equivalent-level training authorized by the Army Radiation Safety Office, the USACBRNS 1-week advanced radiation SOH course (phase 2), or equivalent-level course as authorized by the ARSO, and receive annual refresher radiation SOH training. Level 3 RSOs that are nonionizing

radiation safety officers (NRSOs) must complete the requirements for a Level 3 NRSO in accordance with paragraph 17-4.

(3) *Level 2 radiation safety officer.* The Level 2 RSO must complete the USACBRNS 1-week basic RSO course (phase 1) with source-specific SOH training for items under his or her purview or equivalent-level training authorized by the ARSO, and receive annual refresher radiation SOH training.

(4) *Level 1 radiation safety officer.* The Level 1 RSO must complete a DL or resident radiation SOH course taught by a Level 2 RSO or higher on the AMC commodities, NRC GL items, or RGDs under his or her responsibility. An additional duty RSO at an MTF without an NRC license may be considered a level 1 RSO by agreement or as prescribed by the Director, Defense Health Agency.

f. Refresher training will occur annually and can be resident or computer-based and re-training is required after a significant regulatory change.

g. Radiation Safety for Safety Professionals training is a familiarization program to understand basic radiation SOH and to identify whom to contact for additional expertise, and will meet Level 1 RSO requirements. The training is part of the safety professional certification process and is an accredited course by the installations FC safety certification process.

h. RSSOs will have training equal to or greater than Level 3 RSOs and receive annual refresher training. RSSOs with multiple NRC licenses or ARAs within their command should have training equivalent to Level 4 RSOs.

i. TRADOC instructors who have completed their instructor qualification and applicable level of instruction in radiation safety are qualified to instruct those levels which they have completed. Non-TRADOC instructors (that are not 72A nuclear medical science officers or GS-1306 health physicists) require completion of, at a minimum, RSO Level 3 training and must have completed an instructor qualification course.

j. Individuals receiving ADC dosimetry will be provided general radiation safety training to include the proper procedures for wearing dosimetry. Supervisors will document training on the DD Form 1952 (Dosimetry Application and Record of Previous Radiation Exposure) (see DA Pam 385-10).

k. Army health physicists (AOC 72A or GS-1306) may provide class 7 radioactive shippers training to shippers of RAM—

(1) If they have successfully completed and are currently trained in accordance with DOT and DTR 4500.9-R-Part II requirements, and

(2) Use the DoD approved Radioactive Commodity Identification and Transportation course curriculum offered by CECOM, and

(3) Provide a certificate of completion to students that have successfully passed an exam to demonstrate competency in class 7 shipping procedures.

## **16-5. Nuclear Regulatory Commission licenses**

a. NRC licenses special nuclear, source, and byproduct material in the United States.

b. Applications for new licenses, license renewals, and license amendments will be sent through command channels to the RSSO, as appropriate, for review and concurrence prior to forwarding the application to NRC.

(1) Commanders of ACOMs, ASCCs, DRUs, and USARC and the CNGB may permit subordinate commanders to forward applications directly to NRC without review. The commander, designated executive of the ACOM, subordinate commanders, or directors sign the license application. The applicant will provide a copy of the application to the RSSO, the ARSO, and DCPH-A for tracking and archival purposes. Applicant organizations are responsible for NRC licensing fees.

(2) When compliance with conditions proposed in the application require efforts of personnel of another command, obtain concurrence from an authorized representative of that organization. Commands will utilize the AMC commodities in accordance with their intended purposes. The NRC license RSO, in coordination with the RSSO, will ensure coordination with the commands involved.

(3) The applicant or RSSO provides a copy of all correspondence relating to the NRC license and amendment applications to the ARSO and to Defense Centers for Public Health—Aberdeen, Health Physics Division, 5158 Blackhawk Road, Aberdeen Proving Ground, MD 21010-5403 for Army archiving, to include environmental documentation required by 32 CFR 651.

(4) Tenant/mission commanders must provide a copy of each NRC license and ARA possessed by their command, including all amendments, to the installation RSO.

c. Army personnel may communicate ARSOHP concerns directly to NRC without restriction. Personnel are encouraged to first report concerns to the chain of command for resolution. NRC Form 3 (Notice to Employees) provides guidance on communicating with NRC.

- d. When contract employees perform Army radiation work in U.S. Army facilities, on U.S. Army installations, under the auspices of any Army NRC license, the contract must contain specific requirements tying the contract work-force to Army NRC license conditions and other administrative requirements of the ARSOHP.
- e. Contractors work under their own NRC licenses at GOCO facilities versus working under Army NRC licenses.
- f. Contractors may not work under the auspices of any Army NRC license in non-Army facilities or at off-post locations unless under the direct supervision of an Army RSO and if the work is authorized by the Army NRC license.
- g. The RSO named on an NRC license must be qualified in accordance with NRC guidelines.
- h. The RSSO reviews and approves the RSO prior to submission of the NRC license application or amendment to NRC.
- i. The RSSO notifies the ARSO of any changes in the NRC license RSO.
- j. Report noncompliance with NRC license conditions to the NRC license RSO. For resolution, the NRC license RSO will go through command channels to ARSO to correct noncompliance.

## 16-6. Army radiation authorizations

- a. The Army uses ARAs to control ionizing radiation sources that NRC does not license, to include some RGDs that emit ionizing radiation. Unless otherwise delegated, ARAs are issued by commanders of ACOMs, ASCCs, DRUs, and USARC and the CNGB or their designee on the advice of the command RSSO.
- b. The Army's ARA program is similar to NRC's licensing program. The Army applies NRC regulations and guidance, modified as necessary, in its control of ARA ionizing radiation sources. Most ARA conditions are similar to standard NRC license conditions.
  - (1) When an ARA applicant for a RAM program possesses an NRC license to which ARA RAM use can be linked, the application need only reference the NRC license. The issued ARA that references an NRC license may incorporate the expiration date and all conditions of the NRC license.
  - (2) NRC's regulations regarding license-exempt concentrations (see 10 CFR 30.14) and exempt quantities (see 10 CFR 30.18) are applied similarly to an ARA exemption.
  - c. An ARA is required for sources not regulated by NRC except:
    - (1) Byproduct, source, or special material that NRC has declared to be license-exempt (see 10 CFR 30.14 through 30.20, 10 CFR 40.11, 10 CFR 40.13, 10 CFR 40.14, and 10 CFR 70.14) or GL (see 10 CFR 31, 10 CFR 40.20 through 40.28, and 10 CFR 70.19 through 70.20b).
    - (2) Less than 3.7 kilobecquerels (kBq) (0.1 microcurie ( $\mu$ Ci)) of radium.
    - (3) Electron tubes containing less than 370 kBq (10  $\mu$ Ci) of any naturally-occurring and accelerator-produced radioactive material (NARM) radioisotope.
    - (4) RAMs or radiation-producing devices not capable of producing a high radiation area or very high radiation area (for example, 1 milliSievert (mSv) (100 millirem) in 1 hour at 30 centimeters (cm) from any surface of the device). For those RGDs that do produce a high or very high radiation area an ARA or ARP is still required as follows:
      - (a) Commanders will establish policies and procedures to ensure that design and use of these RAM sources or RGDs comply with the provisions of this regulation, procedures in DA Pam 385-10, DA Pam 40-11, relevant ANSI consensus guidance (N43 series), and applicable federal regulations. Only trained and authorized personnel will operate these systems.
      - (b) Commanders will maintain training records and inventories of RAMs or RGDs by the RSO overseeing the RSP.
      - (c) Commanders of ACOMs, ASCCs, DRUs, and USARC and the CNGB or their designee issue ARAs to organizations operating cargo and vehicle screening systems which use radioactive sources.
      - (d) An Army RSO oversees contractors using Army-owned x-ray systems on an Army installation under an ARA issued to the owning activity from the RSSO.
      - (e) An ARP is required for contractors using their x-ray systems on Army land in accordance with 32 CFR 655.10.
      - (5) Diagnostic x-ray systems (including medical, dental, and veterinary) and cabinet x-ray systems compliant with 21 CFR 1020.40.
      - (6) The Army Reactor Office permits Army nuclear reactors and Army reactor-produced RAM that remains at the reactor site in accordance with AR 50-7.
      - d. In special cases where NRC GL requirements attach to centrally purchased radioactive devices, the commander or designee may issue an ARA to ensure that the GL requirements are met, the provisions of paragraph 16-6c(1) notwithstanding. In the case of an AMC centrally purchased radiation-producing device, the CG, AMC can issue an ARA.
        - e. Commanders forward applications for new ARAs, ARA renewals, and ARA amendments through command channels to the appropriate ACOM for approval. The commander, designated executive of the ACOM, subordinate

commanders, or directors sign the ARA application. The applicant will provide a copy of the application to the RSSO, the ARSO, and DCPH-A for Army tracking and archival purposes.

(1) Use DA Form 3337 (Application for Army Radiation Authorization) for new ARAs, renewals, or amendments. Use either DA Form 3337 or a memorandum for renewals, amendments, or termination requests.

(2) When compliance with conditions proposed in the ARA application requires efforts of personnel of another command, obtain a concurrence from an authorized representative of that command (see para 16-5b(2)).

(3) The RSSO ensures that applications meet appropriate regulatory and advisory guidelines before sending approval through command channels to the applicant.

(4) Tenant commanders provide a copy of each ARA, including all amendments, to the installation RSO.

*f.* The CNGB or designee, or the issuing commander or designee, is the termination authority for ARAs issued by the ACOM, ASCC, or DRU. Terminate the ARA in one of three ways:

(1) An ARA that is linked directly to an NRC license terminates concurrently with the NRC license, providing that all of the ARA RAM and RGDs and use areas are appropriately dispositioned in accordance with the terms of the NRC license termination plan.

(2) An ARA not linked to an NRC license follows the same general course as terminating an NRC license. A termination plan approved by the commander or director is required. Consult DCPH-A, Health Physics Division or the ARSO for guidance.

(3) An ARA that will be replaced by an NRC license does not require a termination plan but requires an approved NRC license to be in effect at the time of termination. Include a copy of the approved NRC license with the termination request.

*g.* The RSSO provides a copy of all correspondence relating to ARA applications and terminations to the ARSO and Defense Centers for Public Health—Aberdeen, Health Physics Division, 5158 Blackhawk Road, Aberdeen Proving Ground, MD 21010–5403 for Army archiving.

*h.* Annually review implementation of an RSP in support of an issued ARA.

*i.* When RAM or RGDs under an ARA are not handled according to the specified ARA requirements, notify the RSSO for corrective action. Contact the ARSO for resolution if the corrective action is not implemented in a timely manner.

## **16-7. Nuclear Regulatory Commission generally licensed material requirements**

*a.* Devices purchased under GL authority do not require the U.S. Army to obtain an NRC license.

*b.* For items licensed under the provision of 10 CFR 31.5, the NRC GL material requires the U.S. Army to operate under procedures established by the manufacturer. For these types of materials, NRC GL material requirements state the material cannot be transferred within the U.S. Army without prior coordination with the manufacturer. If the U.S. Army does not follow the GL of the manufacturer then the U.S. Army is in violation of the NRC GL.

*c.* Commanders of ACOMs, ASCCs, and DRUs and the CNGB may use ARAs or other permitting processes to manage NRC GL materials within their respective commands.

## **16-8. Nuclear Regulatory Commission licensed exempt quantities of radioactive material requirements**

*a.* Acquisition of certain license-exempt radioactive sources may require either a distribution license by the manufacturer or a specific NRC license by the command taking possession.

*b.* License-exempt devices and quantities received by a command require special control procedures. This includes unpacking and use of the material. Potential concerns are external exposure and surface contamination from broken sources. Special precautions may be required if damage has occurred during shipment. The following procedures will be used for exempt quantities and devices received by the command:

(1) Inspect license-exempt devices and quantities when received. This inspection consists of inspecting the external surfaces of the device(s) for damage that could cause potential leakage and contamination. Bring discrepancies found during receipt inspection or unpacking to the attention of the RSO and the organization originating shipment or transfer.

(2) Survey or wipe test damaged devices. Request disposition instructions from JMC or the manufacturer. Use appropriate accountability procedures while the item is pending disposition.

*c.* To minimize the complexities of controlling large amounts of exempt quantities and devices and to prevent loss, commands will consolidate license-exempt quantities and devices in as few areas as practical and minimize the number in storage.

*d.* In the event of damage to a license-exempt device or surface contamination indicated by a contamination survey, the user will isolate the device and packing material and contact the RSO. The RSO will notify the commander and

the RSSO. Take action to prevent the spread of contamination under the guidance of the RSO. Properly record the event following the guidance on mishap reporting.

*e.* The RSO will ensure proper disposal of the license-exempt quantities and devices per the guidance in this regulation on handling and disposal of unwanted RAM.

*f.* The shipment of license-exempt quantities of RAM must comply with the requirements in DTR 4500.9-R-Part II.

## **16-9. Army radiation permits**

*a.* Nonmilitary agencies (including vendors and civilian contractors) require an ARP to use, store, or possess ionizing radiation sources on an Army installation (see 32 CFR 655.10). Nonmilitary applicants provide a letter requesting an ARP and supporting documentation to the garrison commander (see para 16-9d). Submit the letter to the garrison commander at least 30 days before the requested start date of the permit. (For the purpose of this paragraph, ionizing radiation source means any source that, if held or owned by an Army organization, would require a specific NRC license or ARA.)

*b.* The ARP application specifies the start and stop dates for the ARP and describes the intended use of the ionizing radiation source. For sealed sources, an affirmation that leak test requirements are current is included in the application. The garrison commander should consult the installation staff judge advocate or director of public works to ascertain the jurisdictional status of the area on the installation where the ARP applicant will use the radiation source. (On some installations, jurisdiction varies by location on the installation.) The garrison commander approves the application only if the applicant provides evidence to show that one of the following is true:

(1) For installations that maintain exclusive federal jurisdiction and installations in NRC non-agreement states, the ARP applicant must possess one of the following that allows the applicant to use the source as specified in the ARP application:

*(a)* A valid NRC license.

*(b)* A U.S. Department of Energy (DOE) radiological work permit (for work performed under DOE regulations).

*(c)* A state RAM license with an NRC reciprocity agreement. The ARP applicant establishes reciprocity by submitting an NRC Form 241 (Report of Proposed Activities in Non-Agreement States, Areas of Exclusive Federal Jurisdiction, or Offshore Waters) to NRC in accordance with 10 CFR 150.20. NRC limits work performed under a reciprocity agreement to 180 days in a calendar year. Otherwise, an NRC license is required.

*(d)* The NRC or state RAM license must specifically authorize the planned use of the material.

*(e)* If applicable, a copy of the sealed source device registry is required prior to approval.

(2) For installations that maintain concurrent jurisdiction with the state and are located in NRC agreement states, the ARP applicant must possess one of the following that allows the applicant to use the source as specified in the ARP application:

*(a)* A state RAM license (issued by the state in which the installation is located).

*(b)* An out-of-state license with host state reciprocity. The ARP applicant establishes reciprocity by notifying the host state RAM's licensing authority before work commences and complying with host state reciprocity requirements. Some states limit work under a reciprocity agreement to 180 days in a calendar year.

*(c)* A DOE radiological work permit (for work performed under DOE regulations).

*(3)* For radiation-producing devices, the applicant must have an appropriate state authorization that allows the applicant to use the device as specified in the ARP application and can provide documentation that the applicant has in place an RSP that complies with Army regulations. Include training documentation of the applicant's personnel and use National Voluntary Laboratory Accreditation Program (NVLAP) accredited dosimetry for the work covered under the ARP, if required, in addition to contractor dosimetry requirements.

*(4)* Cabinet x-ray systems that are compliant with 21 CFR 1020.40 do not require an ARP, but require the notification of the installation RSO prior to bringing the systems onto the installation.

*(5)* For overseas installations, the applicant has an appropriate HN authorization as necessary that allows the applicant to use the source as specified in the ARP application and has in place an RSP that complies with Army regulations. Applicants will comply with applicable SOFAs and other international agreements.

*c.* All ARPs require applicants to remove all permitted sources from Army property by the end of the permitted time.

*d.* The ARP application should consist of the following:

*(1)* A letter applying for an ARP with supporting documentation.

*(2)* Any one of the following:

*(a)* A copy of the NRC license that permits use or storage of radioactive sources, equipment, and devices at Army bases, garrisons, and installations.

- (b) A copy of a DOE radiological permit with documentation showing that it is valid for the location and operation.
- (c) A copy of an agreement state license and, if provided, documentation to show the license is valid on federal property. This is usually NRC Form 241 in accordance with 10 CFR 150. If work is covered by NRC Form 241, then the work is limited to 180 days in a calendar year, otherwise an NRC license is required.
- (d) If exempt from NRC licensing or under general licensing, provide proof of exemption or general licensing.
- (e) For NARM, the contractor must provide appropriate NRC or state authorization that allows the contractor to use the radiation emitting sources, equipment, and devices.
- (3) The licensing must show operational use conditions and restrictions with expiration date.
- (4) The documentation must specify the start and stop dates for the ARP and describe why the applicant needs the ARP (for example, proposed work statement).
- (5) Provide the portion of the contract that identifies the location(s) that the source will be used, the length of time required for the source, and the type of use for the source.
- (6) A copy of the company RSP.
- (7) A current list of trained and qualified employees using the radiation emitting sources or radiation generating equipment and their training records.
- (8) The name of the contractor RSO and emergency contact telephone number.
- (9) Operating instruction(s) and technical order(s) for the equipment that contains the radioactive source, providing an indication of whether the sources, equipment, and devices are to be stored onsite overnight and how it is to be stored and secured.
- (10) Designating and securing storage locations if the radioactive source remains overnight.
- (11) Proposed marking of the storage location if it exceeds 2 mR/hr as measured at the surface of the storage container.
- (12) How the sources, equipment, and devices will be stored and secured during lunch hour and breaks.
- (13) How exposure to contractors and government personnel is controlled and if dosimetry is required; use NVLAP-accredited dosimetry for dose of record.
- (14) Emergency response plan in case of an emergency for a lost or damaged source, equipment, and device and overexposure mishap.
- (15) Current leak tests of the radiation sources, equipment, and devices.
- e. Grant an ARP for up to 1 year in accordance with 32 CFR 655.10. It is the responsibility of the contractor performing the work under the ARP to be responsible for applying and receiving an NRC license if work exceeds more than 180 days out of a calendar year and comply with each individual state's reciprocity agreements.
- f. If a contractor brings a source or device on Army lands and does not have a valid ARP, contact the installation RSO and the contracting officer. Immediately discontinue work involving the source or device until a permit is obtained.

## 16-10. Radiation safety and occupational health standards

a. *Ionizing radiation.* Personnel exposure limits in this chapter do not apply to doses or exposures due to background radiation, medical administration the individual has received, or voluntary participation in medical research programs.

b. *Radiation standards.* Table 16-1 summarizes Army electromagnetic radiation (EMR) standards. For outside the United States, table 16-1 applies unless SOFAs require more restrictive standards.

c. *Dosimetry.* Army requirements for wearing and recording exposures to ionizing radiation are contained in this regulation with procedural guidance in DA Pam 385-10. Dosimetry is required if indicated by NRC licenses, ARAs, and if local RSO deems necessary. Personnel will complete DD Form 1952 before receiving dosimetry or participating in a routine and bioassay program. The RSO may issue dosimeters to any radiation worker with a likelihood of receiving a measurable dose; however, the RSO will issue dosimeters to assess ionizing radiation doses from external sources to the following:

(1) *External dosimetry.* Personnel who are occupationally exposed to ionizing radiation in the course of normal job duties and who have a reasonable probability of receiving the following doses in any one calendar year:

(a) *Adult occupationally exposed individuals.* A dose in excess of 10 percent of the limits or any dose associated with entering high or very high radiation areas.

(b) *Minors (less than 18 years of age).* A dose in excess of one percent of the annual limit. A minor will not be allowed to receive any dose in excess of 10 percent of the annual limits.

(c) *Formally declared pregnant radiation workers.* A declared pregnant worker will not be allowed to receive more than 5 mSv (500 one-thousandth of one rem (mrem)) during the pregnancy.

(2) *Internal dosimetry.* The RSO will determine the need for monitoring occupational intakes of RAM using federal regulations and NRC license conditions as guides. The RSO may consult medical personnel for assistance and guidance, as needed. DA Form 7689 (Bioassay Information Summary Sheet (BISS)) will accompany bioassay. At a minimum, the RSO will assess the committed effective dose equivalent (CEDE) from RAM intakes when both of the following criteria are met:

(a) Personnel are occupationally exposed to unsealed RAMs in the course of normal job duties.

(b) Personnel have a reasonable probability of receiving the following dose in any one year:

1. *Adult occupationally exposed individuals.* An intake of RAM in excess of 10 percent of the applicable annual limits on intake (ALIs) specified in 10 CFR 20 Appendix B (table 1).

2. *Minors and declared pregnant women.* An intake of RAM in excess of one percent of the applicable ALIs specified in 10 CFR 20 Appendix B (table 1). 10 CFR 20.1207 restricts the allowable CEDE for minors and 10 CFR 20.1208(c)(2) restricts the allowable dose equivalent to the embryo or fetus from radioactive sources internal to the body.

d. *Additional requirements.*

(1) *Nuclear Regulatory Commission jurisdiction.* Standards for exposure to ionizing radiation emitted from NRC-licensed RAMs are in 10 CFR 20. The Army also applies these standards to Army reactors and a combination of exposures to NRC-licensed RAM and other ionizing radiation sources through the requirements of this regulation.

(2) *Occupational Safety and Health Administration jurisdiction.* Federal standards for occupational exposure to all other ionizing radiation sources are in OSHA regulations (see 29 CFR 1910.1096 and 29 CFR 1926.53). See Memorandum of Understanding between the U.S. Nuclear Regulatory Commission and the Occupational Safety and Health Administration for a delineation of radiation sources regulated by each agency. However, adhere to the standards of this regulation for all ionizing radiation sources when these standards are more protective than OSHA standards.

(3) *Federal requirements for security of radioactive material.* Federal requirements for security of RAM; control of access to radiation areas, high radiation areas, and very high radiation areas; caution signs; posting and labeling requirements; and RAM shipping and receiving are cited in 10 CFR, 29 CFR 1910.1096, 29 CFR 1926.53, 49 CFR, and other applicable documents (see app A). Commanders may waive posting and labeling requirements during deployments and contingency operations based on a risk assessment. Consider HN regulations and SOFA requirements in the waiver analysis.

(4) *Radon.* Radon is an invisible, odorless, naturally occurring radioactive gas which can accumulate in housing and other structures. Occupational exposure to radon is governed by this regulation, federal regulation (NRC and OSHA), and DoD policy (see DoDI 6055.08). EPA has published monitoring guidance, radon relative risk information, and action level guidelines (see PWTB 200-1-144).

**Table 16-1**  
**Electromagnetic radiation**

Region	Wavelength <sup>1, 2</sup>	Frequency <sup>1, 2</sup>	Authority <sup>3</sup>
Ionizing (gamma and x-rays)	less than 100 nm	more than 3 PHz (Energy greater than 12.4 eV)	NRC/OSHA <sup>4</sup> /Army
Ultraviolet (UV)	100 nm to 400 nm	0.75–0.79 to 3 PHz	American Conference of Government Industrial Hygienists (ACGIH)/FDA
Visible (light)	400 nm to 780 nm	390 to 790 THz	ACGIH/FDA
Infrared	780 nm to 1 mm	300 GHz to 390 THz	ACGIH/FDA
RF	1 mm to 100 km	3 kHz to 300 GHz	Institute of Electrical and Electronics Engineers (IEEE)/DoD
Extremely low frequency	more than 100 km	less than 3 kHz	IEEE/DoD
Contact and induced current			IEEE/DoD

Notes:

<sup>1</sup> Wavelength x frequency=speed of light=3 x 108 m s-1.

<sup>2</sup> Unit abbreviations: nanometer (nm) (10–9 m); micrometer (μm) (10–6 m); millimeter (mm) (10–3 m); kilometer (km) (103 m); petahertz (PHz) (1015 hertz (Hz)); terahertz (THz) (1012 Hz); gigahertz (GHz) (109 Hz); kilohertz (kHz) (103 Hz); electron volt (eV) (1 eV=1.6 x 10–19 Joule (J)).

<sup>3</sup> The regulating authority for personnel exposure for the purposes of this regulation (see para 16–10).

<sup>4</sup> Use OSHA standards where RGDs are utilized or RAMs not covered by NRC.

## 16-11. Army personnel ionizing radiation exposure standards and dose limits

*a. Army personnel ionizing radiation exposure standards.* The ALARA concept is the basis of ARSOHP regarding exposure to radiation. ALARA involves making every reasonable effort to maintain exposures to radiation as far below applicable dose limits as is practically consistent with the purpose for which the activity is undertaken. Radiation exposure standards for Army personnel to ionizing radiation are in table 16-2. The annual ionizing radiation dose received by adult occupationally exposed individuals, except for planned special exposure (PSE), will not exceed table 16-2.

*b. Annual dose limits.*

*(1) Adults.*

*(a) Annual dose limits for adults will be the more limiting of the following:*

1. *Stochastic.* The stochastic limit of a total effective dose equivalent (TEDE) of 50 (mSv/year (y)) [5 roentgen equivalent man (mammal) (rem)/year (yr)]. The TEDE is the sum of the effective dose equivalent (EDEX) ( $H_d$ ) from external exposure and CEDE ( $H_{E,50}$ ) from internal exposure.

2. *Deterministic.* The deterministic (non-stochastic) limit is the sum of the deep dose equivalent (DDE) ( $H_d$ ) and the CEDE ( $H_{E,50}$ ) to any individual organ or tissue, other than the lens of the eye; for an adult, occupationally exposed individual must not exceed 500 mSv/y (50 rem/yr).

*(b) Lens dose equivalent (LDE) of 150 mSv/y (15 rem/yr).*

*(c) Shallow dose equivalent (SDE) ( $H_s$ ) of 500 mSv/y (50 rem/y) to the skin of the whole body or to the skin of any extremity.*

*(d) In cases of uniform whole-body irradiation, assume dose equivalent is the same for each organ; the TEDE is equal to the EDEX in the absence of any occupational internal exposure.*

*(e) Internal radiation exposures from radionuclides through intake or immersion will use the ALIs and derived air concentrations (DACs) published in 10 CFR 20 to determine the CEDE radiation exposure.*

1. Derive alternative ALIs and DACs for different chemical or physical forms of RAM when chemical or physical forms are known.

2. To calculate the CEDE, the licensee may assume that the inhalation of one ALI, or an exposure of 2,000 DAC hours, results in a CEDE of 50 mSv (5 rem) for radionuclides that have their ALIs and DACs based on CEDE.

(2) *Minors.* The annual occupational dose limits for minors (less than 18 years of age) are 10 percent of the annual dose limits specified for adult workers. Occupational dose limits less restrictive than those specified cannot be applied to minors. In cases of uniform whole-body irradiation, where the dose equivalent is the same for each organ, the TEDE is equal to the EDEX in the absence of any occupational internal exposure.

(3) *Fetus or embryo of occupationally exposed declared pregnant woman.* The occupational dose limit to a declared pregnant woman is 5 mSv (500 mrem) (EDEX of mother + CEDE due to radionuclides in fetus or embryo) during the gestation period. Avoid substantial variation above a uniform monthly exposure rate 0.5 mSv/month (50 mrem/month).

(4) *Nursing mothers.* Nursing mothers potentially exposed to intake of radionuclides require special consideration to limit the dose to their child. The child is a member of the public.

*c. Accumulation of doses.* The dose limits apply to occupational doses that a person receives from all occupations during the calendar year. Thus, the annual limits apply to the sum of all occupational exposures, not just those at a single place of employment.

*d. Overseas standards.* The more restrictive of limits or values will be used when required under the prevailing SOFA with the host country whenever the occupational exposure dose limits specified in this regulation or the ALI and DAC values specified in 10 CFR 20 differ from those of the host country. It is recommended that host country nationals follow host country regulations on U.S. military installations and U.S. personnel follow 10 CFR 20 while on U.S. military installations as they are considered federal property, are typically governed by federal regulations, and their doses are not tracked by the HN.

**Table 16-2**  
**Army personnel ionizing radiation exposure standards<sup>1</sup>**

Category	Maximum <sup>2</sup>
Member of the general public	1 mSv (100 mrem) (TEDE) in calendar year <sup>3</sup>
Fetus or embryo of occupationally exposed declared pregnant woman	5 mSv (500 mrem) (EDEX of mother + CEDE due to radionuclides in fetus or embryo) for gestation period
Occupational exposure of adults	0.05 Sievert (Sv) (5 rem) (TEDE) in calendar year

**Table 16–2**  
**Army personnel ionizing radiation exposure standards<sup>1</sup>—Continued**

Category	Maximum <sup>2</sup>
Lens of the eye	0.15 Sv (15 rem) (LDE) in calendar year <sup>3</sup>
Individual organ	0.5 Sv (50 rem) (DDE + CDE <sup>4</sup> ) in calendar year
Skin or extremity	0.5 Sv (50 rem) (SDE) in calendar year
Occupational exposure of minors under age 18	5 mSv (500 mrem) TEDE in a calendar year
Emergency worker—non lifesaving	0.05 Sv (5 rem) <sup>5</sup>
Emergency worker—lifesaving	0.25 Sv (25 rem) <sup>6</sup>
Emergency worker—lifesaving	0.5 Sv (50 rem) <sup>7</sup>

Notes:

<sup>1</sup> Refer to 10 CFR 20 for detailed standards. For deployment and combat actions, see also JP 3–11.

<sup>2</sup> The OSHA standard for occupational exposure of adults and for the lens of the eye is 1 1/4 rem in calendar quarter (see glossary). The OSHA standard for skin of whole body is 7 1/2 rem in calendar quarter. The OSHA standard for hands and forearms, as well as feet and ankles, is 18 3/4 rem in calendar quarter.

<sup>3</sup> The dose in any unrestricted area from external sources, exclusive of the dose contributions from patients administered RAM, and released in accordance with applicable regulations, will not exceed 0.02 mSv (2 mrem) in any 1 hour.

<sup>4</sup> Committed dose equivalent (CDE).

<sup>5</sup> Emergency radiation exposure to incident responders should be controllable to this limit, in almost all situations. The on-scene commander may increase the limit when all reasonable dose-limiting actions have been employed, and increased dose is unavoidable.

<sup>6</sup> Only on a voluntary basis where a lower dose limit is not practicable.

<sup>7</sup> Only on a voluntary basis where a lower dose limit is not practicable, and only to personnel fully aware of the risks involved, including a substantial increase in their lifetime cancer risk.

*e. Additional requirements and recommendations.*

(1) Firefighters, emergency response personnel, and consequence management response force personnel in situations where they have the potential to be exposed to high levels of radiation will use electronic dosimeters and/or ADC dosimeters if available. Dosimetry should be worn under protective firefighter garments.

(2) Personnel under NRC licenses, ARAs, or activities subject to U.S. state/territory regulatory authority requiring dosimetry will use an Army-approved NVLAP-accredited dosimeter issued by ADC.

(3) Clinical staff who receive exposures from medical x-ray radiation or wear protective apparel (such as a protective apron) will often wear protective apparel during fluoroscopy procedures. A single dosimeter worn outside the lead will overestimate the dose to the protected organs and tissue. A more precise estimate of dose may be obtained by wearing two dosimeters.

(a) Individuals who frequently work with medical fluoroscopic or cardiac catheterization x-ray equipment will wear both a head-and-neck dosimeter and a whole-body dosimeter. The whole-body dosimeter is worn under the lead apron, between the waist and the shoulders; for declared pregnant women, over the developing fetus. The head-and-neck dosimeter is worn outside the lead apron around the neck region. NCRP Report No. 122 recommends procedures for calculating the dose from two dosimeters. The TEDE is calculated by multiplying the recorded head-and-neck dosimeter exposure (C) by 0.04, multiplying the recorded whole-body dosimeter exposure (W) by 1.5, and summing the two (TEDE=0.04C+1.5W). The ADC automatically conducts this calculation and provides the results from the individual dosimeters and the TEDE calculation. NRC licensees will incorporate this method of effective dose calculation into their procedures and radiation SOH program before this method of dose determination can be applied for individuals who receive radiation exposure from both NRC-regulated material and from fluoroscopy. NRC licensees should refer to NRC Regulatory Issue Summary 2002–06 located at <https://www.nrc.gov/> for additional information.

(b) In the practice of radiology involving fluoroscopy and cardiac catheterization where the occupationally exposed individual (for example, physicians, technicians, and nurses) is not behind any protective lead control booth walls, lead aprons provide significant protection to the majority of the occupationally exposed worker's trunk (whole-body). The RSO will issue head-and-neck and a whole-body dosimeter to workers who frequently wear lead aprons. Use eye dose limits to determine if the head-and-neck badge dose limit requires an ALARA investigation. Use the TEDE dose limit to determine the whole-body dose that will require an ALARA investigation.

(4) All industrial radiographers and radiographers' assistants associated with the use of ionizing radiation sources used for radiographic purposes will wear dosimetry. Army-approved NVLAP-accredited dosimeter and a self-reading alarming electronic dosimeter will be issued and worn in accordance with 10 CFR 34.47 and ANSI/HPS N43.3.

(5) Individuals who operate or use irradiators, both machine-generated and NRC-regulated devices, are occupationally exposed and will be provided personnel dosimetry in accordance with the provisions of NBS HDBK 123 and 10 CFR 36. An Army-approved NVLAP-accredited dosimeter will be issued and worn by the irradiator operator. The processor of this dosimeter will be accredited for high energy photons in the normal and mishap ranges (see 10 CFR 20.1501). For requirements of other individuals entering a room with an irradiator see 10 CFR 36.55(b). Personnel using portable irradiators require self-reading alarming electronic dosimeter.

(6) Recommended set point for self-reading alarming electronic dosimeters should be ALARA investigation level (IL) I, see table 16-5.

(7) Individuals who operate or use well logging sources are occupationally exposed and will be provided personnel dosimetry in accordance with the provisions of 10 CFR 39. RSOs issue the Army-approved NVLAP-accredited dosimeter to individuals working with such sources.

## **16-12. Guidance to declared pregnant women**

*a.* Commanders of installations and activities possessing ionizing radiation sources and devices should ensure that the dose to an embryo or fetus, due to occupational exposure of a declared pregnant woman, does not exceed 5 mSv (500 mrem) during the entire pregnancy, and should not exceed 0.5 mSv (50 mrem) per month in accordance with the guidance in 10 CFR 20.1208. The dose to the embryo or fetus is the sum of the EDEX for the declared pregnant woman, the dose to embryo or fetus from radionuclides in the embryo or fetus, and the dose from radionuclides in the declared pregnant woman's body.

*b.* Command policy will aid with the compliance of the occupational dose limits for declared pregnant women and the RSO, the supervisor of the declared pregnant woman, and the declared pregnant woman will be involved. The commander, RSO, the supervisor of the declared pregnant woman, and declared pregnant woman will make efforts to maintain the monthly occupational radiation exposure rate ALARA and relatively uniform; that is, free of any substantial dose rate variation above the uniform monthly exposure rate.

*c.* The RSO will inform females occupationally exposed to ionizing radiation of the different, lower permissible dose limits applicable to the embryo or fetus during pregnancy. The RSO will provide instructions regarding prenatal exposure risks and concerns to the developing embryo or fetus to females occupationally exposed to ionizing radiation. NRC Regulatory Guide 8.13 is typically used to provide this information.

*d.* A female occupationally exposed to ionizing radiation does not fall under the lower annual permissible dose equivalent for declared pregnant women unless and until she formally declares her pregnancy, in writing, to the RSO. The RSO will notify the applicable licensee(s) and the ADC. A formal declaration of pregnancy, however, is the prerogative of each pregnant woman. A woman occupationally exposed to ionizing radiation should not be intimidated or coerced to declare, or not declare, a pregnancy.

(1) To declare her pregnancy, the woman will voluntarily provide to the RSO a written statement that is dated, signed, and contains the following information. "I hereby make notification that I am occupationally exposed to radiation in the course of my normal job duties and that I am now pregnant. My estimated date of conception is (only month and year is needed). I understand that by declaring my pregnancy, my occupational exposure to ionizing radiation should be controlled as prescribed in AR 385-10."

(2) The RSO should maintain a copy of the written declaration on file for the duration of the pregnancy or 1 year.

*e.* A declared pregnant female may revoke her declaration at any time. The revocation should be in writing and maintained by the RSO until the NRC Commission terminates each pertinent license requiring the record.

*f.* Declaring pregnancy should not, in most cases, remove the declared pregnant woman from her normal duties. The supervisor, in coordination with the RSO, should review the female's prior dose history and determine whether changes in the duties of the declared pregnant woman are warranted based on this review. If changes in duties are necessary, the supervisor and RSO should discuss the rationale with the declared pregnant woman.

*g.* If the dose to the embryo or fetus exceeds 5 mSv (500 mrem) or is within 0.5 mSv (50 mrem) of this dose by the time the woman declares the pregnancy to the RSO, the installation or activity should be in compliance with the guidelines provided in paragraph 16-11b if the additional dose equivalent to the embryo or fetus does not exceed 0.5 mSv (50 mrem) during the remainder of the pregnancy.

## **16-13. Control measures**

*a.* The commander, with the guidance of the RSO, will approve the design, select, use, and maintain radiation exposure control measures to ensure anticipated and actual occupational doses are maintained ALARA and do not exceed the limits specified in table 16-2. The following will help in achieving this objective and may be developed for specific categories of workers or work situations:

(1) Develop a formal ALARA program with occupational personnel dose equivalent investigational levels as specified in this regulation.

(2) Radioactive contamination trigger levels within ionizing radiation source use areas (found in table 16–4) signal the need for further investigation, recording, intervention, and mitigation.

b. An annual radiation SOH evaluation audit is contained in appendix B to assist commanders and RSOs in appraising key radiation SOH controls.

c. Nonmedical ionizing radiation facilities and equipment must be classified and governed by procedures or conditions of the facility's NRC license, ARA, ARP, or applicable ANSI standards published by the Health Physics Society (for example, ANSI/HPS N43 series).

d. Qualified experts must perform radiation protection surveys on new or modified ionizing radiation facilities and equipment before placing equipment in routine operation.

e. Radiation protection surveys should be performed periodically by the local RSO to determine the exposure (dose) or exposure rate (dose rate) in the environment during the operation of the equipment. These surveys must be conducted in areas determined by the RSO and must include, at a minimum, area surveys required by the applicable NRC license.

#### **16–14. Restricted area designations**

a. Areas may be restricted for the purposes of control of access to RAMs or to reduce the potential for unnecessary exposure to radiation. Areas with RAMs or the potential for radiation exposure are classified as unrestricted, restricted area, radiation area, high radiation area, very high radiation area, contamination controlled area, a RAM area, caution x-ray, or x-ray in use. Definitions for these areas are found in 10 CFR 20.1003.

b. It is important to use the proper area classification and not over classify an area.

c. It may be appropriate to use more than one type of sign, such as a RAM area and a radiation area if both conditions exist.

d. Mark areas with RGDs for the highest potential exposure. Areas may have a sign that is lighted only when radiation is produced.

#### **16–15. Radioactive contamination limits**

a. In the absence of other regulatory or advisory guidance, use the more restrictive limits from either table 16–3 or table 16–4 (NRC licensees will use table 16–4) to release radiologically surface contaminated material for unrestricted use. ANSI N13.12 Annex C may be used to compare the limits listed in each table.

b. Control, mark, designate, or post per applicable regulations if a surface cannot be decontaminated to levels below those in table 16–3. Report the contaminated surface to the appropriate RSO.

c. Always reduce radioactive contamination to ALARA levels.

d. Local commanders and directors may use contamination standards more restrictive than those in table 16–3, but will not use standards less restrictive without applying RM principles.

e. Guidance on radioactive contamination release criteria for decommissioned facilities is available in NUREG 1757, Volume 1. NRC license holders will use either the release criteria stated in their license or guidance in NUREG 1757, Volume 1 for release of facilities.

**Table 16–3**  
**Screening levels for clearance <sup>a</sup>**

<b>Radionuclide Groups b</b>	<b>Systemé Internationale (SI) Units</b>	<b>Conventional Units</b>	
	<b>Surface (Bq/cm<sup>2</sup>)</b> <b>Volume (Bq/g)</b>	<b>Surface</b> <b>(dpm/100 cm<sup>2</sup>)</b>	<b>Volume</b> <b>(pCi/g)</b>
Group 1 High-energy gamma, radium, thorium, transuramics, and mobile beta-gamma emitters: <sup>22</sup> Na, <sup>46</sup> Sc, <sup>54</sup> Mn, <sup>56</sup> Co, <sup>60</sup> Co, <sup>65</sup> Zn, <sup>94</sup> Nb, <sup>106</sup> Ru, <sup>110m</sup> Ag, <sup>125</sup> Sb, <sup>129</sup> I <sup>c</sup> , <sup>134</sup> Cs, <sup>137</sup> Cs, <sup>152</sup> Eu, <sup>154</sup> Eu, <sup>182</sup> Ta, <sup>207</sup> Bi, <sup>210</sup> Po, <sup>210</sup> Pb, <sup>226</sup> Ra, <sup>228</sup> Ra, <sup>228</sup> Th, <sup>229</sup> Th, <sup>230</sup> Th, <sup>232</sup> Th, <sup>232</sup> U, <sup>238</sup> Pu, <sup>239</sup> Pu, <sup>240</sup> Pu, <sup>242</sup> Pu, <sup>244</sup> Pu, <sup>241</sup> Am, <sup>243</sup> Am, <sup>245</sup> Cm, <sup>246</sup> Cm, <sup>247</sup> Cm, <sup>248</sup> Cm, <sup>249</sup> Cf, <sup>251</sup> Cf, <sup>254</sup> Es, and associated decay chains <sup>d</sup> , and others <sup>b</sup>	0.1	600	3

**Table 16–3**  
Screening levels for clearance <sup>a</sup>—Continued

Radionuclide Groups b	Systemé Internationale (SI) Units	Conventional Units	
	Surface (Bq/cm <sup>2</sup> ) Volume (Bq/g)	Surface (dpm/100 cm <sup>2</sup> )	Volume (pCi/g)
Group 2 Uranium and selected beta-gamma emitters: <sup>14</sup> C, <sup>36</sup> Cl, <sup>59</sup> Fe, <sup>57</sup> Co, <sup>58</sup> Co, <sup>75</sup> Se, <sup>85</sup> Sr, <sup>90</sup> Sr, <sup>95</sup> Zr, <sup>99</sup> Tc, <sup>105</sup> Ag, <sup>109</sup> Cd, <sup>113</sup> Sn, <sup>124</sup> Sb, <sup>123m</sup> Te, <sup>139</sup> Ce, <sup>140</sup> Ba, <sup>155</sup> Eu, <sup>160</sup> Tb, <sup>181</sup> Hf, <sup>185</sup> Os, <sup>190</sup> Ir, <sup>192</sup> Ir, <sup>204</sup> Tl, <sup>206</sup> Bi, <sup>233</sup> U, <sup>234</sup> U, <sup>235</sup> U, <sup>238</sup> U, natural uranium <sup>e</sup> , <sup>237</sup> Np, <sup>236</sup> Pu, <sup>243</sup> Cm, <sup>244</sup> Cm, <sup>248</sup> Cf, <sup>250</sup> Cf, <sup>252</sup> Cf, <sup>254</sup> Cf, and associated decay chains <sup>d</sup> , and others <sup>b</sup>	1	6,000	30
Group 3 General beta-gamma emitters: <sup>7</sup> Be, <sup>74</sup> As, <sup>93m</sup> Nb, <sup>93</sup> Mo, <sup>93</sup> Zr, <sup>97</sup> Tc, <sup>103</sup> Ru, <sup>114m</sup> In, <sup>125</sup> Sn, <sup>127m</sup> Te, <sup>129m</sup> Te, <sup>131</sup> I, <sup>131</sup> Ba, <sup>144</sup> Ce, <sup>153</sup> Gd, <sup>181</sup> W, <sup>203</sup> Hg, <sup>202</sup> Tl, <sup>225</sup> Ra, <sup>230</sup> Pa, <sup>233</sup> Pa, <sup>236</sup> U, <sup>241</sup> Pu, <sup>242</sup> Cm, and others <sup>b</sup>	10	60,000	300
Group 4 Low-energy beta-gamma emitters: <sup>3</sup> H, <sup>35</sup> S, <sup>45</sup> Ca, <sup>51</sup> Cr, <sup>53</sup> Mn, <sup>59</sup> Ni, <sup>63</sup> Ni, <sup>86</sup> Rb, <sup>91</sup> Y, <sup>97m</sup> Tc, <sup>115m</sup> Cd, <sup>115m</sup> In, <sup>125</sup> I, <sup>135</sup> Cs, <sup>141</sup> Ce, <sup>147</sup> Nd, <sup>170</sup> Tm, <sup>191</sup> Os, <sup>237</sup> Pu, <sup>249</sup> Bk, <sup>253</sup> Cf, and others <sup>b</sup>	100	600,000	3,000
Group 5 Low-energy beta emitters: <sup>55</sup> Fe, <sup>73</sup> As, <sup>89</sup> Sr, <sup>125m</sup> Te, <sup>147</sup> Pm, <sup>151</sup> Sm, <sup>171</sup> Tm, <sup>185</sup> W, and others <sup>b</sup>	100 (surface) <sup>f</sup> 1,000 (volume)	600,000 <sup>f</sup>	30,000

Notes:

<sup>1</sup> The screening levels for clearance have been rounded to one significant figure and are assigned to both surface and volume radioactivity (assuming an average surface to mass ratio of 1:1, as discussed in Annex A), unless otherwise noted. Regulatory authorities may increase all volume and surface screening levels by one order of magnitude when clearing bulk quantities of less than 1 metric ton or 1 m<sup>2</sup>.

<sup>2</sup> To determine the specific group for radionuclides not shown, a comparison of the screening factors, by exposure scenario, listed in Tables B.1, C.1, and D.1 of NCRP Report No. 123 for the radionuclides in question and the radionuclides in the general groups above should be performed and a determination of the proper group made, as described in annex A.

<sup>3</sup> Because of potential ground-water concerns, the volume or surface radioactivity values for <sup>129</sup>I should be lowered by one order of magnitude when disposal to landfills or direct disposal to soil is anticipated.

<sup>4</sup> For decay chains, the screening levels represent the total activity (in other words, the activity of the parent plus the activity of all progeny) present.

<sup>5</sup> The natural uranium screening levels for clearance will be lowered from Group 2 to Group 1 if decay-chain progeny are present (in other words, uranium ore versus process or separated uranium, for example, in the form of yellowcake). The natural uranium activity equals the activity from uranium isotopes (48.9% from <sup>238</sup>U, plus 48.9% from <sup>234</sup>U, plus 2.2% from <sup>235</sup>U). This approach is consistent with summing radionuclide fractions discussed in Section 4.4 of ANSI/HPS N13.12.

<sup>6</sup> For radioactivity control considerations, surface radioactivity screening levels for Group 5 radionuclides are controlled to the Group 4 surface radioactivity screening levels.

*f.* As a general practice, Army organizations will not release volumetric-radioactively contaminated materials or items for unrestricted use. Screening levels for volumetric-radioactively contaminated materials are specified by, or negotiated with, the regulator. For volumetric-radioactively contaminated materials not otherwise subject to regulatory control, screening levels for unrestricted release of items or materials potentially radioactively in volume require approval of the ARSO.

**Table 16–4**  
Acceptable surface contamination levels

Nuclide <sup>1</sup>	Average <sup>2, 3</sup>	Maximum <sup>2, 4</sup>	Removable <sup>2, 5</sup>
U-nat, U-235, U-238, and associated decay products	5,000 dpm al-pha/100 cm <sup>2</sup>	15,000 dpm al-pha/100 cm <sup>2</sup>	1,000 dpm al-pha/100 cm <sup>2</sup>
Transuranics, Ra-226, Ra-228, Th-230, Th-228, Pa-231, Ac-227, <sup>1-125, 1-129</sup>	100 dpm/100 cm <sup>2</sup>	300 dpm/100 cm <sup>2</sup>	20 dpm/100 cm <sup>2</sup>
Th-nat, Th-232, Sr-90, Ra-223, Ra-224, U-232, I-126, I-131, I-133	1,000 dpm/100 cm <sup>2</sup>	3,000 dpm/100 cm <sup>2</sup>	200 dpm/100 cm <sup>2</sup>
Beta-gamma emitters (nuclides with decay modes other than alpha emission or spontaneous fission) except Sr-90 and others noted above.	5,000 beta-gamma dpm /100 cm <sup>2</sup>	15,000 beta-gamma dpm /100 cm <sup>2</sup>	1,000 beta-gamma dpm /100 cm <sup>2</sup>

Notes:

<sup>a</sup> Where surface contamination by both alpha and beta-gamma-emitting nuclides exists, the limits established for alpha and beta-gamma-emitting nuclides should apply independently.

<sup>b</sup> As used in this table, dpm (disintegrations per minute) means the rate of emission by RAM as determined by correcting the counts per minute observed by an appropriate detector for background, efficiency, and geometric factors associated with the instrumentation.

<sup>c</sup> Measurements of average contaminant should not be averaged over more than 1 square meter. For objects of less surface area, the average should be derived for each such object.

<sup>d</sup> The maximum contamination level applies to an area of not more than 100 cm<sup>2</sup>.

<sup>e</sup> The amount of removable RAM per 100 cm<sup>2</sup> of surface area should be determined by wiping that area with dry filter or soft absorbent paper, applying moderate pressure, and assessing the amount of RAM on the wipe with an appropriate instrument of known efficiency. When removable contamination on objects of less surface area is determined, the pertinent levels should be reduced proportionally and the entire surface should be wiped.

## 16-16. Ionizing radiation mishaps reporting requirements

Mishap reporting requirements outlined in chapter 3 will be followed and the following additional mishap requirements, to include natural events (flooding, hurricane, tornado, and so forth) impacting storage and mission areas involving RAM and equipment, will be implemented. Additional reportable events include safety device or feature failures, which require notification to NRC, and improperly shipped RAM through proper reporting channels to the DOT.

*a. Command responsibilities.* Commanders, NRC Army license holders, ARA holders, and RSOs will establish procedures to ensure notification, investigation, and reporting of ionizing radiation mishaps are accomplished per 10 CFR, 21 CFR, 29 CFR, 49 CFR, DoDI 6055.08, and this regulation. Army NRC licenses and ARAs may have specific reporting conditions in addition to or in lieu of this guidance. These conditions and federal guidance must be completed to ensure the Army NRC licensee or ARA holder is in compliance. NRC license conditions may be more restrictive than federal regulations and will be followed.

*b. Basis of reporting requirements.* Ionizing radiation mishap reporting will be accomplished per NRC requirements as stated in 10 CFR (primarily in 10 CFR 20 and 10 CFR 30.50), 21 CFR (primarily in 21 CFR 1002.20), and per requirements as stated in DoDI 6055.08 and this regulation.

*c. Reporting requirements.* Incidents or mishaps involving:

(1) *Radioactive material.* Report immediately to the commander, the Army NRC license holder (see table 16-5) or ARA holder or ARP issuer, the installation RSO, and the RSSO.

(2) *Manufacturers of electronics products.* Examples include x-ray machines for industrial, medical, and research; accelerators; electron microscopes; and neutron generators. Where reasonable grounds exist that an incident has occurred, shut off the device and:

(a) Contact DCPH-A, Health Physics Division at DSN 584-8396 or commercial (410) 436-8396 or after duty hours at commercial (410) 436-4375, DSN 584-4375, DSN dialing from outside the United States (312) 584-4375, or (800) 222-9698 (24 hour phone lines). For additional information, check <https://phc.amedd.army.mil/organization/ohs/pages/healthphysics.aspx>.

(b) Report immediately to the commander, the ARA holder or ARP issuer, the installation RSO, and the RSSO.

*d. Initial notification responsibilities and responsibilities.*

(1) The commander or designated representative becoming aware of an ionizing radiation mishap will telephonically report the mishap within 3 hours of confirmation of the mishap through command channels as follows:

(a) Report to the appropriate Army NRC license holder, ARA holder, or ARP holder. The installation RSO and installation safety manager are sources of information concerning contacting the Army NRC licensee holder, ARA holder, and the ARP holder. Notification phone numbers for AMC NRC commodity license RSOs are provided in table 16-5. Notification phone numbers are in respective technical manuals, technical bulletins, technical reports, SOPs, and in the commodity matrix provided on the DA RSO website.

(b) When dealing with NRC GL RAM not covered under an ARA or ARP, contact the local command center, USACRC, and the ODASAF.

*Note.* An exception to the 3-hour criteria is that each licensee must notify the NRC Operations Center within 1 hour after discovery of any case of accidental criticality or any loss, other than normal operation loss, of special nuclear material per 10 CFR 70.52.

1. Contact USACRC at DSN 558-2660/3410, commercial (334) 255-2660/3410, fax DSN 558-3749, or commercial (334) 255-3749.

2. Contact the ODASAF at DSN 227-1321 or commercial (703) 697-1321 or the Army Operations Center after duty hours at DSN 227-0218 or commercial (703) 697-0218.

(c) Upon notification of the mishap the Army NRC license holder, ARA holder, or ARP holder will—

1. Notify NRC and other applicable federal agencies, such as DOT for transportation mishaps.

2. Provide technical information and status of NRC reporting to the ODASAF at DSN 227–1321, commercial (703) 697–1321.

3. Provide technical assistance concerning the mishap as requested by the unit experiencing the mishap.

(2) If the commander experiencing the mishap is unable to notify the Army NRC license holder, USACRC, or the ODASAF in a timely manner, that commander will notify NRC directly and subsequently inform the Army NRC license holder, USACRC, and the ODASAF. The NRC Operations Center is at (301) 816–5100. Precise notification time requirements for various types of mishaps or incidents are in 10 CFR 20 (primarily 10 CFR 20.2202). Maximizing the expertise of the Army NRC license holder in interacting with NRC is the preferred process. Notify DOT and other federal agencies if required.

(3) Notifications will contain as much information as is currently available using the format at paragraph 16–17.

(4) The Army NRC license holder reports applicable mishaps to NRC's 24-hour Headquarters Operations Center at (301) 816–5100. ARA holders and ARP issuers report mishaps to higher commands as required.

(5) Notify the garrison or activity public affairs officer at the onset of the mishap or incident to activate public affairs contingency measures (see AR 360–1). Radiation mishaps or incidents attract the attention of local and national media quickly. Early disclosure of accurate information is vital to maintaining the confidence of both the internal and external public.

*e. Investigation responsibilities.*

(1) The commander experiencing the mishap will—

(a) Ensure a mishap investigation is conducted.

(b) Cooperate with Army NRC license holder or ARA holder or ARP holder and federal regulatory agencies in providing information requested to determine mishap cause and determine corrective measures.

(2) The Army NRC license holder or ARA holder or ARP holder will—

(a) Provide technical assistance to the investigation, as appropriate.

(b) Interface with other federal agencies concerning investigation or other interaction as a result of the mishap.

*f. Army Nuclear Regulatory Commission license holder reporting responsibilities.*

(1) Mishap reports will be submitted to NRC to fulfill requirements of 10 CFR 20.1007 and 10 CFR 30.

(2) RSO provides technical assistance to the commander of the unit experiencing the mishap in developing the written Army mishap report.

(a) DOT, Pipeline and Hazardous Materials Safety Administration, Office of Hazardous Materials Enforcement contact information can be found at <https://www.phmsa.dot.gov/about-phmsa/offices/office-hazardous-materials-safety>.

(b) Information on reports dealing with electronic products is provided at <https://www.fda.gov/radiation-emitting-products/radiation-safety/report-problem>.

*g. Other required reporting agencies and time requirements.*

(1) Information copies of all reports required by 10 CFR 20.2201 through 10 CFR 20.2205, 29 CFR 1910.1096(m), or 29 CFR 1926.53(o) and of any other mishap or incident report will be sent to NRC or OSHA through command channels to the Office of the Director of Army Safety (DACS–SF), 2530 Crystal Drive, 3rd Floor, Suite 3058, Arlington, VA 22202 (DSN 227–1321 or commercial (703) 697–1321) or via email.

(2) Reports through command channels will meet the same time requirements as do required reports to NRC and OSHA. For example, if NRC requires immediate telephonic notification, follow it with immediate telephonic notification through the chain of command to ODASAF (DACS–SF) at DSN 227–1321 or commercial (703) 697–1321 or electronically.

**Table 16–5**  
**U.S. Army Materiel Command Nuclear Regulatory Commission commodity license radiation safety officers**

Major subordinate command	Phone number	Commodity type
U.S. Army Aviation and Missile Command LCMC	(256) 842–3250 DSN 687–3250	Am-241 Range Finders and Magnesium Thorium Alloy
CECOM LCMC	(443) 395–3790 DSN 648–3790	Gauges, Optical Coatings, Military Vehicle and Cargo Inspection Systems
JMC	(309) 782–8423/2113 DSN 793–8423/2113	DU Munitions and Light Anti-tank Weapon Rocket Sights

**Table 16-5**  
**U.S. Army Materiel Command Nuclear Regulatory Commission commodity license radiation safety officers—Continued**

Major subordinate command	Phone number	Commodity type
TACOM	(586) 282-7635/3676/3677/6293 DSN 786-7635/3676/3677/6293	Tritium (H3)/Chemical Agent Detector/Chemical Agent Monitor, DU in Tank Armor, Radium Gauges for Vehicles, Vehicle Igniters, Tank Thorium Combustor Liner, Density Moisture Testers, and UDM-2 Calibrator
IMCOM	(210) 466-0368 DSN 450-0368	M101 DU residue

### **16-17. Radiation mishap report format**

*a.* Commanders send as much information as possible within 24 hours of the occurrence to higher headquarters, the radiological consultant to TSG, the ARSO, and NRC licensee. A complete report should be sent once the investigation is complete. Mishaps will be classified in accordance with chapter 3. Report includes personally identifiable information and must be handled accordingly.

*b.* The radiological mishap report includes the following:

- (1) Date and time of the event.
- (2) Radiation-producing device or source involved, including national stock number, serial number, part number, radiation characteristics, and parameters of the event.
- (3) Description of the event, including cause; names and Social Security numbers of the people exposed, injured, or contaminated; estimated exposure; contamination levels; facilities affected; potential damages; impact on operations; and immediate response actions taken. Information will be appropriately protected, including information protected by Health Insurance Portability and Accountability Act.
- (4) Actions taken to prevent recurrence.
- (5) Recommendations to avoid similar instances at other installations possessing similar material or devices.
- (6) Name and telephone number of 72A nuclear medical science officer or GS-1306 health physicist or RSO, field unit identification, and the appropriate ACOM, ASCC, or DRU involved.
- (7) POC (name, address, and telephone number).
- (8) A statement of when the appropriate offices in DOL, NRC, and DOT were notified (if applicable) and by whom notification was made.
- (9) NRC license, Army authorization number, or Army permit number.

### **16-18. Nuclear weapon and reactor mishaps**

*a. General.*

(1) *Command responsibilities.* Commanders with a nuclear weapon or reactor mission will establish procedures to ensure investigating and reporting of a nuclear mishap is accomplished per guidance in this paragraph.

(2) *Nuclear mishap response and assistance.* Nuclear mishap or incident response and assistance is intended to minimize loss of life, personal injury, hazardous effects, and destruction of property. See AR 50-5.

*b. Definition.* “Nuclear weapon” is defined in AR 50-5. Reactor mishaps are defined by the International Atomic Energy Agency International Nuclear and Radiological Event Scale, <https://www.iaea.org/resources/databases/international-nuclear-and-radiological-event-scale>.

*c. Classifying nuclear weapon mishaps.* Mishaps will be classified in accordance with chapter 3.

*d. Notification.* The commander of the nuclear weapon or reactor operation experiencing the nuclear mishap will follow notification procedures in AR 50-5.

*e. Investigation.*

(1) The DASAF will convene the U.S. Army Nuclear Weapon/Reactor Mishap Investigation Board to investigate nuclear weapon or reactor mishaps.

(2) The CG, AMC will establish procedures to ensure that a technical investigation and analysis is done for each significant incident (requirement control symbol DD-R&E(AR)1168(MIN)) or minor nuclear system incident (requirement control symbol CSOCS-310) (see AR 50-5).

*f. Reporting.*

(1) The commander of the nuclear weapon or reactor operation experiencing the nuclear mishap will follow the reporting procedures in AR 50-5.

(2) Nuclear weapon and reactor mishaps which also meet the criteria of class A through D will be reported in accordance with chapter 3 and DOL Form CA-1 (Federal Employee's Notice of Traumatic Injury and Claim for

Continuation of Pay/Compensation) or DOL Form CA-2 (Notice of Occupational Disease and Claim for Compensation) as appropriate for injury, illness, and property damage.

(3) Occupational illnesses to DA military or Civilian personnel resulting from nuclear weapon or reactor mishaps will be reported as prescribed in AR 40-400.

### **16-19. Dosimetry reporting**

This paragraph provides information on ionizing radiation exposures requiring investigations and reporting using the ALARA ILs.

a. The RSO is responsible for reporting, preparing, and maintaining accurate records of occupational exposure to ionizing radiation per NRC requirements as stated in 10 CFR 20.2202 for NRC-licensed RAMs. Personnel are required to use DD Form 1952 to document previous occupational ionizing radiation history. The type of dosimetry provided to the occupationally exposed individual is included on the DD Form 1952.

b. Elevated ionizing radiation exposures resulting from RAMs or RGDs not covered under NRC licenses will be reported in accordance with OSHA regulation 29 CFR 1910.1096(l).

c. Routine occupational dosimetry records are not considered medical records. Any recorded doses to Army personnel in excess of those listed in table 16-2 will require the individual to see a medical professional (occupation health) and the exposure record at that time will become part of the individual's medical record.

d. DA requirements on reporting ionizing radiation mishaps is provided in paragraph 16-16.

### **16-20. Dosimetry as low as reasonably achievable investigational levels**

a. The ALARA ILs specified for individuals using NRC-licensed materials are in table 16-6. The levels listed in table 16-6 represent doses that, if continued for the entire year, would exceed the stated percentage of the annual limit. For example, a monthly whole-body dose of 0.41 mSv (41 mrem) would be a Level I ALARA investigation. If that dose is received each month for 1 year it would represent an approximate dose of 5 mSv (500 mrem) or 10 percent of the 50 mSv (5,000 mrem (5 rem)) limit. DA activities with an NRC license may set their own IL I and II (IL III will remain consistent for all Army personnel). The activity specific ILs must be approved by the NRC license RSO and the radiation safety committee.

b. For individuals using non-NRC-licensed materials and radiation-producing devices covered under OSHA regulations, the ALARA ILs are provided in table 16-7. The ILs I and II can be changed either up or down based on specific program needs as determined by the RSO or other qualified health physics professional.

c. If an activity has individuals using both NRC-licensed and non-NRC-licensed materials or devices, table 16-6 will be used for the ILs for those individuals.

d. For minors, 10 percent of the ILs should be used.

e. Declared pregnant women are not to be covered under these ILs. However, monthly IL I of 0.41 mSv (41 mrem) is consistent with keeping the dose to declared pregnant woman less than 0.5 mSv (50 mrem) per month and in compliance with regulations.

f. The RSO will have to determine which individuals are exposed to NRC-licensed materials, non-NRC-licensed materials and devices, or a combination of the two. Once the source of the exposure is determined, the specific reporting criteria to NRC or OSHA will be followed for doses that exceed the annual limit. If a determination is not able to be made as to the primary source of exposure for individuals who are exposed to both NRC controlled and non-NRC controlled exposures, NRC reporting will be used.

g. Investigations can be initiated either immediately after an unusual event with a suspected high exposure or after dosimetry results are received indicating a possible elevated dose.

(1) If a worker, coworker(s), supervisor, or RSO suspects that a radiation dose greater than those specified in the ILs has been received:

(a) The RSO will identify, in writing, dosimeters known to have been used under non-occupational emergency conditions, or those suspected to have sustained a potential overexposure, when sending such dosimeters to the ADC for processing.

(b) When internal exposure indicators (for example, bioassay results and air samples) suggest potential internal radiation doses in excess of IL II, the RSO will perform or request one or more confirmatory bioassay specimen collections to be analyzed and used to assess the internal dose.

(c) When an intake of soluble uranium whose enrichment is less than 5 percent by weight exceeds 10 milligram (mg), the event will be considered a potential overexposure, and investigated per paragraph 16-22. One or more confirmatory bioassay specimens will be collected, analyzed, and used to assess the internal dose.

(d) Guidance on bioassay specimens can be found in APHC Technical Guide 211.

(2) When external or internal dosimetry results are above the ILs:

(a) The ADC will record on the ADR a person's dosimeter result that exceeds the applicable ALARA IL, and report the results to the individual's unit or local RSO. ALARA IL values can be found in table 16–6 or table 16–7.

(b) The RSO will ensure that appropriate bioassays specimens are taken on the exposed individuals. DA Form 7689 will accompany bioassay specimens. Recommend consultation with DCPH–A, Health Physics Division or Level 4 RSO. Using the bioassay results, the RSO or equally qualified person can use an appropriate bioassay to dose conversion analysis method to determine the individual's internal radiation dose.

h. When an installation or activity has individuals who are occupationally exposed to both external and internal radiation sources, the ILs identified under the ALARA program will be specified in terms of the TEDE by taking into account the sum of the—

(1) EDEX from external sources.

(2) CEDE from internal radiation sources.

(3) External and internal radiation doses derived from ICRP Publication 26, ICRP Publication 60, ICRP Publication 103, or other radiation protection dosimetry system.

i. In cases where there is an approved radiation work permit, the ILs may be waived if controls are in place to ensure the workers do not exceed the annual limits.

**Table 16–6**  
**Nuclear Regulatory Commission as low as reasonably achievable investigational levels (mSv (mrem))<sup>1, 2, 3</sup>**

**Quarterly monitoring**

<b>Dose type</b>	<b>Level I (10% of annual limit)</b>	<b>Level II (30% of annual limit)</b>	<b>Level III (100% annual limit)</b>
Whole-body <sup>4</sup>	1.25 (125)	3.75 (375)	12.5 (1,250)
Lens of the eye	3.75 (375)	11.25 (1,125)	37.5 (3,750)
Other <sup>5</sup>	12.5 (1,250)	37.5 (3,750)	125 (12,500)

**Monthly monitoring**

<b>Dose type</b>	<b>Level I (10% of annual limit)</b>	<b>Level II (30% of annual limit)</b>	<b>Level III (100% annual limit)</b>
Whole-body <sup>4</sup>	0.41 (41)	1.25 (125)	4.17 (417)
Lens of the eye	1.25 (125)	3.75 (375)	12.5 (1,250)
Other <sup>5</sup>	4.16 (416)	12.5 (1,250)	41.66 (4,166)

Notes:

<sup>1</sup> All values rounded down to the nearest mSv (mrem).

<sup>2</sup> Action levels for some forms of uranium may be based upon their chemical toxicity rather than radiological properties (see NRC Regulatory Guide 8.31, Revision 1).

<sup>3</sup> Facilities which produce radioactive effluents should also consider NRC Regulatory Guide 8.37.

<sup>4</sup> TEDE.

<sup>5</sup> Other includes: SDE to the skin or to any extremity, or the sum of the EDEX and the CEDE to any individual organ or tissue other than the lens of the eyes.

**Table 16–7**  
**Occupational Safety and Health Administration as low as reasonably achievable investigational levels (mSv (mrem))<sup>1, 2, 3</sup>**

**Quarterly monitoring**

<b>Dose type</b>	<b>Level I (10% of annual limit)</b>	<b>Level II (30% of annual limit)</b>	<b>Level III (100% annual limit)</b>
Whole-body: Head and trunk; active blood-forming organs; lens of eyes; or gonads	1.25 (125)	3.75 (375)	12.5 (1,250)
Hands and forearms; feet and ankles	18.75 (1,875)	56.25 (5,625)	187.5 (18,750)
Skin of whole body	7.5 (750)	22.5 (2,250)	75 (7,500)

**Table 16–7**  
**Occupational Safety and Health Administration as low as reasonably achievable investigational levels**  
**(mSv (mrem))<sup>1, 2, 3</sup>—Continued**

**Monthly monitoring**

<b>Dose type</b>	<b>Level I (10% of annual limit)</b>	<b>Level II (30% of annual limit)</b>	<b>Level III (100% annual limit)</b>
Whole-body: Head and trunk; active blood-forming organs; lens of eyes; or gonads	0.41 (41)	1.25 (125)	4.17 (417)
Hands and forearms; feet and ankles	6.25 (625)	18.75 (1,875)	62.5 (6,250)
Skin of whole body	2.5 (250)	7.5 (750)	25 (2500)

Notes:

<sup>1</sup> All values rounded down to the nearest mSv (mrem).

<sup>2</sup> Action levels for some forms of uranium may be based upon their chemical toxicity rather than radiological properties (see NRC Regulatory Guide 8.31, Revision 1).

<sup>3</sup> Facilities which produce radioactive effluents should also consider NRC Regulatory Guide 8.37.

**16–21. Dosimetry as low as reasonably achievable investigational dose reporting**

a. Installations and activities can specify what actions, in addition to those required by this regulation, are required of the RSO when an individual's quarterly or monthly dose exceeds any of the ILs.

b. If monitoring periods other than monthly or quarterly are used, the ILs will be adjusted accordingly for the monitoring period to result in annual doses for Levels I, II, and III at 10 percent, 30 percent, and 100 percent of the occupational dose limits, respectively. At a minimum, such actions will follow the guidance in NUREG 1556 and this regulation.

c. Table 16–8 provides notification, reporting requirements, and suspense guidance for investigational dose criteria. Paragraph 16–22 provides details on ALARA investigations and paragraph 16–23 provides details on potential overexposures above the annual limits.

d. The RSO or NRC license holder, with the support of the ADC, must track actions, to include investigations, corrective actions, reporting, and follow up, to ensure they are completed in a timely manner to minimize future exposures.

**Table 16–8**  
**Army investigation dose reporting summary**

<b>Dose level</b>	<b>Notification(s)</b>	<b>Notification timeframe</b>	<b>Supplemental report(s)</b>
Level I investigation At or above Level I limits, but less than Level II limits	RSO	Informal investigation by the RSO	Review of ALARA program, noted in ADR
Level II investigation At or above Level II limits, but less than Level III limits	RSO Installation RSO RSSO	Notification within 30 working days of receipt of ADR	Written report within 30 working days after notification from the ADC or unit or local RSO
Level III investigation At or above Level III limits, but less than the annual limit	RSO Installation RSO RSSO NRC license holder (if applicable) ARA manager (if applicable) DASAF TSG	Notification within 7 working days of receipt of ADR	Written report within 30 working days after notification from the ADC or unit or local RSO

**Table 16–8**  
**Army investigation dose reporting summary—Continued**

<b>Dose level</b>	<b>Notification(s)</b>	<b>Notification timeframe</b>	<b>Supplemental report(s)</b>
Potential overexposure investigation Above the annual limit	RSO Installation RSO RSSO ADC NRC license holder (if applicable) ARA manager (if applicable) DASAF TSG NRC or OSHA	Immediate notification	Verbal notification to the NRC Operations Center and a written report within 30 working days after notification per 10 CFR 20.2201 by licensee, or notification of the Assistant Secretary of Labor per 29 CFR 1910.1096 by the RSSO. The written report by the RSO will be provided within 20 working days to the NRC licensee or ARA manager for staffing and submission to the applicable federal agency

### **16–22. Dosimetry as low as reasonably achievable investigations**

*a. Level I investigation.* If a suspected exposure meets or exceeds Level I but is less than Level II, an informal internal investigation of the ALARA program is conducted by the RSO.

(1) The RSO will determine the validity of the radiation dose and, if verified, consider process improvements. At a minimum the RSO will—

- (a) Assume the dosimeter is an accurate representation of the individual's dose until proven otherwise.
- (b) Confirm the dosimeter was issued and worn correctly.
- (c) Ensure the dosimeter was being worn when exposed.
- (d) Review the procedures, working conditions, and ALARA program to determine cause of potential elevated exposure levels.
- (e) Provide guidance and recommendations to supervisors and employees.
- (f) Provide training, if needed.

(2) If subsequent exposures continue to exceed the Level I ILs, procedures for a Level II investigation will be followed.

(3) Maintain investigational records in accordance with AR 25–400–2.

*b. Level II investigation.* If a suspected exposure meets or exceeds Level II but is less than Level III, this is a reportable dose in accordance with table 16–8. A formal investigation will be conducted by the RSO. The RSO will—

(1) Follow all of the actions required for a Level I investigation.

(2) Report the dose to the RSSO and the installation RSO within 30 working days of receiving the ADR or bioassay results.

(3) Document the investigation in a written report that will include:

- (a) Investigation procedures.
- (b) Root causes.
- (c) Corrective actions.
- (d) Results and follow up.

(4) Provide the report of the investigation to the NRC license RSO or ARA RSO and the RSSO with a copy for the installation RSO within 30 days from when the dose was reported. The RSSO will review the proposed corrective actions in a timely manner and provide any recommendations promptly to ensure appropriate actions have taken place to minimize the risk of elevated exposure occurring.

(5) Maintain the investigation records per AR 25–400–2.

*c. Level III investigation.* If a suspected exposure meets or exceeds Level III, this is a reportable dose in accordance with table 16–8 and the RSO will conduct a formal investigation. The RSO will—

(1) Follow all of the actions required for Level II investigation.

(2) Report the dose to the RSSO, installation RSO, NRC licensee or ARA manager, DASAF, and TSG within 7 days of receiving the ADR or bioassay results.

(3) Conduct an initial investigation to determine if the occupationally exposed individual needs to be removed from duties that could lead to reportable overexposures pending completion of the full investigation. The results of the

initial investigation will determine when the individual can return to duties involving potential exposure to ionizing radiation.

(4) Provide the written investigation report to the RSSO, installation RSO, NRC licensee or ARA manager, ODASAF, and OTSG within 30 working days from when the dose was reported.

*d. Administrative dose.* If the investigation proves that the dose was not a valid personnel exposure (for example, the dosimeter was exposed when it wasn't on the assigned individual), an administrative dose will be assigned per RSSO review and approval if above a Level III, or by a qualified RSO or health physicist if less than Level III. Guidance on assigning an administrative dose is in DA Pam 385-10. Maintain investigational records in accordance with AR 25-400-2.

### **16-23. Dosimetry actions for potential overexposures above the annual limits**

*a.* This paragraph covers actions in the event of exposures greater than the annual limits. This situation could arise from the following cases:

(1) When a dosimeter is analyzed at the end of the established wearing period and the recorded dose on the ADR is greater than the annual limits.

(2) When bioassay results are converted to dose and the reported dose is greater than the annual limits.

(3) The TEDE from the sum of the external dosimetry dose and the internal bioassay dose results are greater than the annual limits.

*b.* The ADC must immediately report to the RSO, NRC licensee or the ARA manager, DASAF, and TSG any personnel dosimeter results that exceed the Level III values found in table 16-6 or table 16-7. These dosimeters may indicate exposure conditions that could result in annual doses that exceed NRC, OSHA, or DA limits.

*c.* For dosimeters with a reading of a reportable radiation dose at a rate in excess of the quarterly or monthly values specified for Level III (table 16-6 and table 16-7), the RSO will—

(1) Add the reported dose to the individual's accumulated dose for the year. If the individual's accumulated dose exceeds the annual dose limit, the RSO will recommend immediate removal of the individual from his or her duties involving further exposure to ionizing radiation. The results of the investigation will determine when the individual can return to duties involving potential exposure to ionizing radiation.

(2) Conduct an investigation and determine the cause, timeframe, and circumstances surrounding the potential overexposure.

(3) Determine whether or not the dosimeter was actually worn by the occupationally exposed individual during the dosimeter wear period.

(4) Immediately notify the licensee if NRC-licensed materials were involved or the ARA manager if non-NRC-licensed materials or RGDs caused the exposure.

(5) Implement corrective actions or recommend to the commander responsible for the radiation SOH program (for example, brigade or battalion level) corrective actions to prevent recurrence of the situation.

(6) Document the investigation. The written investigation report must contain:

(a) A copy of the affected occupationally exposed individual's ADR covering the previous 12 months of exposure, if available.

(b) Statements from supervisors or other knowledgeable personnel.

(c) A statement from the affected occupationally exposed individual stating: "To the best of my knowledge and belief I [did/did not] receive this dose because [state reason]."

(d) Procedures describing corrective actions.

(7) Perform an ALARA review of the duties performed by the worker who is issued dosimetry to reduce the likelihood of recurrence and minimize future doses.

*d.* When the result of an investigation reveals an exposure in excess of the annual limits, the RSO will—

(1) Recommend immediate removal of the individual from duties involving potential exposure to ionizing radiation.

(2) Follow 10 CFR 20, 10 CFR 34, 10 CFR 35, 10 CFR 36, 10 CFR 39, and 10 CFR 40, as applicable; appropriate NRC regulatory guides; and this regulation, as applicable, regarding reporting of any overexposures for occupationally exposed individuals regulated under an NRC license to NRC. Follow OSHA reporting requirements in 29 CFR 1910.1096 for non-NRC-licensed RAMs or machine-generated radiation. Local national personnel outside the United States will follow the more stringent of U.S. or HN law. Follow all reporting requirements in this regulation when reporting.

(3) Mishaps involving an exposure that results in a lost time injury, or an injury requiring medical treatment that causes 1 or more days away from work (includes limited work activities) are also reportable to DA in accordance with

chapter 3. This includes individuals that have reached their 50 mSv (5 rem) occupational exposure limit. These individuals must be listed in the OSHA 300 Form.

*e.* If medical follow up is required, the supporting OH physician and local RSO will determine the appropriate (if any) medical examinations and medical or laboratory tests, including any bioassay procedures, necessary to document potential short-term or long-term health hazard or injury.

*f.* The RSO will—

(1) Forward the investigation report within 20 working days after the overexposure event as follows:

(a) Where an NRC license is not involved, forward through command channels to the ARA RSO for concurrence and transmittal to DASAF and TSG.

(b) Where an NRC license is involved, forward through command channels to the Army NRC license RSO for concurrence and transmittal to DASAF and TSG, as applicable.

(2) Maintain the investigation records per AR 25-400-2.

(3) Provide to the exposed individual the final investigation report including any revisions made to the individual's reported dose.

*g.* The NRC licensee or the ARA RSO has 10 working days to staff the report to ensure the completed report is provided within the 30-day reporting time frame to the required federal agency.

*h.* The OTSG will provide the ODASAF, RSO, and NRC license RSO or ARA RSO, the approved dose to be officially posted to the affected occupationally exposed individual's dosimetry record.

#### **16-24. Army radiation safety and occupational health recordkeeping**

*a.* NRC license conditions for retention of records will be met before considering ARIMS guidance.

*b.* AR 25-400-2 provides guidance for filing of radiation SOH records and proper record disposition requirements.

*c.* Decommissioning records guidance is as follows:

(1) Holders of NRC licenses will establish and maintain decommissioning records in accordance with 10 CFR 30.35(g), 10 CFR 40.36(f), and 10 CFR 70.25(g).

(2) Holders of ARAs establish and maintain decommissioning records the same way as required by NRC requirements.

(3) Tenants holding NRC licenses and ARAs provide information about the location of use and storage of RAM to the garrison commander and the installation RSO for the installation RAM history records.

(4) RSSOs are required to review annual liabilities estimates and maintain supporting documentation to support financial statement audibility, including initial estimate development and annual revisions. Pertains to activities, facilities, and commodities under an NRC license, ARA, or Army reactor permit.

#### **16-25. Shipping, receiving, transferring, and transport**

*a.* RAM will be transferred to authorized persons only.

*b.* Transfer, sale, or donation of Army radioactive commodities and items will be in accordance with NRC GL requirements, DoD and Army technical publications, and applicable instructions established by the holder of the Army NRC commodity license or ARA.

*c.* For shipping of RAM, the shipper must obtain and retain appropriate evidence that the receiver is authorized to possess the material (for example, a copy of the recipient's ARA, NRC, or agreement state license) before shipping the RAM.

*d.* Domestic shipments of RAM will be in accordance with applicable NRC (see 10 CFR 71), DOT (see 49 CFR), and DTR 4500.9-R-Part II requirements. International shipments of RAM will be in accordance with the requirements of the International Air Transport Association Dangerous Goods Regulations Section 10 and the IMDG Code.

*e.* Report lost or damaged shipments of radioactive commodities to the responsible NRC license, ARA, or ARP holder immediately. Report improperly shipped RAMs per NRC and DOT reporting requirements.

*f.* Class 7, Type A packaging may require additional controls and security. Refer to the applicable NRC license for specified requirements.

*g.* Personnel involved in radioactive shipments will be trained in accordance with 49 CFR Subpart H and the DTR 4500.9-R-Part II. Persons involved with the preparation and shipment of HAZMAT (including RAM) for transportation must receive training in accordance with the DTR 4500.9-R-Part II.

#### **16-26. Foreign country and captured radioactive material**

The Army does not have a central license holder for radioactive sources from foreign countries. Individual units or installations possessing these types of radioactive sources are required to obtain a license from NRC in accordance with 10 CFR or an ARA if NRC does not cover the RAM.

## **16–27. Range maintenance and radioactive materials**

- a.* All range maintenance and disposal actions will follow the guidance in DoDD 4715.11 and DoDD 4715.12.
- b.* Range maintenance and disposal actions will follow the guidance in NRC licenses or ARA that cover the RAM on the range.
- c.* Display appropriate fire, chemical, and radiological hazard symbols in a manner as to be easily visible from all roads of approach. Radiation symbols should conform to ANSI N2.1.
- d.* An industrial hygienist, health physicist, or RSO must evaluate the hazard to determine whether respirators are needed for environmental safety operations where radiological dusts, vapors, or gases are present. Identify the appropriate type of respirators in the equipment listed for that operation.
- e.* Ensure the monitoring methods are sufficient to detect to levels required by NRC license conditions.

## **16–28. Handling and disposal of unwanted radioactive material**

- a.* Army generators of unwanted RAM will implement a plan to reduce unwanted RAM volumes to the extent practicable. Where feasible, establish a single radioactive waste storage point on the installation.
- b.* Do not store RAMs with personnel, explosives, flammables, food products, or other incompatible commodities. Items with radioactive gas or radium will be stored in ventilated structures. Storage areas and containers will be marked in accordance with 10 CFR.
- c.* Burial of radioactive waste on Army or DoD-owned or DoD-leased property is prohibited.
- d.* The JMC is responsible for disposal of Army unwanted RAM. Waste generators will coordinate with item managers prior to disposal. Obtain the approval of the Chief, Risk Management Division (Low-Level Radioactive Waste Program Office), U.S. Army Joint Munitions Command (AM SJM–SFR), 2695 Rodman Avenue, Rock Island Arsenal, Rock Island, IL 61299–65000 for disposal of DoD unwanted RAMs. This includes approving off-site storage, packaging, shipment, treatment, and final disposition of unwanted low-level RAM. Managers of USAEC environmental special projects and other entities that generate unusually large amounts of radioactive waste may arrange for radioactive waste disposal as part of the project. However, project managers will coordinate DoD radioactive waste disposal actions with JMC Chief, Risk Management Division, Low-Level Radioactive Waste Program Office.
- e.* The release of RAM into the atmosphere or to the sanitary sewerage system will comply with applicable NRC and EPA regulations, state requirements, and local requirements.
- f.* RAM will be held for decay and subsequent disposal without regard to radioactivity, if allowed by applicable regulations or by NRC licenses, Army reactor permits, or ARA conditions. However, disposal of such material may still require special handling as hazardous waste.
- g.* Overseas units will comply with the applicable SOFA.

## **16–29. Army Radiation Safety and Occupational Health Program deviations**

- a.* The following personnel may authorize deviations from ARSOHP requirements for both ionizing and nonionizing sources on the advice of their RSSO (deviations from personnel radiation exposure standards require the approval of TSG and the DASAF):
  - (1) The commander of each ACOM, ASCC, and DRU.
  - (2) The Superintendent, U.S. Military Academy.
  - (3) The CNGB, who may subdelegate deviation authority to the state adjutants general.
  - (4) The Chief, USAR, who may subdelegate deviation authority to major subordinate command commanders, but no lower than the first O–8 in the chain of command.
- b.* As a minimum, submit the following information to request a deviation:
  - (1) Reference to the specific standard and to the specific paragraph under which the waiver or exception is being requested.
  - (2) Reasons why the standard cannot be met.
  - (3) Interim measures used that compensate for the inability to comply with the standard.
  - (4) Action being taken to meet the standard and the estimated date the action can be completed.
  - (5) Statement of the impact if the waiver or exception is not approved.
- c.* The approval authority may grant deviations for 1 year or less. The approval authority may extend authorized deviations in increments of 1 year or less provided conditions cited in the original deviation remain the same.
- d.* A mishap occurring under an approved deviation results in immediate termination of the approval until the approving authority completes an investigation and the TSG and DASAF revalidates the deviation.
- e.* Requests for deviations from federal and DoD regulations and standards require the endorsement of the DASAF and, in the case of radiation exposure standards, TSG. Forward requests for deviations to federal or DoD radiation

SOH regulations through command channels to the Office of the Director of Army Safety (DACS-SF), 2530 Crystal Drive, 3rd Floor, Suite 3058, Arlington, VA 22202. Copy furnish the Army NRC license RSO or ARA holder.

## **Chapter 17**

### **Army Radiation Safety and Occupational Health Program—Nonionizing Radiation (Lasers, High Intensity Optical Sources, and Electromagnetic Field Emitters)**

#### **17–1. Introduction**

*a.* Army organizations will develop management and quality control (QC) processes to identify, mitigate, and control nonionizing radiation hazards associated with Army activities and equipment in the following order: by engineering design, administrative controls, or protective equipment.

*b.* Nonionizing radiation-producing devices will comply with applicable Army, DoD, and federal regulations and requirements.

*c.* Organizations will not adopt a practice or conduct an operation involving exposure of personnel to nonionizing radiation in excess of the applicable exposure standards. PSEs to nonionizing radiation in excess of the applicable exposure standards require prior approval. Such PSEs require submission of a deviation request and the written approval from the TSG and the DASAF in accordance with paragraph 16–29 of this regulation. This does not preclude using operational exposure guidance during deployment. Does not apply to patients exposed to nonionizing as part of a diagnostic or therapeutic medical or dental treatment.

*d.* Organizations involved in RDT&E and in acquisition of equipment (including COTS equipment) that emits nonionizing radiation will develop management and QC processes to:

(1) Identify hazards and controls and incorporate protection measures or identify operational restrictions before fielding; recommend in the programmatic environment, safety, and occupational health evaluation (PESHE) or initial capabilities document (ICD) environment, safety, and occupational health (ESOH) section.

(2) Process risks for acceptance per AR 70–1 before fielding materiel.

(3) Address concerns in the fielding, training, and life-cycle management of commodities that produce nonionizing radiation.

(4) Ensure that proponents of technical publications include radiation safety requirements about placement, operation, training, and maintenance of systems that emit nonionizing radiation.

*e.* Hazards of electromagnetic radiation to personnel (HERP), hazards of electromagnetic radiation to ordnance (HERO), and hazards of electromagnetic radiation to fuels (HERF) comprise the EMF portion of the Nonionizing Radiation Safety and Occupational Health Program (NRSOHP). Mitigate HERP, HERO, and HERF prior to conducting all military exercises, operations, and activities. Refer to paragraph 22–12 for HERO.

*f.* Commanders will comply with environmental requirements for use and management of radiation sources and radiation-producing equipment (in accordance with 40 CFR and AR 200–1) and prepare required environmental documentation (in accordance with 32 CFR 651).

*g.* Army outside the United States controls of nonionizing radiation sources will be at least as protective as Army controls in CONUS.

#### **17–2. Nonionizing Radiation Safety and Occupational Health Program regulations and compliance**

*a.* Commanders of ACOMs and managers who employ personnel that operate class 3B, class 4, or military-exempt lasers; HIOS; or EMF sources that could exceed unrestricted environment maximum permissible exposures (MPEs) are required to establish and maintain a safety program for the control of these hazards. Under some circumstances, it is desirable to include class 1, class 1M, class 2, class 2M, and class 3R lasers in the NRSOHP if such lasers contain embedded class 3B or class 4 lasers accessible during maintenance procedures. See TB 43–0133 for guidance in determining if an EMF source is required to be a part of an NRSOHP. Contact DCPH–A and CECOM if EMF systems are not in TB 43–0133. In this regulation the abbreviation MPE is synonymous with ERL, DRL, and threshold limit value (TLV).

*b.* Laser safety as part of the Army NRSOHP will comply with DoDI 6055.15. The ANSI Z136 series can serve as guidance in the development of the laser safety portion of an NRSOHP. TB MED 524 provides further guidance on managing lasers within the NRSOHP.

*c.* HIOS include nonlaser sources of high intensity UV, visible radiation, and infrared radiation. These include, but are not limited to, welding and cutting arcs, searchlights, UV germicidal/disinfection lamps and UV gel trans-illuminator lamps, xenon arc lamps, UV phototherapy lamps in dermatology clinics, therapy lamps in neonatal clinics (not

including bili blankets), UV light emitting diodes (LEDs), fluorescence inspection lamps, operating microscopes, and curing lamps. Contact DCPH–A for further guidance on managing a HIOS as a part of the NRSOHP.

*d.* EMF safety within the Army NRSOHP will comply with DoDI 6055.11. IEEE C95.1–2345 and IEEE C95.7 safety standards can serve as guidance for the safe use of EMF emitting devices in the development of an NRSOHP. These types of devices will comply with OSHA guidance in 29 CFR 1910.97. TB MED 523 and TB 43–0133 provide further guidance on managing the EMF portion of the NRSOHP. The NRSOHP will cover aspects of HERP, HERO, and HERF.

*e.* The Joint Spectrum Center provides frequency deconfliction guidance on EMF systems. Further guidance is found in DoDI 3222.03, DESR 6055.09, JP 3–02, and MIL–HDBK–240A.

*f.* Commanders of ACOMs responsible for acquisition of laser systems must establish laser safety programs in accordance with DoDI 6055.15. Those programs acquiring lasers for Joint Service use must also comply with DoDI 5000.69.

*g.* Organizational safety programs and employee training programs, including refresher programs, are required for those organizations having employees that operate equipment capable of exceeding the MPE.

*h.* Guidance for placement of commercial telecommunications equipment on Army installations is obtained from the Defense Information Systems Agency, Defense Spectrum Organization, Joint Spectrum Center at DSN (313) 919–2836, commercial (410) 919–2836, or email to [disa.sosc@army.mil](mailto:disa.sosc@army.mil).

*i.* Guidance on management of laser illumination of objects above the horizon in the laser clearinghouse (LCH) standard and the LCH waiver is provided in paragraph 17–3c(6).

### **17–3. Nonionizing Radiation Safety and Occupational Health Program implementation**

*a. Requirements.* The NRSOHP will include requirements for the following.

(1) Designation of a primary NRSO.

(a) The local/organizational commander will designate in writing and provide training to an individual as the NRSO responsible for laser, HIOS, and EMF safety. Depending on the various types and number of nonionizing radiation sources that are present, the commander may feel that one NRSO is not sufficient and may deem it necessary to delegate these responsibilities among multiple NRSOs. For nonionizing radiation programs that include class 3B and 4 lasers, a laser safety officer (LSO) will also be designated. The NRSO and LSO can be the same individual. Any individual designated by the commander to manage any portion of the NRSOHP, laser, HIOS, or EMF has the same responsibilities and authorities given to the NRSO, but only for those type of sources within their program. To ensure for a cohesive nonionizing radiation program, these individuals should report to the NRSO. Consider designating an alternate NRSO in writing to ensure program continuity.

(b) The NRSO—

1. Will provide advice and assistance on matters pertaining to nonionizing radiation safety and perform nonionizing radiation safety functions that federal, DoD, and Army regulations require.

2. Should have the authority and responsibility for the control of nonionizing radiation hazards through well-informed evaluation, the implementation of appropriate control measures, and ensured compliance with required regulations.

3. Will establish a hierarchy of support in organizations (for example, hospitals) with multiple programs or building locations that employ nonionizing radiation sources to manage their NRSOHP. As an example, hospitals may have numerous clinics that operate these types of sources, each having their own NRSO and/or LSO, that support the hospital appointed NRSO and/or LSO.

(2) Training of personnel in the safe use of lasers, HIOS, and EMF emitters and where applicable the assessment and control of their hazards. Training requirements are defined in paragraph 17–4.

(3) Application of control measures.

(a) The NRSOHP will—

1. Establish written policies and procedures to ensure compliance with federal, DoD, and Army laser, EMF, and HIOS safety regulations.

2. Ensure control measures appropriate to the laser, HIOS, or EMF emitter hazard are implemented such that under any reasonably possible conditions of operation no one will be exposed to nonionizing radiation levels that exceed the applicable MPE (does not apply to patients undergoing laser medical procedures).

(b) Intentional EMF exposures to humans from EMF systems, such as directed energy or high power microwave emitters that exceed the MPE (Zone 2 (restricted expert only environment) DRLs/ERLs) will require a deviation request in accordance with paragraph 16–29 and written approval from the DASAF and TSG. Requests for deviations will comply with the alternative exposure limit criteria in DoDI 6055.11. These exposure limits do not apply to targets of directed energy weapons as defined in JP 3–13.

(c) The hierarchy of controls used to manage nonionizing radiation hazards is as follows: engineering controls should be primary, followed by administrative controls (procedural), and finally PPE.

(d) Laser and HIOS PPE will be in accordance with ANSI Z87 and Z136 series, to include labeling in ANSI Z136.1. Inspect PPE before each use and periodically test to ensure it maintains protective effectiveness. For eye protection used for HIOS lamps, ensure that the wavelengths protected and its absorptive characteristics are tailored to the requirements of the particular HIOS in use. For welding applications, ANSI Z49.1 will be used in conjunction with ANSI/ISEA Z87.1 requirements for the selection of protective goggles and helmets for welding and cutting operations. These standards address helmet characteristics, shade number for eyewear (which must be appropriate for welding type and radiation intensity), welding goggles and hand shields, and additional eye protection guidance. In addition to protecting the eyes from optical radiation, ANSI/ISEA Z87.1 protection must be worn under the helmet because the helmet is usually lifted to inspect welds. Helmets with photo sensing lenses are recommended for large-scale arc welding operations to minimize the time the helmet has to be lifted for inspection of welds.

(e) Personal EMF monitors are not approved for use as a means of personal protection from EMF exposure.

(4) Procedures for the management of suspected or known exposures of personnel to nonionizing radiation above applicable MPEs, reporting procedures of alleged mishaps for nonionizing radiation incident investigation, and preparation of action plans for the prevention of future mishaps following a known or suspected incident. Mishap reporting procedures are in paragraph 17-8.

(5) An occupational medical surveillance program for laser personnel maintained according to DoDM 6055.05 and AR 40-5.

(6) Normally be a member of the NRSO committee.

(a) The commander may establish a safety committee when the number, hazards, complexity, and/or diversity of nonionizing radiation activities warrant it.

(b) The committee will develop the necessary guidance, procedures, and instructions for the evaluation and control of nonionizing radiation hazards within their program.

(c) The committee will review nonionizing radiation safety training programs and SOPs before the safety program adopts them.

(d) The committee will maintain an awareness of all applicable federal, DoD, and Army radiation safety regulations, new or revised.

*b. Nonionizing radiation safety officer responsibilities.*

(1) *Managing equipment.* The NRSOHP may be comprised of lasers, HIOS, and EMF emitters. Depending on the size of the program, multiple individuals may be tasked with the responsibility of managing it. Any NRSOHP that includes class 3B or class 4 lasers will appoint an individual as the LSO.

(a) Establish, maintain, and disseminate written policies and procedures that ensure the safe use of lasers, HIOS, and EMF emitters within the nonionizing RSP. Provide advice to personnel within the program on the interpretation of these policies and procedures.

(b) Ensure compliance with federal, DoD, Army, and local regulations and nonionizing radiation program policies and procedures for the control of nonionizing radiation hazards. Investigate breaches of these regulations, policies, and procedures.

(c) Maintain copies of Service-level and local nonionizing radiation safety regulations and POCs, local SOPs and program procedures, and documentation of annual reviews of local nonionizing radiation program per DoDI 6055.01. The LSO is responsible for these duties for programs that include class 3B and class 4 lasers.

(2) *Control measures.*

(a) Identify, evaluate, and specify control measures that reduce the potential for exposure to personnel above the appropriate MPE and ensure implementation.

(b) Approve alternate control measures when the primary controls are not practical.

(c) When reasonably achievable, engineering controls will be favored over procedural controls for controlling personnel exposure to nonionizing radiation above the MPE.

(d) Require PPE to be worn by personnel who may be exposed to nonionizing radiation above the respective MPE when engineering and administrative controls do not adequately control the hazards.

(e) The NRSO has the authority to suspend, limit, or terminate the operation of a nonionizing radiation emitting system that is lacking adequate hazard controls.

(f) The NRSO is responsible for ensuring safety analyses of EMF emitting systems that may potentially interfere with medical devices is completed.

(3) *Hazards.* Know the potential hazards, including non-beam hazards of nonionizing radiation sources that emit above the MPE within their program.

(4) *Records.*

(a) Maintain a current inventory of class 3B and class 4 lasers, military-exempt lasers, HIOS, and EMF sources that can exceed the MPE within their program and update it annually and more frequently if required by local procedure. Users of systems on the required inventory will report inventory changes to the NRSO as they occur. NRSOs should forward their program's required inventory to the installation RSO/NRSO at least annually. The program LSO has the same responsibilities for class 3B and class 4 lasers.

(b) The LSO will submit names and maintain records of proposed laser workers per DoDI 6055.05 to the appropriate OH office to ensure required eye exams are performed prior to the start of laser work and after termination of laser work.

(c) Maintain other records including system maintenance, personnel training, program reviews, SOP approvals, and other documents associated with the NRSOHP.

(d) Develop a mechanism to directly notify the NRSO when a system on the current inventory is being modified, its operating conditions change, it is transferred, or it is being turned in for disposal. This mechanism will notify the NRSO when a new system is purchased or acquired. The requirement goes to the LSO if the system is a class 3B or class 4 laser.

(e) Archive documentation associated with the NRSOHP in the organization in accordance with AR 25-400-2.

(5) *Training.* Initiate and verify the completion of appropriate training and refresher training of authorized nonionizing RSP personnel (for example, NRSO, laser, HIOS, and EMF emitter operators, service personnel, and range personnel) in the safe use of nonionizing radiation emitting systems and control of their hazards. See paragraph 17-4 for training requirements.

(6) *Personal protective equipment.* Recommend or approve adequate PPE, barriers, and screens for the control of nonionizing radiation hazards. Periodically audit PPE to ensure it is in proper working order.

(7) *Audits/surveys.*

(a) Periodically inspect potentially hazardous nonionizing radiation systems to ensure compliance with applicable regulations.

(b) Inspect the overall NRSOHP at least annually. An independent outside organization will review the program at least once every 3 years.

(c) The NRSO will take corrective action when any deficiencies are found.

(8) *Warning signs and labels.*

(a) Recommend and approve the wording on area warning signs and equipment warning labels.

(b) Ensure nonionizing radiation emitting equipment are properly labelled and the labels are permanently attached to the system housing.

(c) Approve when and where area warning signs are posted.

*Note.* Area warning signs should not be permanently posted in areas where nonionizing radiation sources are operated occasionally.

(9) *Reviews.* Review Army installations, facilities, ranges, and equipment prior to use of nonionizing radiation sources that exceed the MPE. This includes modifications to existing facilities. The LSO has the same responsibility for class 3B and class 4 lasers.

(10) *Mishaps.*

(a) Know the Army nonionizing radiation mishap reporting process and execute that process, when needed, for their program.

(b) Report known or suspected overexposures to nonionizing radiation. See paragraph 17-8 for details.

(c) Take part in any investigations that involve potential nonionizing radiation overexposures.

(11) *Eye exams.* Ensure implementation of mandatory eye exams for laser personnel within their program is maintained in accordance with DoDM 6055.05, and AR 40-5 (also see DA Pam 40-506).

c. *Nonionizing radiation source operations and range safety.*

(1) Only class 1, class 2, and class 3R lasers are used indoors on Army installations as handheld laser pointing devices. Prohibit class 3B or class 4 lasers for such purposes.

(2) Users are not to conduct an operation involving planned exposure of personnel to nonionizing radiation in excess of the applicable MPE. However, some medical treatments involve the exposure of patients to nonionizing radiation in excess of the MPEs.

(3) Only a Level 2 NRSO or higher is to design, review, and test controls for access to a facility housing a class 3B or class 4 laser, HIOS, or an EMF emitter that can emit above the MPE. Users follow these requirements in accordance with applicable directives before routinely using class 3B or class 4 lasers or EMF emitters within such a facility. A Level 2 NRSO or higher is to write or review for adequacy NRSOHP SOPs for each facility.

(4) Review ranges for laser and EMF safety to include air-to-ground and ground-to-ground operations. Tools, to include laser range management tool software, are available to assist in reviewing ranges for the safe use of lasers.

(5) Laser range safety guidance for ground-to-ground or air-to-ground laser targeting operations that are not fired at targets above the horizon is in DA Pam 385-63 and MIL-HDBK-828C.

(6) Follow LCH policy and procedures for lasers that are directed above the horizon (see DoDI 3100.11).

*Note.* Lasers directed horizontally across the ground that are not terminated by a backstop and lasers aimed at targets above the horizon may need further review by a qualified expert at the U.S. Strategic Command DoD LCH.

#### **17-4. Nonionizing Radiation Safety and Occupational Health Program training requirements**

a. Training is required for an NRSO and/or LSO responsible for a nonionizing RSP of any size and for Soldiers and civilian employees working with, operating, or potentially exposed to any systems that are required to be part of an NRSOHP. Managers of a system or operational area required to be part of an NRSOHP also require training. Training will be documented to provide a record the training was conducted.

b. The training requirements and experience of the NRSO and, if required, the LSO and the alternate NRSO/LSO must be appropriate with the duties and responsibilities of the program for which they will be responsible and in accordance with applicable ANSI standards, IEEE standards, DoD instructions, and other program documents (including state regulations as they may apply to ARNG LSOs).

c. NRSO/LSO will provide training to Soldiers and employees working with, operating, or potentially exposed to nonionizing radiation emitting devices such as class 3B or 4 lasers, or other optical and RF emitting devices that emit above their respective MPE.

d. Training should be provided to Soldiers and employees working with, operating, or potentially exposed to class 1M, class 2, class 2M, or class 3R laser radiation.

e. Individuals who have not yet completed the required training may work under the direct supervision of staff already trained on a particular piece of nonionizing radiation emitting equipment.

f. AR 385-63/MCO 3570.1C contains range safety officer training requirements for nonionizing radiation emitting systems. Range safety officers with nonionizing radiation responsibilities may find the training required for a Level 2 NRSO and LSO as beneficial to their range safety responsibilities (see para 16-4j).

g. Completion of training records guidance will be in accordance with AR 25-400-2.

h. Training requirements for NRSO and LSO designation are as follows:

(1) An LSO designated in accordance with this regulation will have completed a formal course addressing the following topics:

- (a) Laser RSP requirements and LSO responsibilities.
- (b) Terms and units.
- (c) Laser classification.
- (d) Biological effects on tissue.
- (e) Exposure control measures.
- (f) PPE and optical density.
- (g) Nominal hazard zones.
- (h) Medical eye exam program requirements.
- (i) Mishap and incident reporting procedures.

(2) An NRSO with RF safety responsibilities for personnel (HERP) designated in accordance with this regulation will have completed a formal course of instruction addressing the following topics:

- (a) NRSO requirements and responsibilities for the RF safety program.
- (b) Terms and units.
- (c) Biological effects on tissue.
- (d) Effects on medical electronics.
- (e) RF shock hazards.

(3) An NRSO with RF safety responsibilities for ordnance (HERO) or fuels (HERF) designated in accordance with this regulation will have completed a formal course of instruction addressing the following topics:

- (a) Effects on aircraft avionics, controls, and communications.
- (b) Air traffic control.
- (c) Explosives.
- (d) Fueling operations.
- (e) Emergency medical services (EMS) communications.

(4) An NRSO with HIOS responsibilities designated in accordance with this regulation will have completed a formal course addressing the following topics:

- (a) NRSO requirements and responsibilities for the HIOS safety program.
- (b) Terms and units.
- (c) HIOS safety to include non-beam hazards.
- (d) Biological effects on tissue.
- (e) Exposure control measures.
- (f) PPE.

(5) Training listed in paragraphs 17-4h(1) through 17-4h(4) will be completed before the NRSO and/or LSO assumes their safety program responsibilities.

(6) NRSO and/or LSO training will be more comprehensive than for other personnel working with, operating, or potentially exposed to sources of nonionizing radiation.

(7) NRSOs are responsible for the training of subordinate NRSOs. This requirement is the same for LSOs.

i. Requirements for Level 3 NRSO are as follows and apply to ACOMs, ASCCs, and DRU RSSOs:

(1) RSSO, health physicist (GS-1306), physicist (GS-1310), electrical engineer (GS-0855), and nuclear medical science officer (72A) responsible for the command NRSOHP are qualified to be Level 3 RSOs because of their background.

(2) A formal course of instruction is required that includes a minimum of 12 hours of nonionizing radiation instruction in each of the following topics: optical radiation (laser, HIOS) and RF (HERP and, if required, HERO and/or HERF) from paragraph 17-4h.

(3) Individuals who meet the basic standard for a health physicist, but occupy a different career field, may also meet Level 3 qualifications if they have a minimum of 12 hours of nonionizing radiation safety training in the relevant topics listed in paragraph 17-4h.

(4) Requires annual refresher training to include any available nonionizing radiation safety-related material (video, online, or face-to-face training; meeting/conference attendance; and so forth).

j. Requirements for Level 2 NRSO are as follows and apply to subordinate commands, units or organizations (brigade level or above), installations, and large programs with extensive inventory:

(1) Level 2 qualified personnel include CBRN specialist (AOC 74D), AOC 74A CBRN officer, 740A CBRN warrant officer, signal/communications (25 job series), SOH specialist, and engineers and scientists.

(2) Individuals who meet the basic standard for a Level 2 NRSO but occupy a different career field may also meet Level 2 qualifications if they have received a minimum of 12 hours nonionizing radiation safety training in the relevant topics listed in paragraph 17-4h.

(3) Requires a formal course of instruction that includes a minimum of 12 hours of nonionizing radiation instruction (laser, HIOS, RF to include HERP, HERO, and/or HERF) from paragraph 17-4h.

(4) Requires annual refresher training to include any available nonionizing radiation safety-related material (video, online, or face-to-face training; meeting/conference attendance; and so forth).

(5) Contact the Level 3 NRSO, ARSO, or the Nonionizing Radiation Division (NRD) of DCPH-A for guidance in determining the appropriate level of training and refresher training needed for an NRSO to manage their program safely.

(6) Laser range safety officers will be Level 2 NRSOs and have additional training as described in DA Pam 385-63.

k. Requirements for Level 1 NRSOs are as follows and apply to units or organizations below brigade level and organizations with little inventory. Level 1 NRSOs are subordinate to Level 2 or 3 NRSOs:

(1) Level 1 NRSOs must have the guidance of a Level 2 or 3 NRSO available to them. They are responsible for lasers, HIOS, and EMF sources within medical facilities, industrial settings, and shops used for research as well as other nonionizing radiation sources.

(2) The Level 1 NRSO should complete a nonionizing radiation safety course taught by a Level 2 or higher NRSO or SME, or receive other equivalent online training as approved by the command.

(3) A portion of their training must be specific for the nonionizing radiation emitting systems within their program's responsibility.

(4) They must receive annual refresher nonionizing radiation safety training (see para 17-4r).

(5) If a Level 2 or 3 NRSO is not easily accessible to train him or her, the Level 1 NRSO will take Level 2 training.

l. Army personnel who have been identified as laser workers or operators of nonionizing radiation equipment that emits above the MPE will be provided training in those areas needed to execute their mission safely and efficiently. This training will be for the system(s) that they operate or work with and specifically address, at a minimum:

(1) Topics listed for NRSO designation as they pertain to a particular piece of nonionizing radiation emitting equipment.

- (2) Proper use of PPE and control measures such as barriers, signs, warning lights and so forth.
- (3) General and special safety requirements, to include hazard distances, particular to the system and its operation.
- (4) Identification of all known and perceived hazards.
- (5) Risk mitigation techniques and controls.
- (6) Lessons learned from previous operations.
- (7) Mishap and incident reporting procedures.
- (8) Procedures for maintaining an operational log for recording EMF radiation safety-related events (such as radiation control area violations, overrides of warning signs, or safety interlocks).
- (9) Training will meet National Environmental Policy Act environmental documentation requirements for potential impact of EMF systems on the surrounding environment through interaction with tissue, medical electronics, aircraft, explosives, and fueling operations.
  - m.* Where appropriate, training will include CPR and safety procedures for applicable non-beam or non-EMF hazards associated with systems in use.
  - n.* NRSO/LSO develops a risk communication plan for applicable hazards (such as high voltage) other than nonionizing radiation hazards associated with the systems in use.
- (1) Apply current risk communication techniques for describing risk and the process of risk assessment and characterization (see chap 6). Potential EMF exposures in military deployments follow operational risk communication requirements of DoDI 6490.03 and DoDI 6055.11.
- (2) At a minimum, address opportunities to ensure potential occupationally exposed individuals to EMF emitters, including those with implanted medical devices, metal implants, stents, shunts, or wires, understand the known health implications of the EMF system operation.
  - o.* Nonionizing radiation safety instructor qualifications are as follows:
    - (1) Nonionizing radiation safety training programs designed to train Level 2 and 3 NRSOs are conducted by nonionizing radiation SMEs with a thorough knowledge of nonionizing radiation and its safety concepts.
    - (2) TRADOC new equipment and refresher training instructors that have completed their instructor qualification and an applicable level of instruction in laser, HIOS, or EMF safety are qualified to instruct those levels which they have completed.
    - (3) Non-TRADOC new equipment and refresher training instructors for laser, HIOS, or EMF emitters (that are not GS-1306s, GS-1310s, GS-0855s, or 72As) require completion of, as a minimum, Level 2 NRSO training and must have completed an instructor qualification course.
    - (4) Personnel having received NRSO training can provide safety training to personnel having a reduced responsibility within the nonionizing RSP (in other words, a Level 1 NRSO could train a laser operator, but not another Level 1 NRSO).
    - p.* The nonionizing radiation safety portion of the Radiation Safety for Safety Professionals course will meet Level 1 NRSO requirements. It is a familiarization program to understand basic nonionizing radiation safety and whom to contact for additional expertise. The training is part of the safety professional certification process and is an accredited course by the SOH FC certification process.
    - q.* Recommended course for Level 2 and 3 NRSOs is offered by DCPH-A. Commercial courses with similar course material may be acceptable if they are approved by the Army NRSO. Refresher training for Levels 2 and 3 is also available through DCPH-A.
    - r.* Refresher training requirements are as follows:
      - (1) Provide refresher training annually to ensure personnel are adequately trained and the training is being retained.
      - (2) Annual nonionizing radiation safety refresher training for laser workers (defined in DoDM 6055.05), operators of class 3B lasers, class 4 lasers, HIOS, or EMF emitters that produce nonionizing radiation above the exposure limits will be approved by the Level 2 NRSO or higher.
      - (3) Annual nonionizing radiation safety refresher training will be scheduled and funded by the commander.
      - (4) Accomplish annual refresher training through local training, a DL course, or a formal course of instruction. A series of laser safety videos developed by DCPH-A for Level 1 NRSO training and nonionizing radiation equipment operators are available on [www.milsuite.mil/video/](http://www.milsuite.mil/video/). (CAC required.)
      - (5) Annual refresher training should cover a topic described in paragraph 17-4*h* or a topic specifically designed for a particular piece of nonionizing radiation emitting equipment or facility.
      - (6) Refresher training could be an abbreviated version of the original training or it may be as simple as a review of an SOP, operator manual, or local radiation safety regulation.
      - (7) Personnel that occasionally (less than once a month) work with class 3B or class 4 lasers and HIOS or EMF emitters that produce nonionizing radiation above the MPE require refresher training each time and prior to working

with that particular piece of equipment. This training may be a review of an SOP or operator manual for that piece of equipment, as long as nonionizing radiation safety is included.

(8) Re-training should occur after a significant regulatory change.

#### **17–5. Program audits, inspections, or reviews**

*a.* The U.S. Army will provide (upon request) an update of the NRSOHP to the Office of the DUSD (Installations and Environment) as part of the ASOHP in-progress review requirements of DoDI 6055.01.

*b.* NRSO and/or LSO periodically inspects potentially hazardous nonionizing radiation systems to ensure compliance with applicable regulations.

*c.* NRSO and/or LSO audits the overall program at least annually.

*d.* An independent outside organization should review the nonionizing RSP at least once every 3 years.

*e.* The NRSO and/or LSO will take corrective action when deficiencies are found.

#### **17–6. Range audits, inspections, or reviews**

The OTSG, when requested, will provide policies, guidance, and technical assistance for OH protection regarding laser, EMF, or HIOS hazards on indoor and outdoor ranges per AR 385–63/MCO 3570.1C.

#### **17–7. Nonionizing radiation hazard evaluation**

*a.* DCPH–A serves as the Army's laser, HIOS, and EMF emitter safety reviewer who provides a system safety review and hazard evaluation of lasers, HIOS, and EMF emitters used in the U.S. Army.

*b.* DCPH–A can provide guidance on hazards from nonionizing radiation emitting devices that do not have a military application.

*c.* Laser devices manufactured or marketed in the United States for DoD are required to meet the provisions of the Radiation Safety Performance Standards issued by FDA, Center for Devices and Radiological Health, 21 CFR 1040.10, and 21 CFR 1040.11 per DoDI 6055.15. Laser devices manufactured or marketed in the United States for DoD for use in combat, combat training, or that are classified in the interest of national security are considered military-specific lasers. Military-exempt lasers are required to meet the provisions of the Radiation Safety Performance Standards issued by FDA, Center for Devices and Radiological Health, 21 CFR 1040.10, and 21 CFR 1040.11 per DoDI 6055.15 to the greatest extent possible see paragraph 17–9.

*d.* Military-specific laser products used exclusively by DoD designed for actual combat, combat training, or are classified in the interest of national security that are unable to comply with the 21 CFR 1040 may be exempted from some requirements of 21 CFR 1040, but will meet the guidance to the greatest extent possible. See paragraph 17–9 for guidance on the DoD military exemption.

(1) DCPH–A, NRD (DSN 584–3353/3932 or commercial (410) 436–3932/3553) reviews all military-specific lasers used by the U.S. Army and nonmilitary-specific lasers that are used by or may expose U.S. Army personnel and are not medical or classroom pointers. These laser hazard evaluations (LHEs) should take place early in the development of a laser system and at milestones described in DA Pam 70–3.

(a) The PM and safety engineers implement the regulatory guidance from the DCPH–A LHE or provide in writing the rationale why the guidance is not to be implemented.

(b) The PM and safety engineers coordinate with the contracting officer, laser manufacturer, and DCPH–A on the process to ensure the safety guidance is implemented.

(2) If an LHE has been performed and the laser product did not comply with the 21 CFR 1040, the PM will inform the manufacturer of those requirements not being met and the manufacturer is then responsible for implementing those requirements or requesting the use of the military exemption from the DoD procuring agency.

(3) See paragraph 17–9 for using the DoD military exemption.

*e.* Acquisition of type-classified, military-specific laser systems is conducted by the program executive offices of the ASA (ALT) as required by AR 70–1 (also see DA Pam 70–3).

*f.* DCPH–A provides hazard evaluations of broadband light sources and HIOS that have a combat application. Nonlaser UV, visible, and infrared sources or HIOS will be used and controlled such that personnel exposures do not exceed the limits specified in the latest ACGIH Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices. However, some medical treatments (for example, phototherapy lamps in dermatology clinics) involve the controlled exposure of patients to nonionizing radiation in excess of the TLVs.

*g.* Only Level 3 LSOs and DCPH–A can authorize use of class 3B and class 4 lasers on an Army range for RDT&E purposes.

*h.* Use of any military-specific laser or any COTS laser on an Army range is permitted only if a Joint DoD or Army LHE has been performed, documented, and signed for that specific model of laser.

i. Use measurement procedures and techniques recommended in IEEE C95.3 as basic guidance when making measurements for evaluating HERP. This requirement does not preclude the use of other EMF measuring and evaluation methodologies.

(1) DCPH–A can provide information pertaining to personnel hazard evaluation and the capability for investigating and evaluating personnel hazards created by various EMF systems.

(2) Based upon IEEE C95.1–2345 and DoDI 6055.11 there are two tiers to RF safety exposure limits, restricted access and unrestricted access.

(3) In some RF environments, contact with excessively high RF voltages may result in an RF shock or burn. An open voltage of 140 volts root-mean-squared in the RF field is a conservative criterion used to define the potential RF shock and burn hazard situation.

(4) These standards are established to protect personnel against any adverse health effects and specify exposure levels for personnel protection. Current scientific evidence indicates that no adverse health effects will occur with exposures that are within the Zone 3 DRLs or ERLs, even under repeated or long-term exposure conditions.

j. DCPH–A maintains Army records of surveys, reports, calculations, and control measures for each type-classified EMF emitter.

k. Where multiple EMF emitters are located, RF evaluation data will include a determination of weighted contributions from expected simultaneously operated emitters.

(1) *Multiple emitters in fixed arrangements.* Where multiple EMF emitters may be collocated in fixed arrangements (such as aboard ships or at communication sites), determine the weighted contribution that should be made to ensure personnel are not exposed to effective EMF levels above the exposure limits.

(2) *Multiple emitters in dynamic arrangements.* Where multiple EMF emitters may be collocated in dynamic arrangements, computer-aided modeling is needed to determine the weighted contribution that should be made to ensure personnel are not exposed to effective EMF levels above the exposure limits.

l. EMF emitter evaluation data will be provided to the Army Spectrum Management Office to confirm the data collected is in accordance with the data provided in the spectrum supportability risk assessment and DD Form 1494 (Application for Equipment Frequency Allocation). The EMF emitter evaluation data will be included in the Army Spectrum Management Program.

m. Affix HERO warning labels to operated portable or mobile emitter systems to alert the user of the potential hazard if the emitter is operated closer than the prescribed safe separation distance for the military munitions-related operation of concern where appropriate. Further guidance on HERO is in paragraph 22–12.

n. Extremely low frequency EMR and static electric field sources will be used and controlled such that personnel exposures do not exceed the limits specified in the latest ACGIH Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices. Extremely low frequency and static field limits are located in IEEE C95.1–2345.

o. Static magnetic field sources will be controlled so personnel exposures do not exceed the limits specified in IEEE C95.1–2345.

## 17–8. Nonionizing radiation related mishap

a. *General.* Mishaps occur when personnel are exposed to nonionizing radiation levels in excess of the MPE for a laser source, in excess of the applicable ERL for an EMF source, and in excess of the TLVs for HIOS.

b. *Suspected injuries.*

(1) Immediately evacuate personnel suspected of experiencing an overexposure from laser, HIOS, or EMF radiation to the nearest medical facility for an examination (within 48 hours of suspected exposure). Typically, these injuries aren't easily detected by untrained personnel.

(2) Medical personnel can coordinate medical guidance for laser and EMF injuries from the DoD Laser/EMF Injury Hotline through the ESOH Service Center, 1–888–232–ESOH (3764) or email esoh.service.center@us.af.mil. Upon examination, if medical facility personnel suspect or confirm the overexposure, they contact the injured person's commander or supervisor.

(3) When possible, quarantine the device that caused the potential injury. DCPH–A may use it as part of the mishap investigation in accordance with paragraph 17–8c(3)(d), DoDI 6055.11, and DoDI 6055.15 through OTSG/MEDCOM.

c. *Reporting requirements.*

(1) Persons involved in or aware of a mishap will, after getting the injured person medical treatment, report it immediately to the commander or supervisor directly responsible for the operation, materiel, or persons involved.

(2) The commander or supervisor is responsible for reporting the mishap. The NRSO may be tasked by the commander or supervisor to report the mishap.

(3) Report the suspected overexposure to the following:

(a) Notify the garrison or activity public affairs officer at the onset of the mishap to activate public affairs contingency measures (see AR 360-1). Radiation mishaps attract the attention of local and national media quickly. Early disclosure of accurate information is vital to maintaining the confidence of both the internal and external public.

(b) DoD Laser/EMF Injury Hotline at 1-888-232-ESOH (3764) or email esoh.service.center@us.af.mil.

(c) U.S. Army Institute of Surgical Research (MCMR-SRR-O), Ocular Trauma and Vision Restoration at website [https://usaisr.amedd.army.mil/04\\_ocular\\_trauma.html](https://usaisr.amedd.army.mil/04_ocular_trauma.html). Trauma Clinic and Civilian Care Coordination Office at commercial phone (210) 916-2796.

(d) DCPH-A, NRD (DSN 584-3353/3932 or commercial (410) 436-3932/3553 or (800) 222-9698 after duty hours) email usarmy.apg.medcom-phc.mbx.nonionizing@army.mil. This is the lead office for laser, HIOS, and EMF mishap investigations through OTSG/MEDCOM.

(e) The commander experiencing a nonionizing radiation mishap will send an email message and provide as many details of the mishap as possible, if in accordance with the Radiological Mishap Report format paragraph 16-16, within 24 hours of occurrence to the following addresses:

1. Commander, U.S. Army Combat Readiness Center (CSSC-Z), Fort Rucker, AL at DSN 558-2660/3410 or commercial (334) 255-2660/3410 (24-hour phone line), fax DSN 558-3749 or commercial (334) 255-3749, or email helpdesk@crc.army.mil.

2. The ODASAF (DACS-SF) at DSN 227-1321 or commercial (703) 697-1321, or the Army Operations Center after duty hours at DSN 227-0218 or commercial (703) 697-0218.

(f) Contact local industrial hygienist to enter data into DOEHRs.

(g) Contact responsible safety office to ensure they meet any OSHA recordkeeping requirements per this regulation.

(h) For incidents to Army aircraft in commercial air space, report these incidents to the USACID and the Federal Bureau of Investigation.

## **17-9. Using the Department of Defense military laser exemption**

a. To be eligible for use of the DoD military laser exemption and become designated as military-exempt, a military-specific laser product must meet all of the following:

(1) Used exclusively by the DoD.

(2) Designed for actual combat, combat training, or is classified in the interest of national security.

(3) Must be unable to comply with provisions of the performance requirements in 21 CFR 1040.10 due to mission requirements.

b. Lasers intended primarily for indoor classroom training and demonstration, industrial operations, scientific investigations, or medical applications cannot be designated military-exempt.

c. Military-specific lasers will meet the laser performance requirements in 21 CFR 1040.10 to the greatest extent possible unless the laser system's mission may be affected by the CFR requirement(s).

d. If a military-specific laser is unable to comply with all of the provisions of 21 CFR 1040.10, the manufacturer is responsible for requesting the use of the military exemption from the DoD procuring agency.

e. If the DoD procuring agency grants the use of the military exemption, a military exemption notification letter is authored by the DoD procuring agency and sent to the laser manufacturer prior to any lasers being delivered to the U.S. Army.

(1) The PM or someone designated by the PM is the signatory for the military exemption notification.

(2) The signatory will control and is responsible for the inventory of those exempt systems for the entire lifecycle up to demilitarization and disposal.

(3) These letters are contract specific and limited to the number of lasers in that contract. New contracts or contract extensions require the issuance of a new military exemption notification letter to the manufacturer.

(4) Army PMs granting use of the military exemption notification letter to a manufacturer will maintain the laser exemption documentation and will provide DCPH-A, NRD with a copy of the military exemption notification letter.

(5) Exempt lasers will be tracked and accounted for throughout their lifetime by the receiving ACOM, ASCCs, and DRUs; ensure the PM knows where and how the lasers are being used to ensure they are being properly controlled and safely used.

(6) For laser systems that are being delivered to the U.S. Army for a safety release for T&E purposes only, a T&E military exemption notification letter per DoDI 6055.15 is sent to the manufacturer prior to delivery of the T&E lasers. DCPH-A, NRD can provide guidance in authoring these letters.

(a) The delivered T&E lasers are limited by the letter in quantity to a minimum number of units necessary for T&E activity.

(b) Contact DCPH-A to perform an LHE to assess safety and report any CFR deficiencies prior to the issuance of a safety release and any T&E activities taking place. As part of the LHE the laser product will be in accordance with 21 CFR 1040 and if noncompliant with ANSI Z136.1, it must comply with alternative controls in MIL-STD-1425A.

(c) For T&E units that remain in the Army's custody permanently after the required LHE, and after the completion of testing activities, a second military exemption notification letter for fielding is issued to the laser manufacturer for those systems being retained.

(7) For laser systems that are being delivered to the U.S. Army for a safety confirmation for fielding, a fielding military exemption notification letter per DoDI 6055.15 is sent to the manufacturer prior to delivery of the lasers to the U.S. Army.

(a) Military-exempt lasers ready for a safety confirmation for fielding will comply with laser safety design requirements in MIL-STD-1425A (also found in ANSI Z136.6).

(b) Fielding military exemption notification letters require as an attachment to the letter the DoD Laser Exemption from Federal Standards form (available at <https://www.denix.osd.mil/soh/references/>) that lists all CFR deficiencies and gives justification for that deficiency.

(c) All military-exempt lasers will have a DoD military exemption label permanently attached to the laser housing. This label will contain the statement contained in figure 17-1 (alternate wording may be recommended by DCPH-A, NRD).

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## CAUTION

This electronic product has been exempted from the FDA radiation safety performance standards prescribed in the Code of Federal Regulations, Title 21, Chapter I, Subchapter J, pursuant to Exemption No. 76EL-01DOD issued on July 26, 1976. This product should not be used without adequate protective devices or procedures.

Figure 17-1. Department of Defense military exemption label

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(8) Proponents of military-exempt lasers include laser safety requirements in technical publications for siting, operation, and maintenance of these lasers and laser systems. Recommended requirements include:

(a) Nominal ocular hazard distances.

(b) Nominal ocular hazard distances for 7 x 50 binocular viewing.

(c) Nominal skin hazard distances.

(d) Optical density requirements for laser eye protection.

(e) Reproductions of all required labels and hazard warnings.

(f) Any appropriate safety instruction to avoid hazards specific to that system.

(9) Ensure that foreign military sales of military-specific exempt lasers comply with applicable U.S. regulations and DoD directives. AMC handles foreign military sales of military-exempt lasers. Disposition of a military-exempt laser without utilization or specialized sale requires approval of the DUSD (Installations and Environment) or designee. Send requests for such disposition through supply channels to the commander of the appropriate item manager.

(10) Deliveries of noncompliant lasers without a military exemption notification letter are a violation of the CFR.

### 17-10. Exempt laser inventory requirements

a. The signatory for a military exemption notification letter is responsible for the inventory of those military-specific lasers delivered under that exemption (contract) throughout their lifetime.

b. PM offices that field exempt military-specific lasers are responsible for maintaining an inventory of the lasers they have exempted and are currently in the field.

c. DCPH-A, NRD serves as the repository of Army program delivered military exemption notification letters. Each time a letter is issued a copy will be forwarded to DCPH-A, NRD.

d. The U.S. Army will provide to the DoD the status of the Army military-exempt laser process (upon request by the FDA).

### **17-11. Exempt laser and electromagnetic field emitters disposal, turn in, or resale**

a. Once the DoD exemption is applied to a laser system, the working laser system will not be sold, loaned, or donated outside of DoD unless the system is brought into full compliance with 21 CFR 1040 or exempted in the foreign military sales contract.

b. Disposal of exempted lasers will be in accordance with DoDM 4160.21.

c. Do not dispose of potentially usable military-exempt lasers or laser parts. Utilization and specialized sales will always precede demilitarization per DoDM 4160.21.

d. EMF radiation sources capable of creating hazardous levels will be labeled as such before being offered to the Defense Disposition Services for disposal or resale. Furthermore, a memorandum will be prepared by the NRSO to warn any new owner of the nonionizing radiation hazard that can be produced when the source is powered.

e. Disposal of COTS lasers and EMF systems will follow manufacturer recommendations if no recommendations are given request guidance from the NRSO.

## **Chapter 18**

### **Aviation Safety Program**

#### **18-1. Introduction**

Aviation safety is a key component of protecting the force. This chapter provides responsibilities, policies, and duties for integrating safety and RM into existing command processes and according to Army RM policy.

#### **18-2. Commanders**

Commanders and the CNGB will—

a. Integrate RM into all planning and operations with emphasis on the troop leading procedures/military decision-making process in order to effectively manage risk, minimizing the accidental loss of personnel and equipment.

b. Maintain current authorized full-time positions for qualified ASOs within the ARNG and at ACOMs, ASCCs, DRUs, corps, installations or facilities that support aviation activities, and aviation unit levels (regiment/brigade/group, battalion/squadron, company/troop, detachments, and comparable activities). Commanders of aviation units without an MTOE or TDA ASO position will appoint, in writing, an ASO or an appropriately trained operations staff aviation officer to assume ASO responsibilities. At a minimum, the appointed aviation officer who is not ASO-qualified must complete USACRC USO and the Aviation Risk Management Course within 60 days of assuming ASO duties.

c. Appoint, in writing, an ASO to manage the aviation safety program and oversee command support programs.

(1) Rate ASOs at regiment/brigade/group level and below.

(2) Ensure that ASOs are not assigned duties that are not related to the safety component of protecting the force.

(3) Appoint a safety-trained NCO, officer, or DA Civilian, in writing, to assist the ASO.

d. For aviation units and aviation support facilities, incorporate safety meetings into the overall training plan for the unit. The frequency of aviation safety meetings is at the discretion of the commander.

#### **18-3. Operations officers**

Operations officers will—

a. Ensure that all aviators are issued appropriate, current publications for pilotage or navigation purposes.

b. Ensure that pilots are properly briefed on each mission prior to the planning phase of the mission and monitor aviation safety during mission planning through execution. (A deliberate risk assessment is conducted for each mission.)

c. Monitor each pilot-in-command mission debrief upon completion of the mission and immediately pass potential regulatory violations, near miss incidents, and hazards to the ASO for investigation and/or reporting.

d. Ensure that a detailed flight hazard map covering the entire unit operational area is posted and current.

e. Monitor the fighter management program and provide feedback as necessary to meet mission requirements.

f. Manage the unit reading file, implementing a system that ensures new information is reviewed by crewmembers.

g. Develop, administer, review, rehearse, and document the pre-mishap plan with the technical assistance of the unit ASO.

#### **18-4. Aviation safety officer**

ASOs will—

a. As their primary duty, advise and assist the commander and staff on all safety matters, including developing safety policy.

(1) Develop safety goals, objectives, and priorities and integrate them into appropriate training guidance based upon identification of the most probable and severe types of mishaps expected and the most likely reasons (hazards) for these mishaps.

(2) Develop corrective actions/control options for command selection.

(a) Assist hazard analysis, prioritizing hazards in terms of mishap severity and probability, and promptly advising the appropriate officials.

(b) Advise the commander when a below-standard status that affects safety is detected in any functional area.

(3) Advise and assist in developing the commander's training assessment based upon a safety assessment of unit functional areas and programs administered or monitored by the ASO.

(4) Assist the commander and staff in assessing the unit's RM effectiveness and safety performance after operations by:

(a) Collecting information about RM successes, shortcomings, and needed improvements from each staff section.

(b) Assisting the commander in determining if the performance met the commander's guidance (goals, objectives, and priorities).

(c) Assisting staff officers in implementing corrective actions/controls selected by the commander to improve performance.

b. Monitor safety-related programs, including:

(1) Observe flight and ground operations to detect and correct unsafe practices.

(2) Monitor the ability of each unit functional area to protect the force against aviation mishaps.

(3) Review aircraft mishap reports and help to implement corrective measures.

(4) Monitor the adequacy of the unit pre-mishap plan and the documentation of rehearsals. The degree of response by elements in the pre-mishap plan may be varied; however, conduct an exercise requiring all elements to physically respond at least annually.

(5) Conduct required inspections of the physical condition of airfields, heliports, helipads, and tactical landing sites for hazards; when deficiencies are noted, recommend abatements and ensure publication of all known hazards.

(6) Ensure safety promotion by using mishap prevention tools and other appropriate safety literature.

(7) Review aviator flight records and recommend corrections to any deficiencies noted.

(8) Monitor techniques and proficiency of personnel in handling weapons; AE; petroleum, oil, and lubricants; chemicals; hazardous and toxic materials; and lasers.

(9) Observe aviation maintenance operations, making recommendations to correct unsafe procedures and practices, and monitoring the Safety of Flight Program.

(10) Monitor the FOD prevention program.

(11) Review results of workplace hazard inspections.

(12) Monitor unit aviation life support equipment (ALSE) and related survival training programs.

c. Manage safety-related programs, including but not limited to:

(1) DA Form 2696 (Operational Hazard Report).

(2) The unit's safety award program in accordance with the unit administration officer.

(3) Ensure serviceability of the mishap investigation kit.

#### **18-5. Aviation safety noncommissioned officer**

The aviation safety NCO assists, advises, and makes recommendations to the ASO on aviation mishap prevention matters. The aviation safety NCO will—

a. Maintain liaison with the command sergeant major, first sergeants, and other enlisted personnel on all aviation safety matters.

b. Observe aircraft support activities (such as petroleum, oil, and lubricants; maintenance; operations; and enlisted crewmembers' training) and participate in unit safety surveys and inspections to detect and report unsafe practices or procedures.

c. Perform other USO duties prescribed in paragraph 5-5.

## **18–6. Aviation maintenance officer**

The aviation maintenance officer will maintain all requirements and training in accordance with the applicable aviation maintenance regulations, technical manuals, and bulletins. Further, the aviation maintenance officer will—

- a.* Continuously monitor QC through coordination with QC personnel, ensuring that QC personnel complete SF 368 (Product Quality Deficiency Report) according to established procedures (Army regulations, technical manuals, field manuals, and so forth).
- b.* Ensure adequate training of maintenance personnel and ensure that a formal continuing education program is available to provide maintenance personnel with current information on techniques, procedures, and modifications.
- c.* Provide maintenance personnel with lessons-to-be-learned from mishap summaries that cite maintenance as the mishap cause factor.
- d.* Take part in aviation safety meetings to educate aviation crewmembers on the aviation maintenance aspects of flight.

## **18–7. Flight surgeon**

The flight surgeon assists and advises the command in all aviation medical matters. In remote areas where a flight surgeon is not assigned or readily available, local support will be provided by the servicing medical department activity to best accomplish these duties. The flight surgeon will—

- a.* Maintain liaison within the command to implement the aviation medicine program.
- b.* Take part in and observe flight operations to monitor the interactions of crewmembers, aircraft, and environment. The flight surgeon exerts maximum effort in observing the flying ability and characteristics of each assigned aviator at least annually.
- c.* Ensure that the medical portion of the pre-mishap plan is adequate.
- d.* Monitor the physical and mental health of aviation personnel, including alcohol, tobacco, dietary supplements, and self-medication problems (see AR 40–8).
- e.* Advise the commander on crew endurance issues.
- f.* Monitor the survival and physiological training of aviation crewmembers and provide medical support in accordance with applicable Army regulations.
- g.* Medically clear crewmembers for further flight duty after aircraft mishaps in accordance with applicable Army regulations.
- h.* Make recommendations to the Commander, USACRC for improvement of human factors compatibility, crash-worthiness, ALSE, and survival features of aircraft.
- i.* Take part in aviation safety meetings to educate aviation crewmembers on the aeromedical aspects of flight.
- j.* Monitor the ALSE Program.
- k.* Assist in and advise on the hearing and occupational vision program.
- l.* Ensure command consideration of preventive and occupational medicine aspects of all plans, operations, training, and security missions.

## **18–8. Unit instructor pilot or standardization officer**

The unit instructor pilot or flight standardization officer will administer the aviator standardization training program for the commander according to Army policy and procedures and stress that sound safety principles are adhered to during all operations.

## **18–9. Aviation life support equipment officer/noncommissioned officer/technician**

The ALSE officer/NCO/technician will—

- a.* Develop and implement a unit aviation life support systems program that ensures aircrews are provided with adequate aviation life support systems (as prescribed by AR 95–1).
- b.* Ensure the serviceability of all ALSE.
- c.* Advise and assist with the training of the aircrew members on individual and aircraft ALSE.

# **Chapter 19**

## **Life-Cycle System Safety**

### **19–1. Introduction**

This chapter prescribes policies, responsibilities, and management functions to ensure hazards in Army systems and facilities are identified and the risks associated with these hazards are properly managed throughout the system's or

facility's lifecycle. It applies to all Army materiel systems, facilities, and equipment, including NDIs and COTS items, rapid equipping and rapid fielding initiatives, and applies during all phases of the lifecycle of systems, facilities, and equipment. These concepts apply to all levels of procurement and acquisition programs down to and including the user level.

- a. This chapter identifies policy and responsibilities to:
  - (1) Establish and manage system safety programs to minimize risks throughout the system or facility lifecycle.
  - (2) Conduct hazard identification, system safety, hazard tracking, and RM during all phases of the lifecycle.
- b. The primary objective of system safety is to maximize operational readiness and mission effectiveness through mishap prevention by ensuring that:
  - (1) Hazards and associated risks are identified and managed for each system throughout its lifecycle and all mission variations.
  - (2) Hazards are eliminated through design or controlled to acceptable levels and risk associated with residual hazards is formally identified, accepted by the appropriate management decision level, and documented.
  - (3) Hazards associated with new technology or operations are identified for consideration in later applications.
- c. See DA Pam 385-16 for mandatory procedures for PEOs, PMs/project managers/product managers, capability developers (CAPDEVs), MATDEVs, testers, independent evaluators, and system safety engineers to:
  - (1) Establish and manage system safety programs to minimize risks throughout the system lifecycle.
  - (2) Conduct hazard identification, system safety, hazard tracking procedures, and RM during all phases of the lifecycle.

## **19-2. Precepts of life-cycle system safety**

- a. System safety will be applied early (for example, during materiel solution analysis) and tailored according to MIL-STD-882E for all Army systems and equipment, regardless of the acquisition process utilized throughout their lifecycles.
- b. Safety lessons learned will be a key consideration in selecting the best solution when analyzing alternatives.
- c. Army systems and equipment with uncontrolled residual hazards will not be fielded, nor will Army facilities with uncontrolled residual hazards be used, without executing the RM process.
- d. Emphasis will be placed on eliminating hazards through system design. Training, administrative procedures, and labels will be used only as a last option. (See order of precedence in MIL-STD-882E and paragraph 6-5.)
- e. FASS engineering, management, and health analysis procedures will be used for the design, construction, operation, and disposition of military and civil works facilities. Army commanders/directors will designate FASS POCs in the early stages of facility concept development to develop preliminary hazard information and analyses for incorporation into the requirements and/or funding documents (DD Form 1391 (FY \_\_\_\_ Military Construction Project Data), task orders, scope of work, and so forth) pursuant to mandatory procedures in DA Pam 385-16. FASS POCs will complete USACE-recommended FASS training.
- f. Army Acquisition Executive (AAE), PEOs, and PMs/product managers/project managers will integrate system safety elements, tailored to meet the complexity of system and milestones of their systems, into their acquisition programs as part of the overall system acquisition strategy. This will be done by developing a system safety management plan (SSMP) for all systems (or for a family of systems), that includes:
  - (1) Establishing Army management objectives and responsibilities for executing the system safety program.
  - (2) Defining system-specific methods for determining the severity and probability of identified hazards.
  - (3) Describing the safety resources for the program, to include the qualifications of the associated safety personnel.
  - (4) Chartering the System Safety Working Group composed of representatives from users, developers, testers, DA, and other stakeholders which will be maintained throughout the system lifecycle.
  - (5) Establishing a hazard tracking system to provide a total life-cycle record of hazards associated with the system.
  - (6) Defining an SSRA process to formally document the acceptance of all risks as specified in the SSMP. The PM is required to staff the SSRA through PM/ASA (ALT) for acceptance of risk(s) specified in the SSRA when applicable.
  - (7) Obtaining a safety release from ATEC/AEC when required as specified in paragraph 2-22.
  - (8) Obtaining a safety confirmation from ATEC/AEC when required as specified in paragraph 2-22.
  - (9) Documenting milestones and preparing a programmatic environmental, safety, and health evaluation or safety and health data sheet to support the MDRs.
  - (10) Providing safety support for fielded items, safety evaluation of system modifications, and procurements to make certain hazards are not introduced into the system.
  - (11) Notifying users of system hazards and countermeasures via the AESMNS and safety of flight message system for hazards identified in fielded system. This provision does not apply to AE that is covered by AR 75-1.

(12) Updating the SSMP at each MDR and throughout the lifecycle as requested by the PM or LCMC Safety Office.

(13) Identifying the supporting safety office through the PM and, when appropriate, establishing a memorandum of agreement. The supporting safety office will be independent of the PM/PEO chain of command.

(14) Establishing a System Safety Working Group. The working group is chartered by the PM, product manager, or project manager to provide program management with system safety expertise and to ensure communication among all participants. The working group will be a formally chartered group of persons representing organizations associated with the system acquisition program, organized to assist the managing activity system PM in achieving the system safety objectives. The charter will define requirements, responsibilities, and memberships.

g. Hazards discovered in fielded systems, facilities, and materiel will be assessed (to include software and data contribution) and communicated to the user in a timely manner. Hazards will be eliminated, controlled, or accepted through the RM process and the Army Safety Action Team, as appropriate, pursuant to mandatory procedures in DA Pam 385-16. Health hazards will be assessed using the SOHA in accordance with AR 40-10 and will be coordinated with DCPH-A through OTSG/MEDCOM. Hazards and controls will be assessed and RACs determined by the supporting safety office through an SSRA.

h. Perform acceptance of Army system and equipment safety risks at a level of management authority and user concurrence as required per DoDI 5000.02T and as follows:

(1) The determination of hazard risk will be in accordance with MIL-STD-882E and table III of MIL-STD-882E will be used as the standard Army matrix.

(2) The following risk acceptance levels will be used for all programs: the AAE for high risks, PEO-level for serious risks, and the PM for medium and low risks.

(3) If a program or PEO develops an alternate risk authority matrix, it will be reviewed by the servicing LCMC Safety Office and AMC Safety Office and their positions included in the package submitted for approval to the AAE. The recommended matrix will be submitted for approval to the affected level of authority. The risk acceptance hierarchy will be published and updated as required in the appropriate SSMP.

(4) In the event of a conflict regarding the risk level associated with a potential hazard, the PM determines the risk acceptance authority based on the highest level of risk proposed by any of the SSRA signatories as described in DA Pam 385-16 (PEO/PM, TRADOC, or LCMC Safety Office). User concurrence, typically within the TRADOC capability manager's chain of command, will be at the same rank as the risk acceptance authority or higher.

(5) An SSRA will be used to document risk acceptance of residual hazards by the appropriate risk acceptance authority. SSRA's for risk acceptance at the serious level or above will have a concurring signature from a user's representative or from the gaining command at an equivalent level to the risk acceptance authority. This final signed SSRAs will be stored in a database.

i. Army commanders and managers will ensure risk reduction by applying the following approaches, in order of priority:

- (1) Eliminate hazards through design selection.
- (2) Design changes that reduce the severity and/or the probability of the mishap potential caused by the hazard(s).
- (3) Incorporate engineered features or devices.
- (4) Provide warning devices, training, procedures, cautions, warnings, and/or inspections.

j. Assess and track system hazards and mitigate risks associated with government-furnished equipment, NDI, and COTS, to include inherent hazards, hazards associated with system integration and interfaces with other system components, hazards associated with differences between intended use and conditions with commercial use and conditions, and hazards caused by limitations on life-cycle operational sustainment and maintenance as follows:

(1) Risks associated with NDI and COTS systems that comply with applicable industry consensus design standards may be closed out as "meeting or exceeding consensus design standards," without requiring acceptance in an SSRA, provided that the Army's intended use and conditions of the system are the same as the intended use and conditions for the applicable industry consensus design standard.

(2) Hazards associated with government-furnished equipment need to consider ESOH and HSI risks associated with the interface to the new system and any operating environment changes.

k. When a hazard is identified that has potentially significant impact upon Army training or operations, the PM, in conjunction with the cognizant materiel development agency, will immediately alert the Army Safety Action Team chair pursuant to mandatory procedures in DA Pam 385-16.

l. The PM will ensure the LCMC Safety Office completes the certification of ordnance for HERO for all six phases of the stockpile-to-safe separation sequence (S4) in the electromagnetic environment (EME) cited in MIL-STD-464 (table IX). See paragraphs 17-1, 17-2, 17-4, 17-7, and 22-12 for HERO, HERP, and HERF requirements. The MATDEV's LCMC/major subordinate command safety office will serve as the certification official and prepare the

HERO certification letter and HERO data package based on test center/facility evaluation, analysis, and/or other data as needed.

*m.* The PM will ensure for Joint programs the review process of DoDI 5000.69 is applied. Utilize the Army Weapons System Safety Review Board to coordinate the Joint process for Army-led programs and represent the U.S. Army in Joint weapon system reviews.

*n.* The PM will integrate software system safety in system safety engineering (SSE), software development, and verification processes pursuant to MIL-STD 882E for safety-significant software.

*o.* PMs will support system-related mishap investigations by providing analyses of hazards that contributed to the mishap and recommendations for materiel risk mitigation measures, especially those that minimize human errors.

*p.* The PM integrates system safety and health hazards into the Army's HSI program, which focuses on integrating human considerations into the system acquisition process to enhance Soldier system design, reduce life-cycle costs, and optimize total system performance.

*q.* When planning for the use of advanced manufacturing, the appropriate hazard analyses will be performed to identify hazards, assess risk, and develop needed controls to effectively manage trade-offs between manufacturing techniques, readiness and performance, and potential impacts to safety. RM will be applied holistically over the entire lifecycle for the system component(s) under consideration for advanced manufacturing to include HSI, manufacture process, raw materials used, and operations and maintenance environment. When designing and producing components utilizing advanced manufacturing, the application of SSE and management practices will be implemented (see DA Pam 385-16).

*r.* For systems with potential catastrophic or critical hazards utilizing artificial intelligence (AI) software:

(1) The CAPDEV/PM/materiel acquirer (MA) will implement system safety principles and practices to manage risks with AI systems throughout their life-cycle. Verification (end-to-end traceability and evidence) of safety will be demonstrated.

(2) Software safety engineers will ensure the AI and machine learning activity tasks are analyzed during nominal and off nominal conditions, to identify their potential contribution to mishap occurrence for the system under analysis and the overall system, and document hazards in the appropriate hazard analysis. Software safety engineers will coordinate with cybersecurity SMEs to ensure synchronization of efforts.

(3) The CAPDEV/PM/MA will ensure that the integrity and quality of the source data set(s) and data transfer method(s) is considered during the risk assessment process.

(4) Machine learning models that are able to provide an uncertainty metric during the deployment to assess the confidence of the model are preferred where it is possible.

### **19-3. Program-level responsibilities**

*a.* PEOs/PMs will maximize operational readiness and mission effectiveness through mishap prevention by ensuring:

(1) Hazards and associated risks are identified and managed for each system throughout its lifecycle and all mission variations.

(2) Hazards are eliminated through design or controlled to acceptable levels and risk associated with residual hazards is formally identified, accepted by the appropriate management decision level, and documented.

(3) Hazards associated with new technology or operations are identified for consideration in later applications.

(4) Safety performance capabilities are established addressing hazards with similar legacy systems.

(5) Safe systems are sustained throughout the lifecycle.

(6) System safety programs are documented and implemented in accordance with DoD and Army requirements.

(7) The identification of safety concerns, inclusion of safety criteria, and coordination with the test community as early in the development cycle as possible.

(8) Multi-domain operations, HSI, as well as effectiveness, survivability, and suitability are all considered in the safety characterization of AI systems.

(9) Adequate characterization of the effective operational scope of AI systems in order to inform the development of the system's safety envelope.

*b.* The CAPDEV will—

(1) Establish safety performance capabilities addressing hazards with similar legacy systems.

(2) Integrate system safety into technology development prior to Milestone B.

(3) Ensure risk mitigation and acceptance decisions for developmental systems are coordinated with users and CAPDEV system safety expertise.

(4) Ensure user's perspectives on the acceptability of residual risk is incorporated into any modification.

(5) Ensure AI/machine learning is risk assessed and risk managed to include all interfaces with other systems, subsystems, and hardware. Data collection, exchange standards, and quality assurance methodology for use by AI/machine learning systems must be developed and implemented.

c. The MATDEV of a system of systems (SoS) will have a tailored, overarching system safety program.

d. The host platform MATDEV will assume safety responsibility for the total system integration unless a memorandum of agreement states otherwise.

e. Testers will—

- (1) Identify potential and real hazards.
- (2) Verify the effectiveness of the correction imposed.
- (3) Determine test event residual risk level.

(4) Ensure testing of AI systems includes assessment of the system's safety characterization, safety envelope, reliability, accountability, maintainability, functionality, the ease to debug, the ability to update, operation fragility and processing speed.

(5) Provide appropriate test methodologies to equip CAPDEV/PM/MA with tools needed to properly confirm safety standards in AI systems.

(6) Consider adversarial testing (depending on the sensitivity of the use case) to assess robustness of the underlying AI model.

(7) Ensure AI/machine learning training datasets reflect test datasets used and assess the management, controlling, and transmitting of data in the current and deployed electronic environments.

f. Independent evaluators will—

- (1) Provide an independent assessment for materiel acquisition decision process reviews.
- (2) Receive from the PM copies of the appropriate documents for evaluation prior to the materiel acquisition decision process review date.

(3) Ensure mechanism for tracking and analyzing AI/machine learning software trouble reports, as well as hazards enabled by AI/machine learning software, for trends; ensure there is a documented method for capturing and sharing AI/machine learning lessons learned.

(4) Ensure a documented AI/machine learning trouble/problem recognition training program has been created for use by AI/machine learning system users and maintainers and a quality assurance program for AI/machine learning data collection, transfer, and storage has been implemented.

g. Commanders of LCMCs will—

- (1) Maintain continuity and capability for SSE and management.
- (2) Maintain system safety expertise for support to the PM throughout the lifecycle.
- (3) Assist the PM in ensuring all hazards are managed and laws/regulatory requirements are met throughout the lifecycle.

(4) Ensure materiel release SOH requirements are completed per AR 770-2 and this regulation.

## **Chapter 20**

### **Infectious Agents and Toxins**

#### **20-1. Introduction**

a. This chapter establishes DA safety policies for the use, handling, transportation, transfer, storage, and disposal of IAT rated at BSL-2/ABSL-2/ACL-2 and above including, but not limited to, microbiological activities in permanent or temporary clinical laboratories, biomedical and biological research settings, large-scale production facilities, microbiology teaching laboratories, and veterinary reference laboratories. (Throughout this regulation, the term "BSL" is understood to include the corresponding ABSL and ACL.) These policies apply to all U.S. Army activities and facilities in which IAT are used, produced, stored, handled, transported, transferred, or disposed, to include the ARNG and the USAR and consultants conducting microbiological and biomedical activities for the U.S. Army. These policies apply to Army contractor personnel and contractor operations only as specified in specific contract provisions, with exception of the following:

- (1) Clinical laboratories that import IAT into the United States in accordance with 42 CFR 71.54, and
- (2) Field sites that collect biological samples from processing.

b. Commanders of ACOMs, ASCCs, and DRUs and the CNGB employing mobile laboratories will develop a mobile laboratory biosafety program. At a minimum, the program will address applicable elements listed in paragraph 20-4.

c. The requirements of DoDM 6055.18 apply to Army activities involving the use, handling, transportation, transfer, storage, and disposal of IAT rated at BSL-2 and above used in microbiological activities in clinical laboratories, biomedical and biological research settings, microbiology teaching laboratories, and veterinary reference laboratories.

d. Certain IAT have been determined by the Secretary of Health and Human Services and the U.S. Department of Agriculture to have the potential to pose a severe threat to public health and safety. These BSAT are listed in 42 CFR 73.3, 9 CFR 121.3, and 7 CFR 331.3 and require special considerations, including permits, designation of a responsible official, inventory, security, incident repose, transfer, inspections, reporting, and training. Note that animals and arthropods containing select agents (but not toxins per CDC Division of Select Agents and Toxins and Animal and Plant Health Inspection Service (APHIS) Agriculture Select Agent Services “Select Toxin Guidance” dated May 2017) are considered select agents. The DoD Biological Select Agents and Toxins Biorisk Program Office (BBPO) manages and oversees the DoD BSAT Program. BSAT activities will comply with AR 190-17, DoDI 5210.88, 42 CFR 73, 9 CFR 121, and 7 CFR 331.

## **20-2. General**

a. The transport, storage, handling, use, and disposal of IAT will occur in a manner that will not adversely affect the safety and health of employees, military personnel, visitors, the surrounding community, or the environment. The overarching principle for safety in biological activities is to minimize the potential exposure of personnel and the environment to IAT. Conduct biological activities using facilities, equipment, and procedures commensurate to the level of risk of the activity or the BSL. The minimum number of appropriately qualified and trained personnel will be engaged in the activity for the shortest period of time and with the minimum amount of material (consistent with program objectives and safe operations).

b. Conduct all testing of protective equipment or detection devices employing IAT in appropriate BSL laboratories, chambers, or other facilities. Conduct all testing using the least hazardous IAT consistent with mission objectives.

c. Field-testing (open air) is restricted to the use of IAT simulants, unless the Secretary of Defense determines that testing is necessary for national security according to 50 USC 1512.

d. Security policy, responsibilities, standards, and procedures for safeguarding BSAT are contained in DoDI 5210.88.

(1) Prior to implementation of security standards and procedures a risk assessment will be conducted in accordance with paragraph 20-5. Implementation of security standards and procedures that will increase the risks associated with the use, handling, transportation, transfer, storage, or disposal of BSAT requires documentation of risk acceptance at the level described in DA Pam 385-30.

(2) Physical security plans of BSAT entities prescribed in DoDI 5210.88 will be synchronized with the entities’ safety program requirements and emergency plans.

(3) Security forces will meet training and OH requirements prescribed in DoDM 6055.18 (this is in addition to the requirements of 42 CFR 73.15).

e. Contracts involving IAT will include the following requirements.

(1) Contractors must comply with the CDC BMBL and the NIH Guidelines for Research Involving Recombinant or Synthetic Nucleic Acid Molecules.

(2) Contractors will not distribute the material to other facilities or organizations.

(3) The contract will specify whether contractors are to inactivate and dispose of IAT materials or return IAT materials to the DoD agency at the completion of the project.

(4) The contractor will allow the U.S. Government access to the contractor’s facilities, personnel, and safety program documentation. The contractor will correct all major deficiencies noted during safety compliance inspections prior to beginning or continuing operations in accordance with the government’s instructions.

(5) If a mishap involving government-supplied IAT occurs, the contractor will notify the contracting officer immediately, conduct an investigation in accordance with other provisions of this contract or as required by the contracting officer, and submit a written report to the contracting officer.

(6) At the conclusion of the contract, the contractor will manage the final disposition of the IAT according to the plan specified in the contract.

## **20-3. Biological safety programs**

a. The CNGB and commanders of each ACOM, ASCC, DRU and major subordinate command that conducts IAT activities will include an IAT SOH section in their written SOH program prescribing responsibilities and procedures for managing the command biosafety program.

b. Commands, institutes, and centers conducting IAT activities will include an IAT SOH section in their written SOH program prescribing responsibilities and procedures for managing their biosafety program.

c. When another agency or military department is conducting biological activities as a tenant on an Army installation, that organization will coordinate its IAT SOH program with the senior commander.

#### **20–4. Biosafety manuals**

Commands, institutes, and centers conducting microbiological activities will develop and administer a written facility biosafety manual that provides local responsibilities, requirements, and procedures for implementing applicable requirements of this regulation and those prescribed in DoDM 6055.18. Biosafety manuals will address, as applicable:

- a. Program policies and responsibilities.
- b. Safety committee.
- c. Requirements and procedures for risk assessments and selection of appropriate BSL.
- d. Requirements and procedures for SOPs.
- e. OH requirements and procedures.
- f. Facility design and commissioning.
- g. Access control.
- h. Engineering controls/safety equipment (selection, use, training, testing, and maintenance).
- i. Biosafety practices.
- j. PPE (selection, use, training, testing, and maintenance).
- k. Labeling and posting of hazards.
- l. Chemical hygiene plan.
- m. Personnel qualifications and training.
- n. Safety information.
- o. Inspections.
- p. Facility, utilities, and equipment continuing maintenance plan.
- q. Pest management.
- r. Transportation and transfer of IAT.
- s. Decontamination and disposal of IAT.
- t. Emergency planning and response.
- u. Mishap investigation and reporting.
- v. Select agent registration.
- w. Recombinant and synthetic nucleic acid molecules.
- x. Radiation safety.
- y. Biosafety, occupational safety, and animal care in animal research and veterinary diagnostics environments.
- z. Contract activities.

#### **20–5. Mishap risk management**

a. A risk assessment will be completed and documented for every operation involving IAT. The risks associated with biological activities will be assessed and controls prescribed (personnel training and qualification, procedures, containment equipment, and facility design) to contain IAT and to protect workers, support personnel, the environment, and laboratory products. The principal investigator or immediate supervisor (whoever has the best understanding of the activities and risks) is responsible for conducting the risk assessment in close coordination with SOH personnel and other SMEs (for example, environmental, emergency response, security, facilities, and maintenance) and/or the facility safety committee to ensure compliance with applicable guidelines and regulations.

b. SOPs are required for every biological operation using IAT. The SOPs will be based on the activity's risk assessment and developed in accordance with mandatory procedures in DA Pam 385–10 and DoDM 6055.18. SOPs will be readily available at the work location and designated personnel will maintain a copy of SOPs in a centralized location.

c. Workers and support personnel who have been granted access to laboratories during IAT operations will have their health risk assessment reviewed in conjunction with OH examinations or screenings.

#### **20–6. Recombinant or synthetic nucleic acid molecules**

a. When work with recombinant or synthetic nucleic acid molecules is undertaken, an Institutional Biosafety Committee (IBC) is established to review recombinant or synthetic nucleic acid molecules activities and protocols. The IBC functions as stated in the NIH Guidelines for Research Involving Recombinant or Synthetic Nucleic Acid Molecules.

b. Activities funded by NIH involving recombinant or synthetic nucleic acid molecules will comply with all requirements of the NIH Guidelines for Research Involving Recombinant or Synthetic Nucleic Acid Molecules and are

subject to IBC approval. Facilities conducting work with recombinant or synthetic nucleic acid molecules that are not funded by the NIH should adopt these guidelines as best practices.

## **20–7. Biosafety officer**

*a.* Facilities conducting IAT research and all facilities that store select agents and toxins as defined in 7 CFR 331, 9 CFR 121, and 42 CFR 73 will designate an individual as the biosafety officer (BSO). Other IAT activities (for example, clinical laboratories) will have access to a BSO, such as on a regional support basis. BSOs will be trained and qualified pursuant to mandatory procedures prescribed in DoDM 6055.18.

*b.* BSOs will serve as a facility/activity's biosafety SME and will provide/support risk assessments, RM, biosafety controls, biological safety program management, SOPs, biosafety training, inspections, mishap notification, investigation and reporting, and emergency planning and response.

## **20–8. Biosafety program manager**

Commands without a BSO on staff that oversee subordinate activities who use, handle, transport, transfer, store, and dispose of IAT, will appoint, on orders, a biosafety program manager (BSPM).

*a.* BSPMs will—

- (1) Conduct oversight of the subordinate activity biosafety program and compliance with this regulation, including training and inspections.
- (2) Serve as intermediary between the subordinate activity and higher headquarters' BSPMs and/or Department of the Army Biological Safety and Health Council (DABSHC).

*b.* BSPMs will meet all of the following specialized training requirements:

- (1) Three-, four-, or five-day Service-approved biosafety course.
- (2) DoD biosafety course.
- (3) Training in SOH policy, standards, and RM.

## **20–9. Unit biological safety officer**

Activities will assess the need for a qualified unit biological safety officers (UBSOs) to be designated for each laboratory room or suite in research or production facilities or per clinical department for healthcare diagnostic laboratories.

*a.* UBSOs possess advanced training in microbiological safety and will provide support in risk assessments, RM, biosafety controls, biological safety program management, SOPs, biosafety training, inspections, mishap notification, investigation and reporting, and emergency planning and response.

*b.* UBSOs, in addition to specific safety training required for them to be qualified as an UBSO and knowledgeable of general safety and health matters relevant to their lab, will complete training specified in paragraph 20–17c.

## **20–10. Biological mishap notification, investigation, and reporting**

*a.* Biological mishap notification, investigation, and reporting will be in accordance with mandatory procedures in DA Pam 385–40, requirements prescribed in paragraph 20–12 of this regulation, DoDM 6055.18, 7 CFR 331, 9 CFR 121, 42 CFR 73, AR 190–45, DoDI 5210.88, and applicable federal, state, and local requirements. Commanders will establish procedures to ensure notification, investigation, and reporting of a biological mishap is accomplished in accordance with these requirements as well as applicable state and local requirements. All biological mishaps will be investigated for the purpose of mishap prevention.

*b.* The term “biological mishap” is defined in the glossary.

*c.* All biological mishap investigation reports will be shared with the ODASAF in order to disseminate lessons learned to other Army organizations via the DABSHC.

*d.* Any incidents involving an IAT that requires an SIR, mishap report (see para 20–12), or may generate media attention will be reported to the ODASAF, coordinated with installation/activity safety, and medical and biosafety professionals as applicable, for concurrence on causal factors and corrective actions, and a copy provided to higher headquarters safety officials, including ODASAF (usarmy.pentagon.hqda-aso.mbx.army-safety-office@army.mil), for awareness and trend analysis.

## **20–11. Presumptive biological select agent and toxins samples**

*a.* The BBPO EARO and DASAF will be notified whenever a sample collected for human protection or environmental surveillance is determined to be presumptive BSAT.

*b.* The BBPO EARO will be notified of the disposition of the presumptive BSAT sample.

## 20-12. Class G biological mishap notification and reporting procedures

Biological mishaps are classified as an Army class G mishap (see para 3-7 for information on mishap classification). Notification and reporting will be as follows.

*a. Biological select agents and toxins.* (Including clinical, diagnostic, or proficiency test specimens of BSAT.)

(1) In accordance with 7 CFR 331, 9 CFR 121, 42 CFR 73, and DoDM 6055.18, upon discovery of a release of a BSAT causing potential exposure or release of a BSAT outside of the primary containment barriers (for example, biological safety cabinet, trunnion centrifuge cups, and aerosol-containing blenders) of the biocontainment area (including clinical or diagnostic laboratories and other entities that possess, use, or transfer BSAT contained in a specimen presented for diagnosis, verification, or proficiency testing), an individual or entity must immediately notify the CDC or APHIS and the DoD BBPO. The following information will be provided:

(a) The name of the BSAT and any identifying information (for example, strain or other characterizing information).

(b) An estimate of the quantity released.

(c) The date, time, and duration of release.

(d) The environment into which the release occurred (for example, in building or outside of building, waste system, and so forth).

(e) The location (installation/activity, building, room) from which the release occurred or where the exposure occurred.

(f) The number of individuals potentially exposed at the entity.

(g) Brief description of what happened (for example, spill, needle stick).

(h) Actions taken to respond to the release.

(i) Hazards posed by the release.

(2) The entity should notify the appropriate local and state health agencies.

(3) A category 1 SIR is reported in accordance with AR 190-45.

(4) A completed APHIS/CDC Form 3 (Report of a Release/Loss/Theft of a Select Agent or Toxin) is submitted to the CDC or APHIS and BBPO within 7 calendar days. Within 24 hours of submitting APHIS/CDC Form 3 to the CDC or APHIS and BBPO, forward a copy directly to ODASAF (usarmy.pentagon.hqda-aso.mbx.army-safety-office@army.mil), submit a copy through the chain of command for the applicable ACOM/ASCC/DRU safety director and, if the facility is a tenant on an installation, provide a copy to the garrison commander.

(5) Completed APHIS/CDC Form 3 is submitted to the CDC or APHIS and BBPO within 7 calendar days, with a copy forwarded through the first general officer in the chain of command to ODASAF.

(6) A closeout report is submitted to ODASAF and BBPO with copy furnished through normal command channels after the mishap investigation is complete.

*b. Non-biological select agents and toxins.* (IAT not characterized as BSAT.)

(1) Upon discovery of a release of a non-BSAT causing potential exposure or release of a non-BSAT outside of a primary containment barrier of the biocontainment area, an individual or entity must immediately notify the activity safety office, and medical and BSOs if applicable. Reports will include the information listed in para 20-12a(1), substituting the name of the IAT for the name of the BSAT in para 20-12a(1)(a). Within 24 hours, reports will be provided directly to ODASAF (usarmy.pentagon.hqda-aso.mbx.army-safety-office@army.mil), submitted through the chain of command for the applicable ACOM/ASCC/DRU safety director, and, if the facility is a tenant on an installation, provided to the garrison commander. The entity should notify the appropriate local and state health agencies.

(2) A closeout report is submitted to ODASAF with copy furnished through normal command channels after the mishap investigation is complete.

*c. Mishaps.* Class A through E mishaps, as defined in paragraph 3-7, occurring during biological activities will be reported in accordance with chapter 3 requirements.

## 20-13. Monitoring and Inspections

*a. Laboratory directors will designate individuals to conduct monitoring and inspections as follows:*

(1) The laboratory supervisor is responsible for monitoring safety program requirements, inspections, and the maintenance of required laboratory safety controls and equipment.

(2) The laboratory supervisor will ensure that room and building malfunctions, laboratory safety controls, or equipment or shortages in required equipment and supplies are reported to the appropriate maintenance and supply personnel. The laboratory supervisor will ensure that the laboratory room and/or safety controls and equipment are labeled to warn of the malfunction and indicate that it should not be used until repaired and, as applicable, tested.

*b.* Before performing operations with IAT, operators will survey the work area. Operators will have a means to correct the deficiencies found or to report any unsafe conditions and have them corrected prior to beginning operations.

*c.* The laboratory supervisor or a designated qualified (per para 20-17*h*) individual will conduct and document monthly laboratory inspections.

*d.* The safety officer, BSO, or qualified SOH personnel designated by the commander/director will inspect BSL-2 and toxin laboratories at least semiannually and BSL-3 and BSL-4 laboratories and those in which dry forms of toxins are handled at least quarterly.

(1) The competent medical authority (CMA) will participate in inspections at least annually to identify potential workplace hazards and determine if revision of exposure prevention strategies is indicated.

(2) These documented inspections may be unannounced and will include coverage of general safety practices as well as requirements applicable to the laboratory's BSL.

(3) One of the semiannual or quarterly inspections can be an SASOHI.

*e.* A qualified industrial hygienist (GS-0690 job series) will conduct an industrial hygiene survey of research microbiology laboratories annually. Surveys will identify and document chemical, physical, biological, and ergonomic hazards. Industrial hygienists will evaluate and assign an RAC to each hazard and recommend appropriate hazard control (see DA Pam 40-503). Each visit will be documented and the work site supervisor is provided a written report. At a minimum, these evaluations will include HAZMAT identification, type of engineering controls needed (if applicable), type of PPE required, and posting of appropriate signs needed (such as noise hazardous area or eye protection required). Make appropriate entries in DOEHRS-Industrial Hygiene.

*f.* Deficiencies or procedures that create a potentially life-threatening situation will be immediately referred to supervisory personnel, the safety office, the commander or institute director, and, if the facility is a tenant on an installation, the garrison commander. The operation will be stopped and corrective actions will be immediately implemented. Any residual risks will be accepted at the appropriate level in accordance with command risk acceptance policy.

*g.* Reports of deficiencies for other than life-threatening situations will be made as soon as possible to the appropriate supervisor with copies furnished to the safety office. If a problem is widespread, notify all affected personnel.

*h.* Inspection findings and observations should be captured and tracked through closure of corrective actions.

## **20-14. Reviewing biological facilities**

*a.* For new construction or major modifications of government biological facilities, the BSO and SOH professionals at the facility and/or higher headquarters will review facility design safety controls for compliance using mandatory procedures prescribed in DoDM 6055.18 and provide comments to the appropriate design review or contracting agency (for example, Health Facilities Planning Agency). USACE is the designer and construction agent for Army biological facilities and will ensure the user representative's biosafety and SOH professionals are provided designs for technical review at the 35 percent design phase.

*b.* Prior to initial use, containment (BSL-3) and maximum containment (BSL-4) laboratories will be validated for safe operation through a commissioning survey. The organization conducting the commissioning survey may be in-house or contracted, but will be reviewed and endorsed by the DABSHC and the DoD BBPO for BSAT laboratories (DoDM 6055.18 prescribes mandatory commissioning survey criteria). Commissioning surveys are in addition to preoperational surveys (see para 20-15).

## **20-15. Facility preoperational surveys**

*a.* Prior to starting operations at new BSL-2 facilities, a preoperational survey will be completed and approved by commanders of ACOMs, ASCCs, and DRUs and the CNGB. The CNGB or parent ACOM, ASCC, or DRU will lead the preoperational survey. Preoperational survey teams will be composed of safety, industrial hygiene, and laboratory operations SMEs. This responsibility may be delegated to a major subordinate command. Surveys of clinical BSL-2 operations will be synchronized with the laboratory coming online and conducted in a manner to ensure no disruptions in-patient care.

*b.* Prior to starting operations at new biological BSL-3 and BSL-4 facilities or BSL-3 and BSL-4 facilities that have undergone major modification (defined as a modification affecting one or more commissioning certification criteria as prescribed in DoDM 6055.18), a preoperational survey will be completed and approved by the ODASAF. Preoperational survey teams will be led by a representative of ODASAF and composed of an industrial hygienist, an occupational medicine SME, and a safety and laboratory operations SME. The ODASAF is consulted if uncertain whether a modification requires a preoperational survey. Depending on the scale and complexity of the modification, the ODASAF may delegate the survey to the CNGB or ACOM, ASCC, DRU, or major subordinate command commander.

c. The preoperational survey will be conducted to evaluate the implementation and effectiveness of the facility's biosafety control measures and compliance with this regulation, DoDM 6055.18, and mandatory procedures in DA Pam 385-61 to include simulation of selected operational and emergency response operations.

d. Inspection findings and observations should be captured and tracked through closure of corrective actions.

## **20-16. Biological program safety studies and reviews**

Safety studies and reviews are conducted to assess the safety of biomedical and microbiological activities and the effectiveness of biosafety and OH controls. HQDA principal officials; commanders of ACOMs, ASCCs, and DRUs; and the CNGB may recommend a special study or review and will coordinate recommendations with the Office of the Director of Army Safety (DACS-SF), 2530 Crystal Drive, Suite 3058, Arlington, VA 22202. Special studies and reviews may be used to:

- a. Identify and assess conditions or practices that may affect biosafety program management or controls.
- b. Analyze major microbiological/biomedical system modifications or innovations (including design and physical configuration changes) for impact on safety and health.
- c. Assess the impact of significant changes to SOH standards or program requirements with a potential to affect biological operations.

## **20-17. Personnel qualifications and training**

a. All personnel who work directly with or who otherwise have a potential for occupational exposure to IAT will receive training in IAT hazards and controls.

b. BSOs will meet one of the following degree, credential, or experience requirements:

(1) *Degree and experience.* Graduation from an accredited college or university with a baccalaureate degree in a physical or biological sciences discipline (may substitute 96 months of directly-related biosafety experience for a bachelor's degree; experience counted towards degree requirement cannot be applied to requirement for professional biological safety experience). Some microbiology courses are required such as general microbiology, epidemiology, and pathogenic microbiology. In addition, 5 years or more professional biological safety experience is required. A Master's degree in relevant discipline counts for 2 years towards the 5-year requirement. An earned Doctoral degree in relevant field counts for 3 years towards the 5-year requirement.

(2) *Credentials.* Recognized professional credentials such as the Certified Biological Safety Professional or Registered Biosafety Professional will be accepted for both the education and experience requirements.

(3) *Experience.* Individuals not meeting the requirements of paragraph 20-17b(1) or 20-17b(2) but who possess extraordinary biosafety experience may request consideration/approval from the DABSHC based on training and experience.

c. BSOs will meet all of the following specialized training requirements:

- (1) Three-, four-, or five-day Service-approved biosafety course.
- (2) DoD biosafety course.
- (3) Training in Service-specific safety policy and standards and RM.

d. UBSOs will meet the following requirements:

- (1) Bachelor's degree with background in science.
- (2) One year of laboratory experience at equivalent BSL.
- (3) Three-, four-, or five-day Service-approved biosafety course.
- (4) DoD biosafety course.

(5) Training in Service-specific safety policy and standards and RM.

e. Supervisors are responsible for understanding IAT operations and Army safety policy and standards for microbiological and biomedical activities.

f. Supervisors are responsible for ensuring that employees have received the training to enable them to safely execute the operation and ensuring safety equipment and controls are available, safe, functioning, inspected, tested, and maintained.

g. Supervisors are responsible for ensuring that personnel entering a clinical or biomedical research laboratory meet applicable local requirements for access control, medical, and SOH training.

h. Prior to performing assigned duties, personnel working with IAT will be aware of the associated hazards, will receive training that adequately prepares them for their assigned duties, and will be proficient in microbiological practices and procedures. Training will be developed in coordination with the safety office and will be documented to include the date of the training session, the contents or a summary of the training, and employee's name. Training will include:

- (1) RM principles and techniques.

- (2) Concept and definition of BSLS.
- (3) Modes of transmission, infectivity, time delay to onset of signs and symptoms, and the potential acute and chronic health effects and signs/symptoms associated with the IAT to which workers are potentially exposed.
- (4) Facility safety controls.
- (5) Selection and use of safety equipment (for example, biological safety cabinets, glove boxes, laboratory chemical hoods).
- (6) Laboratory practices and safety requirements, including all applicable SOPs and special practices and requirements.
- (7) Blood borne pathogens (per 29 CFR 1910.1030), HAZCOM (per 29 CFR 1910.1200), and occupational exposure to hazardous chemicals in laboratories (per 29 CFR 1910.1450).
- (8) Selection and use of PPE (per 29 CFR 1910 Subpart I).
- (9) Access control.
- (10) Facility signage, labeling of containers, and safety communications.
- (11) The purpose and description of the OH program, including specific medical surveillance and immunization requirements associated with the IAT to which workers are potentially exposed.
- (12) Hazardous biological waste handling, approaches to minimizing the volume of waste, decontamination, packaging, and disposal.
- (13) Disinfection and sterilization.
- (14) Emergency procedures.
- (15) Reporting mishaps.
- (16) Inspection requirements.
- (17) Transportation (packaging and shipment) and transfer of IAT, when applicable.
  - i. In addition to academic training, all new employees working with IAT will complete a period of supervised orientation in the facilities, as prescribed in the agency/facility biological safety program, by a scientist or technician with specific training in the procedures and properties of the IAT in use. During the training period, new laboratory personnel will be under the supervision of appropriately trained personnel.
  - j. Biosafety personnel working with BSAT will comply with 42 CFR 73.15 refresher training requirement.

## **20–18. Containment**

- a. Engineering controls equipment will be used in conjunction with personnel qualification, training, and safe work practices and procedures to minimize potential exposure of personnel and the environment to IAT.
- b. Engineering controls will be implemented to the maximum extent feasible and verified as effective. PPE can be used in addition to primary barriers according to risk assessments and the operation being performed.
- c. Biological protocols and SOPs will maximize use of engineering and administrative controls to preclude or minimize the need for PPE.
- d. The level and type of PPE required for biological activities will be based on the results of risk assessments and the criteria prescribed in DoDM 6055.18. The selection and training for use of PPE will be executed pursuant to mandatory procedures prescribed in DoDM 6055.18.
- e. Before beginning any IAT operation, supervisors and/or operators will determine that the hazards associated with the operation are under positive control (as defined in the applicable SOP) and that the operation complies with the criteria prescribed in this regulation and DoDM 6055.18.

## **20–19. Maintenance controls**

A continuing maintenance process will be documented and implemented for equipment and facilities. The continuing maintenance process at a minimum will address requirements, responsibilities, and procedures for:

- a. Identifying safety-critical equipment and utility system components.
- b. Inspecting, testing, certifying, maintaining, and documenting safety-critical equipment and utility system operating components.
- c. Investigating, reporting, and correcting equipment and utility system problems, failures, and user errors.
- d. Ensuring maintenance personnel possess the necessary knowledge, skills, and qualifications to inspect, test, certify, and maintain safety-critical equipment and utility systems.
- e. Responding to safety-critical equipment and utility system failures or disruptions.

## **20–20. Transporting infectious agents and toxins**

- a.* Per DTR 4500.9–R–Part II, all DoD personnel (military, civilians, and contractors) involved in the preparation and shipment of IAT for the DoD transport receive general awareness, function specific, safety, and security training per 49 CFR 172.704.
- b.* Individuals responsible for packaging the agents and certifying IAT manifests must additionally receive DoD certification training per DTR 4500.9–R–Part II and successfully complete the 40-hour Transport of Biomedical Material Course offered by DCPH–A. (The only alternative option is successful completion of a DoD 80-hour HAZMAT course indicated in DTR 4500.9–R–Part II. No other options are permissible for DoD shipments.)
- c.* Commanders or their designated representative must appoint all personnel who successfully complete the DoD 40-hour Transport of Biomedical Material Course in writing to certify IAT shipments. The appointment order must state the scope of authority and expiration date for all certifying officials.
- d.* Security requirements for safeguarding BSAT during transportation and transfer are contained in DoDI 5210.88. Personnel must also follow additional requirements as specified in 49 CFR Subtitle B Chapter I, 42 CFR 73, 7 CFR 331, and 9 CFR 121.
- e.* Transportation outside the United States is subject to additional and/or different international regulations and HN requirements and may be forbidden without specific permit.

## **20–21. Inactivation of *Bacillus anthracis***

Inactivation of *Bacillus anthracis* will be in accordance with the revised Federal Select Agent Program policy statement, dated 14 August 2017, Subject: Revised FSAP Policy Statement: Inactivated *Bacillus anthracis* and *Bacillus cereus* Biovar *anthracis*, and all applicable Federal Select Agent Program policy updates. The policy statement is available at [https://www.selectagents.gov/policystatement\\_bacillus.html](https://www.selectagents.gov/policystatement_bacillus.html).

## **20–22. Disposal controls**

All cultures, stocks, and other potentially infectious materials are decontaminated before disposal using an effective method (see DoDM 6055.18). Disposal planning will be conducted during the risk assessment process. Depending on where the decontamination will be performed, the following methods should be used prior to transport:

- a.* Materials to be decontaminated outside of the immediate laboratory must be placed in a durable leak-proof container and maintained in the laboratory or designated storage area until it is transported.
- b.* Materials to be removed from the facility for decontamination must be packed according to applicable local, state, and federal regulations.

## **20–23. Biological warfare materiel and biological agent contaminated materiel response, characterization, and remediation activities**

- a.* BWM and BACM response, characterization, and remediation activities include:
  - (1) Emergency response to the discovery of known or suspected BWM or BACM.
  - (2) Characterization (sampling and investigations) of a facility or in an area that is suspected to have BWM or BACM, including buildings in which biological agent were known or suspected to have been handled, used, stored, or destroyed (for example, BSL–2 or greater laboratories).
  - (3) Planned remediation activities in which BWM or BACM is anticipated, including construction, renovation, upgrades, or demolition of buildings in which biological agent is encountered or were known or suspected to have been handled, used, stored, or destroyed (for example, BSL–2 or greater laboratories).
- b.* The scope of BWM and BACM potentially encountered in a response, characterization, or remediation (RCR) activity include the following:
  - (1) Biological munitions. Such munitions, which include projectiles, rockets, mines, and bombs, may have been manufactured by the United States or foreign countries.
  - (2) Bulk BWM containers. Such containers include, but are not limited, to laboratory packs and other large containers.
  - (3) Miscellaneous containers (for example, laboratory bottles, vials, syringes) that based on location, may contain biological agent.
  - (4) Munitions with unknown suspect biological fills.
- c.* The objectives of BWM and BACM RCR activities are the safe, timely, and effective removal of public and environmental health and safety hazards posed by the materiel, in compliance with statutory and regulatory requirements and in coordination with EPA and state and local authorities. The cardinal principle—minimize exposure consistent with safe and efficient operations (for example, expose the minimum number of people for the minimum time

to the minimum amount of explosive, chemical, or biological agents)—will be observed during the BWM/BACM responses.

*d.* Suspect and recovered BWM and BACM will have a risk assessment conducted and hazard controls will follow the hierarchy explosives first, then biohazards will be considered and managed as a Risk Group 3 agent (pursuant to DoDM 6055.18) until it has been fully characterized and a risk assessment conducted to determine the appropriate risk group or assigned a different BSL by the U.S. Army Medical Research Institute of Infectious Diseases (USAMRIID) or CBC.

(1) The 20th CBRNE Command will assess recovered suspect BWM and BACM to determine if the materiel is explosively configured, if it is fuzed, the potential for biological or chemical agent, and whether the materiel is safe for movement, storage, treatment, and disposal.

(2) For explosives and biological safety reasons, the positive identification of recovered suspect biological munitions is required before demilitarization, destruction, or disposal in order to assess and mitigate both explosives and downwind biological hazards. Suspect biological munitions will be assessed by the Army's Materiel Assessment Review Board using nondestructive testing (for example, x-ray).

(3) USAMRIID and CBC will, on a cost-reimbursable basis, characterize BWM and BACM. CBC has the capability to handle and characterize BWM and BACM with or without explosives and/or chemical agent as long as items are deemed safe for transport by CBRNE Analytical and Remediation Activity.

(4) Storage of explosively configured items require a risk assessment, endorsed by USAMRIID and CBC, to determine the appropriate controls for potential explosives and biological hazards.

*e.* Some BWM and BACM sites may also contain munitions that may be determined upon evaluation by EOD or similarly qualified personnel to be munitions and explosives of concern (MEC), hazardous toxic radiological wastes, and/or industrial chemicals. At such sites, the hazard that poses the greatest immediate risk to workers or the public will be addressed before, or in concert with, any hazard posing less risk, with any other hazards mitigated to the greatest extent possible. In such instances, the following hierarchy will be followed in responding to the hazards from such combinations: the explosives hazards will be mitigated first, followed by the chemical warfare materiel hazards, followed by the radiological hazards, followed by the BWM and BACM hazard, and lastly the hazards from industrial chemicals.

*f.* Any activity on a BWM or BACM RCR project will require the determination of risk to the public and to site workers. Risks to human health and the environment as a result of an explosion or release of biological agent are the primary factors in determining the effectiveness of RM decisions concerning BWM and BACM. A site-specific maximum credible event will be developed to form a basis to generate hazard zones. Hazard zones will be computed using the maximum credible event and atmospheric dispersion modeling. Quantitative RACs will also be developed to assess response, characterization, and remediation hazards (for example, dispersion of agent contaminated soil, explosive hazards). Public risk information and controls will be addressed in safety planning documents.

*g.* All BWM/BACM emergency response activities or other planned activities in areas where BWM-related activities are known or suspected to have occurred may result in a number of conditions that would merit an immediate onsite response to protect workers or the public from the effects of a biological agent release, exposure, or in many cases explosive hazards. Installation or district commanders will ensure that emergency plans and procedures are prepared to address each phase of a BWM or BACM response or other activities that could result in a release of biological agent or exposure or explosive hazards.

*h.* Biological mishap or incident reporting procedures are as follows:

(1) Installation or USACE district commanders will report biological response, characterization, and remediation incidents in accordance with SIR requirements in AR 190-45.

(2) Installation or USACE district commanders will report biological mishaps per procedures prescribed in paragraph 20-12.

*i.* A comprehensive public affairs effort is essential on all BWM and BACM RCR activities. For these activities, an effective public affairs plan will be initiated at the earliest opportunity. All communications with the public and the media regarding RCR activities will be coordinated and disseminated through appropriate public affairs channels.

*j.* Detailed requirements and procedures for BWM and BACM response, characterization, and remediation are contained in DA Pamphlet 385-64.

## **20-24. Occupational health program**

*a.* The Army OH Program consists of capabilities and activities necessary to identify, assess, and control disease and injury risks to military and eligible civilian personnel from exposures to IAT encountered due to their occupation. These exposures may occur in a clinical laboratory or in a biomedical research setting.

*b.* The installation, institute, or activity's SOH program will include a biological OH element meeting the requirements prescribed in DoDM 6055.18.

## **Chapter 21**

### **Chemical Agent and Non-Traditional Agent Safety Management**

#### **21–1. Applicability**

*a.* This chapter prescribes safety policy and procedures for the Army chemical agent and NTA safety program. The requirements of this chapter are applicable to all operations involving Army chemical agent and NTA.

*b.* Army chemical agents refers to the following:

(1) Schedule 1 chemicals, as listed in the Chemical Weapons Convention (CWC), in Army possession. Schedule 1 chemicals are identified in the CWC Annex on Chemicals, Part B–Schedules of Chemicals. The CWC Annex provides the chemical composition of the group of toxic chemicals included in the “type” (V-type, G-type, and others).

(2) NTAs, as defined by the CWC, in Army possession. NTAs are chemical agents as defined by DoDI 5210.65.

(3) DoD munitions with chemical fill at chemical weapons storage facilities (also called chemical stockpile storage facilities in DoDI 5210.65) and their associated Army chemical weapons destruction facilities as declared by the CWC.

*c.* This chapter applies to blister agents Levinstein mustard (H), distilled mustard (HD), mustard T-mixture (HT), and Lewisite (L) and to nerve agents Tabun (GA), Sarin (GB), Soman (GD), Cyclosarin (GF), and O-ethyl S-(2-Disopropylaminoethyl) methylphosphonothiolate (VX) (see glossary for definitions of these chemical agents) and other experimental chemical agents exhibiting toxicity similar to nerve and blister agents.

*d.* This chapter does not apply to commercially available or produced chemicals or to the RCWM Program, including munitions and certain materials of interest.

*e.* See DA Pam 385–61 for technical SOH requirements for management and control processes for operations involving chemical agents and associated weapons systems.

(1) DA Pam 385–61 is not mandatory for contingency or tactical military operations, but the chemical agent safety principles and practices should be used as a guide.

(2) Operations involving dilute chemical agent will comply with general industry SOH practices. Each installation or activity conducting RDT&E solution operations must have a program document that describes how these operations will be conducted. (RDT&E dilute solutions refers to DoD chemical agents whose quantity and/or concentration are at or below exemption levels as identified in AR 50–6.)

*f.* Waste associated with chemical agent environments and operations, including waste that is known or reasonably suspected to present a chemical agent hazard, will be managed, stored, and shipped according to existing laws and regulations. Waste will be transferred or released only to a facility with permits and licenses required for such waste.

#### **21–2. Chemical agent operations**

*a.* Army chemical agent operations will be executed in a safe, efficient, and effective manner that protects personnel involved in the chemical agent operations, the public, and the environment.

*b.* All aspects of the Chemical Demilitarization Program, including movement of munitions to the treatment facility or system and operation of the treatment facility or system, will be based on public safety risk considerations instead of maximum credible events or other traditional risk assessment procedures. The Chemical Demilitarization Program uses risk assessment procedures governed by federal statute, recommended by the Board on Army Science and Technology, and accepted by the CDC.

*c.* Where there is conflict, this publication takes precedence over the guidance contained in previously issued policy letters, technical manuals, field manuals, supply bulletins, technical bulletins, other DA pamphlets, and ACOMs, ASCCs, and DRUs, USARC, and the CNGB regulatory documents. Restrictions imposed by local governing agencies will be followed as required.

*d.* Activities that handle explosively configured Army chemical agents will develop an ESMP as a component of the installation ESMP. See chapter 22 for ESMP requirements.

#### **21–3. Chemical agent program management**

Commands and activities that conduct operations with Army chemical agents will develop a chemical agent safety program as part of their SOH program. The chemical agent safety program will consist of management and control processes addressing the following key components, in accordance with mandatory procedures in DA Pam 385–61:

*a.* Chemical agent air monitoring.

*b.* Chemical agent engineering controls and facility engineering design.

- c. OH.
- d. Specialized PPE for chemical agent use.
- e. Specialized training for chemical agent operations and support personnel.
- f. Special procedures for chemical agent emergency response and preparedness.
- g. Chemical agent recordkeeping.
- h. Chemical agent mishap notification, investigation, and reporting.
- i. Chemical agent transportation.
- j. Chemical agent unique decontamination.
- k. Special techniques for chemical agent storage.

#### **21–4. Army mishap class H chemical agent mishap**

- a. A chemical agent mishap is defined as an event in which the failure of facilities, equipment, or procedures may feasibly allow the possible unintentional exposure of personnel or the work environment to Army chemical agents, including dilute concentrations. Chemical agent mishap reporting and investigation will comply with the requirements of current guidance messages and applicable federal, state, and local requirements. Commanders will establish internal procedures to ensure initial notification, investigation, and reporting of a chemical agent mishap is accomplished per these requirements. All chemical agent mishaps will be investigated for the purpose of mishap prevention.
- b. Mishaps involving Army chemical agent will be reported and investigated in accordance with the requirements of chapter 3 of this regulation, AR 190–45, AR 190–59, mandatory procedures found in DA Pam 385–40 and DA Pam 385–61, current guidance messages, and federal, state, and local requirements, as applicable.
- c. Commanders and directors of chemical agent activities will—
  - (1) Establish internal procedures to ensure initial notification, investigation, and reporting of an Army chemical agent mishap is accomplished per these requirements.
  - (2) Investigate all Army chemical agent mishaps for the purpose of mishap prevention, as appropriate for the severity and consequences of the mishap.

#### **21–5. Evaluation of alternate personal protective clothing and equipment**

- a. Personal PPE that does not meet one of the following must be approved by the ODASAF, approval is required prior to use with Army chemical agents (not NTA); refer to DA Pam 385–61 for approval process:
  - (1) Type-classified (for example, assigned a national stock number) with specific intent including non-battlefield use.
  - (2) NATO-approved.
  - (3) NFPA/NIOSH certified for CBRN protection.
- b. Using type-classified, NATO, or NFPA/NIOSH (CBRN) PCE in an operational setting (such as industrial, training, or homeland defense) that exceeds the conditions of type classification, NATO approval, or NFPA/NIOSH (CBRN) certification must be approved by the ODASAF. For example, ODASAF approval would be required for longer use duration, use with a chemical agent not previously tested, addition of components (for example, communication equipment attached to the mask), or use in scenarios different from those intended by the classification, approval, or certification.
- c. Organizations requesting ODASAF approval of PCE in accordance with paragraphs 21–5a or 21–5b should contact the ODASAF for submittal requirements. Requesting organizations, at a minimum, will copy furnish their ACOM, ASCC, or DRU when submitting requests to the ODASAF. The ODASAF will task DACASC to evaluate alternate PCE requests and provide a recommendation.

#### **21–6. Training**

Training must be provided so that managers, supervisors, employees, and contractors are knowledgeable of the Army chemical agent hazards in the workplace, how to recognize hazardous conditions, signs and symptoms of Army chemical agent exposure, controls and safe work procedures, and emergency response. Mandatory training is described in DA Pam 385–61 and applicable OSHA standards including, but not limited to, 29 CFR 1910.1200, 29 CFR 1910.120, 29 CFR 1910.119, and 29 CFR 1910.1450. Managers and supervisors must understand their safety and health responsibilities and how to carry them out effectively.

#### **21–7. Chemical agent monitoring**

- a. Employers are required to limit employee workplace chemical exposures to nonhazardous levels and to protect the public around their workplaces. To meet these requirements, air monitoring as specified in DA Pam 385–61 must be conducted to determine the employee exposure level to individual hazardous chemicals. The factors in determining

airborne chemical exposure are type of contact, duration of contact, and chemical concentration. The purpose of an air monitoring program is to confirm whether specific hazardous chemicals are present and to determine if the concentration presents a hazard.

*b.* Monitoring must be performed using instruments selected to measure the proper parameters for the specific chemical encountered at its associated monitoring level. The instruments and methods used must be sufficiently sensitive to reliably measure threshold quantities at required levels. See mandatory procedures in DA Pam 385-61 for monitoring.

## **21-8. Inspections and preoperational surveys**

Use of the Chemical/Biological Inspection and Survey Worksheet (see DA Pam 385-61) is recommended for capturing inspection findings and observations and tracking closure of corrective actions.

## **21-9. Non-traditional agent safety**

*a.* Commanders, directors, and PEOs/PMs of NTA defense RDT&E facilities will designate a non-traditional agent safety officer (NTASO) in writing. NTASOs will—

- (1) Advise responsible commanders, directors, or PEOs/PMs on NTA-related occupational safety and health matters.
- (2) Review all NTA SOPs and risk assessments at NTA defense test facilities and laboratories.
- (3) Inspect NTA defense test facilities and laboratories at least quarterly for compliance with mandatory procedures in DA Pam 385-61.

*b.* Commanders, directors, and PEOs/PMs of NTA defense RDT&E facilities will establish a Non-Traditional Agent Safety Committee (NTASC) and define membership in writing. The NTASC will include professionals with backgrounds and experience in occupational safety and health, security (physical and information), and accountability. The NTASC will include a laboratory staff senior scientist and medical participant, if available. NTASCs will—

- (1) Oversee NTA defense test facility and laboratory NTA safety programs with assistance from laboratory occupational safety and health and industrial hygiene staff.
- (2) Act as an advisory group senior management on NTA-related occupational safety and health matters.
- (3) Review and recommend approval for all NTA SOPs and risk assessments at NTA defense test facilities and laboratories.
- (4) Provide advice and guidance on changes to NTA defense RDT&E operations based on NTA data.
- (5) Recommend infrastructure, facility, equipment, and PPE requirements to ensure the safety of NTA defense RDT&E.
- (6) Recommend NTA defense RDT&E operations-related occupational safety and health policy at NTA defense test facilities and laboratories.
- (7) Review laboratory NTA safety plan annually and make necessary revisions.
- (8) Ensure appropriate oversight for observation of preoperational exercises and readiness to conduct NTA defense RDT&E operations.

*c.* Commanders, directors, and PEOs/PMs or designated official of NTA defense RDT&E facilities will approve all NTA-related SOPs at NTA defense test facilities and laboratories.

## **Chapter 22**

## **Explosives Safety Management**

### **22-1. Introduction**

*a.* This chapter provides explosives safety policy for commanders with DoD military (AE) munitions missions and functions.

*b.* Commanders will use mandatory explosives safety standards in DA Pam 385-64 and this chapter.

*c.* Storage and handling of DoD military munitions must conform with DoD and Army standards for explosives safety. The exception is when more stringent criteria apply by agreement (for example, NATO or an HN). A copy of applicable agreements will be made part of the permanent real property records and site planning records.

*d.* This chapter applies to:

- (1) Activities and organizations with missions involving DoD military munitions;
- (2) Peacetime, wartime, contingency operations, training, exercises, military munitions responses, and RDT&E.

*e.* Mandatory explosives safety procedures specific to live-fire training are contained in DA Pam 385-63 and prescribed in AR 385-63/MCO 3570.1C.

## **22–2. Explosives safety management**

Consistent with peacetime, contingency, and wartime operational requirements and corresponding DoD military munitions requirements, it is Army policy to:

- a.* Provide the maximum possible protection to people and property from the potential damaging effects of an incident involving DoD military munitions.
- b.* Comply with mandatory procedures in DA Pam 385–64 and, when outside the United States, CJCSI 4360.01B, HN, multinational, or U.S. explosives safety standards, whichever is more stringent, unless an international agreement mandates compliance with specific criteria.
- c.* Use qualitative and quantitative risk-based explosives safety assessment tools and criteria as decision-making aids.
- d.* Minimize exposures consistent with safe and efficient operations (in other words, expose the minimum number of people for the minimum time to the minimum amount of explosives).
- e.* Enhance readiness and mission capability by providing for explosive safety management considerations throughout the military munitions’ lifecycle.
- f.* Implement and maintain an effective ESMP.
- g.* Prohibit the disposal of DoD military munitions on land or in water (for example, burying and dumping) except in an explosives or munitions emergency or when specifically authorized by the SECARMY or the SECARMY’s designee. This prohibition does not preclude covering munitions with earth to control fragments and noise during authorized testing or destruction by detonation or the use of in-situ capping when implemented as an engineered remedy under an authorized munitions response action.
- h.* Give precedence to explosives safety management principles and requirements that provide for immediate protection of people and property while complying with applicable environmental regulations.
- i.* Conduct appropriate munitions responses on Army real property that is known or suspected to contain DoD military munitions per applicable environmental laws and regulations and DoD and Army policy.
- j.* Prohibit unnecessary access (for example, recreational uses such as hunting, magnet fishing, and hiking) and take appropriate action to deter unauthorized access to areas under Army control that are known or suspected to contain DoD military munitions (UXO or discarded military munitions) that may upon evaluation by EOD or similarly qualified personnel be determined to be MEC.
- k.* Control authorized access to areas known or suspected to contain DoD military munitions that may be MEC under Army control, particularly operational range impact areas.

## **22–3. Explosives Safety Management Program leadership and support responsibilities**

In addition to the general ASOHP responsibilities delineated in chapter 2:

- a.* Senior commanders are responsible for synchronizing and integrating the installation’s explosives safety priorities and the installation’s ESMP. Subordinate and tenant commands will support the senior commander in execution of senior commander ESMP responsibilities. To protect Soldiers and their families who live on Army installations, Army employees and contractors who work on Army installations, and the public, particularly those who live in communities that surround Army installations, senior commanders will ensure that the installation’s ESMP includes a requirement for the installation to implement and maintain a 3Rs Program (see <https://www.3rs.mil>) Senior commanders will—
  - (1) Establish and implement a written installation ESMP (see para 22–4).
  - (2) Identify, program, document, and monitor ESMP resourcing requirements.
  - (3) Ensure AE operations have an Army and DDESB-approved quantity distance (QD) safety submission (explosives site plan (ESP) or chemical site plan (CSP)) or other DDESB–RESS (see para 22–9).
  - (4) Maintain a comprehensive list of all existing munitions operating facilities (for example, storage, renovation, demilitarization) and status of RESS (see para 22–9*i*).
  - (5) Maintain awareness of explosives safety deviations (see para 22–11). Ensure deviations are approved at the appropriate level of authority. Conduct and document annual reviews of deviations and provide a copy of each approval to USATCES. Report the cancellation of deviations to USATCES through the chain of command no later than 45 days after the date of cancellation.
  - (6) Monitor explosives safety staffing and competencies (see para 22–8). Identify and document key explosives safety positions and take measures to minimize staffing reductions and alleviate competency gaps in these positions. Promote use of the American National Standards Institute (ANSI)/installations FC Explosives Safety Certificate Program.
  - (7) Ensure DoD military munitions storage complies with approved QD safety submissions or explosive licenses and also complies with operational limits.

(8) Ensure installation Master Plan (or equivalent plans) and associated maps are maintained, current, and accurately depict explosives safety quantity distance (ESQD) arcs, range boundaries, and other areas known or suspected to contain AE that may be MEC.

(9) Maintain oversight of installation construction projects to ensure construction does not violate explosives safety criteria (see para 22-9a).

(10) Ensure procedures are in place to keep emergency responders (installation and surrounding community, when appropriate) informed of the locations of DoD military munitions operating facilities (for example, storage, production, demilitarization) and associated hazards. Ensure procedures are in place to keep all affected activities and personnel property trained and equipped for emergency response. Exercise AE emergency plans at least annually to ensure command and control procedures are known and effective.

(11) Establish procedures to assess annually in conjunction with the Installation Status Report and in coordination with the appropriate land-holding commands (NGB, AMC, IMCOM, and USARC), the operating status of explosives facilities to support recapitalization, disposal, and military construction decisions.

(12) Consult, as needed, with USATCES for explosives safety expertise for RM, site planning, and training.

*b.* Commanders of deploying units (battalion and above) will—

(1) Ensure explosives safety personnel (explosive safety specialists, safety officers, ammunition warrant officers, and QASAS) and others, as necessary, complete pre-deployment explosives safety training provided by USATCES.

(2) Consult, as needed, with USATCES for reach-back explosives safety expertise for site planning, training, and RM.

*c.* Army leaders of organizations with AE missions and functions will—

(1) Establish, manage, and direct the organization's ESMP according to the requirements of this regulation, mandatory procedures in DA Pam 385-64, and the installation's ESMP.

(2) Reinforce a culture of AE safety and discipline by:

*(a)* Ensuring proper management and handling of DoD military munitions.

*(b)* Ensuring proper manning and execution of a commander's ESMP.

*(c)* Ensuring proper resourcing.

*(d)* Reinforcing command engagement in explosives safety and DoD military munitions management.

*(e)* Ensuring personnel receive training commensurate with their level of responsibilities.

(3) Maintain awareness of the posture of their ESMP and explosives safety deviations.

*d.* Safety directors/managers of organizations with an AE mission will—

(1) Serve as the primary POC for ESMP-related actions and coordination with other SMEs, agencies, and stakeholders as necessary to maximize awareness and solicit input for consideration.

(2) Keep leadership informed of the organization's ESMP posture and explosive safety and related issues.

(3) Ensure:

*(a)* Explosives safety deviations are accurate and current, and that appropriate mitigation measures are implemented.

*(b)* Incoming leaders are advised, when the organization's leadership transitions, of existing deviations and ensure the incoming leader accepts the risk by renewing and approving applicable DARADs.

*(c)* Explosive mishaps are properly reported, investigated, and analyzed.

*(d)* Explosives safety training requirements are identified, complied with, resourced, and documented.

*(e)* QASAS provide requested technical assistance to the organization's safety office as delineated in recommended and mandatory procedures in DA Pam 385-64.

*(f)* Ammunition warrant officers provide requested support to the organization safety office and leadership to tactical units.

(4) Conduct periodic evaluations to ensure the effectiveness of the organization's ESMP.

## **22-4. Explosives Safety Management Program requirements**

*a.* Commanders of units with an AE mission will implement an ESMP that complies with the installation ESMP.

(1) Units with missions that involve only small arms ammunition, EOD operations, or munitions response (clean up) are excluded from the requirement to develop an ESMP but will include applicable explosives safety management requirements in internal SOPs.

(2) Units receiving DoD military munitions for live-fire training or operational mission do not require an ESMP but will include applicable explosives safety management requirements in internal SOPs.

(3) Units whose AE mission involves only specialty explosives devices (for example, squibs, flash bangs, simulators, flares, cartridge actuated devices, propellant actuated devices, signals, and so forth) do not require an ESMP, but will include applicable explosives safety management requirements in internal SOPs.

(4) A memorandum of understanding should be used to work out any conflicts between supporting and supported organizations.

*b.* ESMPs will address:

(1) Organization and staffing.

(a) Identify the explosives safety responsibilities of all organizations with AE missions.

(b) Require inclusion of explosives safety in the senior commander's safety council.

(c) Designate a qualified explosives safety POC for management of the command's ESMP. Minimum qualification is attainment of installations FC Explosives Safety Level II Professional Certification.

(d) Tenant organization/activities will coordinate explosives safety requirements with the senior commander.

(2) RESS and explosives safety licensing.

(a) Specify the process and the roles and responsibilities for staffing and approval of RESS for submission to the USATCES for Army review and approval and submission to the DDESB.

(b) Establish a process for annual reviews of the installation Master Plan for AE locations to monitor and prevent encroachment within an ESQD and ensure RESS and explosives licenses are accurate and submitted in compliance with Army and DoD policy.

(c) Define areas that require explosives licensing, the process for obtaining explosives licensing, and required information on explosives licenses.

(3) Emergency response coordination and planning.

(4) Installation master planning.

(a) Specify responsibilities to coordinate participation with senior commander's explosives safety POCs participation in the installation master planning process.

(b) Outline process for annual reviews of the installation Master Plan for AE locations to monitor and prevent encroachment within an ESQD and to ensure RESS and explosives licenses are accurate and submitted in compliance with Army and DoD policy and the Real Property Utilization Board.

(c) Ensure the Real Property Utilization Board reviews the installation Master Plan for AE locations when proposing new uses or changes in use of real estate.

(5) RM. Outline explosives safety RM responsibilities and process, including levels of risk acceptance for commanders and coordination of explosives safety deviations pursuant to requirements in DA Pam 385-64.

(6) Records management. Outline requirements and responsibilities for records management, including designation of the repositories for explosives safety records (for example, lightning protection system tests, inspections, deviations, site plans).

(7) Inspections/evaluations/audits/annual reviews.

(a) Outline responsibilities and procedures for conducting and assessing internal inspections/evaluations/audits/reviews, correcting deficiencies, and tracking/reporting closure of findings.

(b) Outline responsibilities for conduct of DCS, G-4 inspections, correction of deficiencies, and tracking/reporting closure of findings.

(c) Address option for requesting an ESAV during non-DCS, G-4 review.

(8) Training.

(a) Establish a qualification program that includes personnel supervising or performing AE related functions.

(b) Identify training requirements by activity (for example handling, transportation, and so forth) (see mandatory procedures in DA Pam 385-64).

(9) Establish and maintain an installation-specific 3Rs Program (see website at <https://www.3rs.mil>) to advise Soldiers and their families, personnel that work on or visit an installation, and the surrounding communities of the dangers associated with AE and the actions to take should they encounter or suspect they have encountered a DoD military munition (AE).

(10) Prohibit magnet fishing on installations.

(11) Access control.

(a) Outline responsibilities and procedures for the identification and control of areas known or suspected to contain AE that may be MEC.

(b) Delineate AE routes, dedicated impact areas, dedicated dud areas, contaminated areas, and so forth.

## **22-5. Explosives safety mishap reporting**

See paragraph 3-8 for explosives safety mishap reporting requirements.

## **22–6. Worldwide Department of Defense Military Munitions Logistics/Explosives Safety Review and Technical Assistance Program**

*a.* The U.S. Army Defense Ammunition Center's Logistics Review and Technical Assistance Office conduct surveys of AE logistics management and explosives safety surveys of installations in accordance with AR 700–13 on a 4-year cycle. These surveys assess compliance with applicable DoD and Army policy for the management of DoD military munitions and applicable DoD and Army explosives safety criteria. (Contractor operations will be evaluated against DoD 4145.26–M.)

*b.* The DCS, G–4 and ODASAF—

(1) Oversee these Logistics Review and Technical Assistance Office surveys, including development and approval of survey criteria and matters of special interest.

(2) Review survey reports to identify:

(a) AE safety and logistics programmatic findings and trends.

(b) Implement corrective actions.

## **22–7. Explosives safety assistance visits**

*a.* USATCES conducts ESAVs to evaluate the effectiveness of a command's, installation's, or activity's ESMP.

*b.* An ESAV assesses compliance with applicable regulatory requirements, identifies shortcomings, and provides assistance to improve their ESMP. Assistance can be provided for, among other matters, determining requirements for RESS; developing QD safety submissions (for example, ESP); evaluating AE operations (for example, the application of QD; presence of lightning protection systems; the conduct of munitions responses); management and processing of material potentially presenting an explosive hazard, material documented as an explosive hazard, and material documented as safe; explosives safety for operational and test ranges, including range clearance and modernization activities; and live-fire training and testing.

*c.* Commands, installations, or activities—

(1) Are not required to respond to ESAV findings.

(2) Should contact USATCES if they desire an assistance visit.

## **22–8. Explosives safety training**

Explosives safety is a core competency of installations FC SOH professionals. Consistent with their responsibilities, Army SOH professionals will be trained and competent in AE safety and explosives safety management procedures.

*a.* Installations FC personnel in job series 0017, 0018, and 0803 will complete the following training and are encouraged to obtain the ANSI/Installations FC Explosives Safety Level 1 certificate:

(1) Introduction to Ammunition (course 9E–F67/921–F35 (DL) (Ammo–45)).

(2) U.S. Army Explosives Safety Familiarization (course 4E–F44/645–F28 (DL) (Ammo–63)).

(3) Ammunition Publications (4E–F62/645–F46 (DL) (Ammo–78)).

(4) Introduction to Explosives Safety Management for Safety Professionals (course 4E–F26/431–F10 (DL) (Ammo–107)).

*b.* Installations FC personnel in positions with explosives safety roles and responsibilities are required to complete training in advanced explosives safety management to include the following, and will obtain the ANSI/Installations FC Explosives Safety Level 2 certificate:

(1) Army Electrical Explosives Safety (course 4E–F33/645–F17(DL) or 4E–F32/645–F16(IL) (Ammo–28)).

(2) RM and Prep of SOPs for Ammo and Explosives (course 9E–F68/920–F36(DL) or 9E–F60/950–F39(IL) (Ammo–54)).

(3) Munitions History Program (course 4E–F64/645–F48(DL) (Ammo–97)).

(4) Application of U.S. Army ESQD Principles (course 4E–F65/645–F49(DL) (Ammo–99)). Army Explosives Safety Quantity Distance and Site Planning Course (course 4E–F24/431–F8 (IL) (Ammo–82)) is the equivalent to both Ammo–99 and Ammo–100.

(5) Army Explosives Safety Site Planning (course 4E–F25/431–F9(DL) (Ammo–100)). Army Explosives Safety Quantity Distance and Site Planning Course (course 4E–F24/431–F8 (IL) (Ammo–82)) is the equivalent to both Ammo–99 and Ammo–100.

(6) Ammunition and Explosives Storage Safety (course 4E–F28/645–F12(DL) (Ammo–112)).

(7) Advanced Explosives Safety Management Workshop.

(8) Army Explosives Safety Deviations Workshop.

*c.* Installations FC personnel performing industrial and/or RDT&E missions and functions must also complete training designed to provide requisite knowledge, skills, and abilities in these areas to include:

(1) Army Contract Safety Course.

(2) Explosives Safety in RDT&E and Industrial Environments Workshop.

*d.* Installations FC personnel with explosives safety roles and responsibilities in munitions response missions and functions must also complete training designed to provide requisite knowledge, skills, and abilities as listed in paragraph 22-8c, including Military Munitions Rule (course 4E-F46/645-F30 (DL) (CERT) (Ammo-68)).

## **22-9. Quantity distance safety submissions (explosives site plans and chemical agent site plans)**

*a. New facilities and construction.*

(1) For potential explosion sites, QD safety submissions will be submitted as required by, and will comply with, Army and DoD explosives safety criteria. QD safety submissions or amendments to approved QD safety submissions are required for construction of new munitions operating facilities and sites (for example, storage, production, ammunition pads) and major modifications of existing munitions operating facilities and sites.

(2) For ESs, an ESP or amendment to an approved QD safety submission may be required for construction or placement of a facility or structure within an ESQD arc.

(3) The command or project proponent will submit a complete construction project proposal through command channels to USATCES for review and approval prior to obtaining approval for construction or modification of potential explosion sites and ESs. This submission is required, regardless of the project's cost or the intended use of the facility or structure. This requirement applies to:

(a) Tenant activities, regardless of Service or agency, on Army installations or activities.

(b) Army tenants on other Service installations or activities.

(c) Other locations for which Army has explosives safety responsibilities, and where DoD military munitions may be present.

(4) USATCES will review proposals for construction projects, major modifications, or construction of placement of structures within an ESQD to ensure compliance with Army and DoD explosives safety criteria.

*b. Ammunition and explosives mission requirements that increase the level of risk.* An ESP or an amendment to an approved ESP is required when the use (for example, increased storage) or remodeling of a munitions operating facility increases the associate level of risk. Although an amendment or ESP are not required for remodeling or changes in use that pose a similar or lower level of risk, a correction to an approved ESP may be required.

*c. Quantity distance safety.* QD safety submissions will be submitted as described in DA Pam 385-64.

(1) The command or organization responsible for operating the munitions operating facility or site will, in compliance with the senior commander's ESMP, develop, or request and coordinate with explosives safety SME support to develop, the required ESP.

(a) Develop the ESP or request the designated safety office initiate the required ESP.

(b) Provide the designated safety office the information required to develop and coordinate the ESP.

(2) The command or organization responsible for operating the munitions operating facility or site will coordinate the ESP as the senior commander's ESMP requires. Normally, ESPs will be coordinated with:

(a) The appropriate safety offices, as indicated in the ESMP;

(b) Installation master planner or office responsible for facility master planning;

(c) Facility engineers; and

(d) Offices with primary responsibility for munitions management, logistics management, the supporting QASAS, security, and the supporting F&ES and affected operating and tenant units.

(3) The responsible command or organization will review and approve the completed ESP and forward it to the designated (per the ESMP) safety office for forwarding to USATCES (see also para 22-9e).

(4) Use of explosives safety siting (ESS) software is mandatory. Requests to submit by other means must be justified in writing and submitted to USATCES for consideration. USATCES may be contacted for ESS technical assistance.

(a) Organizations with ESS software will submit ESP or CSP using this software.

(b) Organizations that do not have ESS software will submit site plans in electronic format by converting required documents to a PDF and either emailing it to USATCES or uploading it to a secure server.

*d. Risks to other Services.* When the ESQD from an Army explosive site pose a risk to another Service or a non-DoD entity, the responsible command or organization must obtain the affected Service's or non-DoD entity's acceptance of risk and include it with QD safety submission.

(1) The affected Service's or non-DoD entity's acceptance of risk must be at the appropriate level based on the risk being accepted.

(2) USATCES will finalize coordination with the other Service's headquarters, if required.

*e. Quantity distance safety submission reviews and approval.* The chain of command will—

(1) Indicate in a letter of transmittal its approval of the QD safety submission;

(2) Address in the transmittal changes, modifications, or specific precautionary or mitigating measures it considers necessary.

(3) Forward the command approved QD safety submission and required documentation to the Director, USATCES.

*f. Expedited quantity distance safety submission reviews.* Commands requesting an expedited review of QD safety submission will provide the following information for review:

(1) The date approved required.

(2) The proposed contract award date.

(3) The reason the priority action is needed.

*g. Munitions operating facilities built before January 1958.*

(1) Effective 30 September 2024, the U.S. Army will require either a DDESB-approved QD safety submission (for example, an ESP) or DA Form 7632 DARAD, which the appropriate level of command has approved, for DoD military munitions operating facilities built before January 1958 and to which Commands have applied the previously authorized exemption for QD safety submissions. This change will not apply to:

(a) Those DoD military munitions operating facilities for which the ASA (IE&E) has approved a SecCert.

(b) DoD military munitions storage locations storing stockpiled chemical munitions pending demilitarization under the Assembled Chemical Weapons Alternatives Program.

(2) When preparing QD safety submissions or DARADs, use the following criteria:

(a) DoD military munitions storage magazines for which the as-built construction, current condition, or appropriate type and blast-load rating (7-BAR, 3-BAR, or undefined) is not known will be considered undefined for storage and siting purposes. Earth-covered magazines for which the command is not maintaining the appropriate level of earth cover (a minimum thickness of 2 feet (0.61 m)) will be considered as above-ground magazines.

(b) The DARAD for storage magazines will include a statement that addresses how the storage magazine will be brought into compliance with DoD explosives safety criteria by the end of the Program Objective Memorandum cycle 2020 to 2024. An ESP will be prepared once the storage magazine is brought into compliance.

(3) The user is responsible for developing, coordinating (as appropriate), and submitting an ESP in accordance with the senior commander's ESMP.

*h. Facility closure.* Upon closure of a DoD military munitions operating facility or site, closure and cancellation of the RESSs will be reported through the chain of command to USATCES no later than 45 days from date of closure.

*i. List of Department of Defense military munitions operating facilities.* Army installations and activities will—

(1) Develop and maintain a comprehensive listing of existing munitions operating facilities and sites. Each explosives facility and site will be identified by:

(a) Building number or facility/site identification.

(b) Type (for example, earth-covered magazine, above-ground magazine, production facility, Resource Conservation and Recovery Act-permitted AE treatment facility, pad).

(c) User, and owner if different from user, as applicable.

(2) Indicate one of the following for each munitions operating facility and site as:

(a) Having an Army and DDESB-approved ESP or one has been submitted to USATCES for Army approval and submission to the DDESB (reference USATCES file number for each ESP).

(b) Being grandfathered, with the required documentation on file. (Not applicable after 1 October 2024.)

(c) Having an approved DARAD or Secretarial Exemption.

(d) Does not require an ESP (see DA Pam 385-64), and why.

(e) Requires an ESP, but has not submitted one and does not have an approved DARAD.

## **22-10. Explosives licensing policy**

Commanders will ensure—

*a.* Explosives licenses are maintained for each location where AE will be processed or stored on a permanent, routine, or recurring basis and the location does not have an Army or DDESB-approved ESP. The license will be interim authorization for munitions to be stored or processed until the RESS is approved.

*b.* Compliance with the explosives license's requirements.

## **22-11. Deviation from explosives safety criteria**

DoD and Army explosives safety criteria are established to protect people from serious injury or loss of life, and critical assets and property from damage or destruction. Such criteria are not intended to be so rigid as to prevent the U.S. Army from accomplishing its assigned mission. Prior to deviating from explosives safety criteria, the responsible authority must assess the risk to personnel and property against strategic or other compelling reasons.

*a. New construction or facility modification.* Prior to construction of a new potential explosive site, ES, or performing major modifications (greater than 15 percent of current value) to an existing facility, the commander or responsible authority must obtain an approved QD safety submission (an ESP or CSP). When a commander or responsible authority determines that the required construction or modification will violate explosives safety criteria, the commander or responsible authority must obtain a SecCert prior to constructing or modifying the facility. To obtain a SecCert, the commander or responsible authority must certify that the projects are essential due to operational necessity or other compelling reasons. The request for a SecCert must be endorsed by the chain of command (see mandatory procedures in DA Pam 385-64).

*b. Existing facilities.* When an existing facility is determined to violate DoD or Army explosives safety criteria, the associated risk must be covered by a DARAD completed in accordance with mandatory procedures in DA Pam 385-64 and accepted at the appropriate level of command.

*c. Violations.* When an operation will violate DoD or U.S. Army explosives safety criteria, the commander or responsible authority must complete a DARAD pursuant to procedures in DA Pam 385-64 and it must be accepted at the appropriate level of command.

*d. Technology advancements.* Where the provisions of this regulation do not provide guidance or requirements for new and emerging technologies in explosives formulations and process equipment, a risk assessment will be prepared and accepted at the appropriate level of command prior to the implementation of the process (also see DA Pam 385-64).

## **22-12. Hazards of electromagnetic radiation to ordnance (ammunition and explosives or Department of Defense military munitions)**

AE containing electrically initiated devices (EIDs) (for example, exploding foil initiators, laser initiators, burn wires, fusible links, hot bridge wires, carbon bridges, and conductive compositions) will be designed or protected such that EMR does not cause an inadvertent initiation, degradation, or disablement. Both direct RF induced actuation of the EID or electrical coupling to and triggering of the associated firing circuits can occur, especially in a tactical radiated EME.

*a. Certification of Department of Defense military munitions.*

(1) HERO certification is the assignment of a HERO classification to an ordnance or AE item by a technically competent, designated activity using the results of test or analysis. Obtaining HERO certification ensures HERO information is available on the subject ordnance item used in the field to ensure the maximum possible protection to people and property from the potentially damaging effects of an inadvertent actuation of DoD military munitions containing an EID. It also ensures the reliability of the munition is not adversely affected by exposure to electromagnetic energy. Programs and MATDEVs responsible for the design, development, T&E, and sustainment of munitions will use this process to obtain HERO certification for all military munitions.

(2) HERO certification requirements are as follows:

(a) DESR 6055.09 requires that military munitions containing EIDs be designed or protected such that EMR does not cause an inadvertent initiation, degradation, or disablement. Both direct RF induced actuation of the EID or electrical coupling to and triggering of the associated firing circuits can occur, especially in a tactical radiated EME.

(b) During acquisition, HERO evaluation and certification of DoD military munitions will be accomplished, both for routine employment mission profiles and for any anticipated Joint or combined operational employment to include all six phases of the S4 in the EME cited in MIL-STD-464 (table 9) and applies during the disposal of munitions.

(c) The HERO evaluation and certification process addresses the possibility that different HERO classifications may occur for an individual ordnance item depending on the phase of S4. For example, an ordnance item may be considered HERO SAFE during storage, but maintenance of the item may defeat shielding resulting in increased susceptibility to the EME, changing the items HERO classification.

*b. Stockpile-to-safe separation sequence.* S4 are the progressive stages (phases) that begin at the time the munitions are developed/designed and manufactured and continue until it is expended or reaches a safe distance from the launch vehicle/platform/system. This progression is referred to as the S4 and may consist of up to six of the following distinct stages in which varying degrees of susceptibility can result from unique physical configurations or operational EMEs:

(1) *Transportation/storage.* The phase in which the munitions are packaged, containerized, or otherwise prepared for shipping or stored in an authorized storage facility. This includes transporting of the munitions.

(2) *Assembly/disassembly.* The phase involving all operations required for munitions build-up or breakdown and typically involves personnel.

(3) *Staged.* The phase where the munitions have been prepared for loading and are prepositioned in a designated staging area.

(4) *Handling/loading*. The phase where physical contact is made between the munitions item and personnel, metal objects, or structures during the process of preparing, checking out, performing built-in tests, programming/reprogramming, installing, or attaching the munitions item to its end-use platform/system; for example, aircraft, launcher, launch vehicle, or personnel. These procedures may involve making or breaking electrical connections, opening and closing access panels, and removing/installing safety pins, shorting plugs, clips, and dust covers. This configuration also includes all operations required for unloading; in other words, removing, disengaging, or repackaging the munitions item.

(5) *Platform-loaded*. The phase where the munitions item has been installed on or attached to the host platform/system (for example, aircraft, ground vehicle, and personnel and so forth) and all loading procedures have been completed.

(6) *Immediate post-launch*. The phase where the munitions item has been launched from its platform/system, but up to its safe separation distance with regard to the actuation of its explosives, pyrotechnics, or propellants.

c. *Recertification of military munitions*. HERO certification will be done when legacy military munitions are redesigned or before military munitions are employed in an EME for which they were not previously HERO certified.

d. *Hazards of electromagnetic radiation to ordnance database*. Data from HERO evaluations will be compiled in an Army-approved centralized data repository to support the Joint Spectrum Center Ordnance Electromagnetic Environmental Effects Risk Assessment Database for subsequent use in information applications.

e. *Electromagnetic environment controls*. Commanders will ensure that HERO effects on military munitions are resolved during the planning of Joint or combined operations and training exercises. Such measures may include:

- (1) Identifying susceptibilities.
- (2) Quantifying EMEs.
- (3) Evaluating risks associated with operating procedures.
- (4) Establishing tailored emission control instructions.

f. *Posting of radio frequency warning signs*. Areas where the levels of RF EMFs constitute a radiation hazard to military munitions or to flammable materials located in areas where radiation hazards to military munitions exist will be clearly marked with warning signs or labels for mobile emitters.

g. *Hazards of electromagnetic radiation to ordnance warning signs*. Warning signs will be posted at each location where radar equipment or other possible sources of EMR might create the potential for premature initiation of military munitions. Warning signs—

(1) Will be placed along transportation routes approaching military munitions operations (for example, missile assembly and munitions piers) at designated locations.

(2) Should alert operators of mobile or portable emitter systems to a potential hazard and restrictions when using these emitters (for example, radios and cellular telephones) past the designated point.

h. *Radio frequency identification*. Prior to using electronic equipment that intentionally generates RF energy to identify or track military munitions or for use within a military munitions storage or operating facility (for example, assembly or disassembly and build-up areas) commanders will ensure that qualified personnel have evaluated and certified such equipment for use by comparing the device's radiated emission characteristics with respect to a military munition's potential susceptibility and determining a safe separation distance (see para 22-9).

## **22-13. Explosives safety and munitions risk management for Joint operations planning, training, and execution**

Apply current version of CJCSI 4360.01B.

## **22-14. Process safety management**

a. Process safety management (PSM) is OSHA's standard for management of hazards associated with highly hazardous chemicals and establishes a comprehensive management program that integrates technologies, procedures, and management practices. PSM is addressed in 29 CFR 1910, general industry standards, and 29 CFR 1926.

b. PSM is required for all manufacturing operations involving DoD military munitions (explosives) to include mixing, blending, extruding, synthesizing, assembling, disassembling, and other activities involved in the making of a chemical compound, mixture, or device which is intended to explode. Unlike other highly hazardous chemicals covered by PSM, DoD military munitions do not have a listed threshold quantity under current OSHA standards. If any quantity of DoD military munitions (explosives) is manufactured as discussed in this paragraph, then the manufacturing process is covered by the PSM standard. PSM is not intended for RDT&E operations.

c. The following DoD military munitions manufacturing and demilitarization activities will develop a written PSM program that implements the mandatory procedures in DA Pam 385-64:

(1) Operations involving highly hazardous chemicals listed in 29 CFR 1910.119 Appendix A, which exceed applicable threshold quantities.

(2) DoD military munitions manufacturing operations defined as the mixing, blending, extruding, synthesizing, assembling, disassembling, and other activities involved in the making of a chemical compound, mixture, or device designed to explode.

(a) For production operations, these requirements are applicable from time chemical materials are introduced/removed from DOT packaging until the completed product is placed in DOT-approved packaging configuration, unless configured into a 1.4 hazard classification configuration.

(b) For maintenance/demilitarization operations, these requirements are applicable to operations that change the physical state of energetic material (melt out, steam out, cryo-fracture, hydrolysis, and so forth) or disassemble an article from a final configuration which exposes energetics not normally exposed in a user environment (for example removing fuze well liners).

(c) For load assemble pack (LAP) operations, these requirements are applicable to LAP operations until the point the material is placed in DOT-approved packaging configuration.

d. A written PSM program is not required for the following DoD military munitions activities:

(1) DoD military munitions activities for which a documented process hazards analysis, which complies with 29 CFR 1910.119(e), determined that a catastrophic release of toxic, reactive, flammable, or explosive chemicals would not be the consequence of a mishap.

(2) The intentional functioning of DoD military munitions.

(3) The assembly or disassembly of separate finished components (for example, a fuze) to a DoD military munition in its final configuration (for example, installing or removing a fuze from a projectile, replacing like components during maintenance operation).

(4) The conduct of quality assurance functions (for example, surveillance inspections, repackaging).

(5) Storage of DoD military munitions.

## **22-15. Improvised explosives and homemade explosives**

a. Improvised explosives (IE)/homemade explosives (HME) is defined as an explosive compound or chemical mixture, produced from precursor materials, that is not designed for traditional military or commercial use. Precursor materials, commercially produced chemicals, and explosives used to produce IE/HME are not in and of themselves considered IE/HME. IE/HME includes:

(1) *Primary explosives*. Primary explosives include triacetone triperoxide (TATP), hexamethylene triperoxide diamine (HMTD), and methyl ethyl ketone peroxide (MEKP).

(2) *Secondary explosives*. Secondary explosives include hydrogen peroxide and fuel explosives, potassium perchlorate and fuel explosives.

(3) *Tertiary explosives*. Tertiary explosives include certain ammonium nitrate created or combined to produce an explosive material.

b. RM will be used to provide the maximum possible protection to personnel and property during operations that involve IE/HME. Operations involving IE/HME or precursor materials will comply with applicable Army RM policy and requirements and safety standards, ACOM/ASCC/DRU and command safety policy and standards, and unit SOPs.

c. Commanders will ensure that only the minimum number of personnel are exposed to the minimum quantity of IE/HME or other explosives for the minimum time, consistent with safe and efficient operations.

d. Suspected IE/HME will be assumed to be in the most hazardous state or condition and considered extremely dangerous and unstable until confirmed otherwise by a designated EOD personnel or civilian bomb squad emergency response authority or chemist. Because of the unknown explosive effects of finished IE/HME, the determination of adequate explosives safety separation distances to provide protection to personnel and materiel assets can be difficult to assess. Until positive identification is made, IE/HME will be assumed to be equivalent to the effects of trinitrotoluene (TNT) (1 pound of IE/HME = 1 pound of TNT) and the sensitivity of nitroglycerine.

e. IE/HME operations, storage, and training on Army installations or Army-controlled facilities must be communicated and coordinated with the senior commander, garrison commander, and Department of Emergency Services.

f. The primary focus during an IE/HME incident or explosives emergency is to mitigate the risk of a catastrophic explosive event. Every other function is secondary.

g. Prior to performing assigned duties, and pursuant to mandatory procedures in DA Pam 385-64, personnel conducting IE/HME detection, identification, sampling, analysis, collection, render safe, transportation, storage, disposal, or training must—

(1) Receive training in the characteristics, hazard controls, safety policy, and standards for IE/HME operations.

(2) Participate in the development of, or receive briefing on, the applicable risk assessments and procedures for the safe handling or destruction of IE/HME and constituent materials.

(3) Be provided with PPE and tools and materials required for the safe execution of their IE/HME responsibilities.

h. Follow the mandatory procedures in DA Pam 385-40 for notification and reporting of mishaps associated with IE/HME response actions as well as IE/HME training. Notification of such mishaps will be through the chain of command to the DA HME Safety Working Group at email usarmy.pentagon.hqda-aso.mbx.ihmeh@army.mil in addition to the Army Operations Center at email usarmy.pentagon-e.hqda.mbx.armywatch@army.mil.

## **22-16. Munitions shipments requiring satellite motor surveillance service**

a. The SDDC's Defense Transportation Tracking System (DTTS) Program Management Office monitors the safe and secure transport of arms, ammunition, and explosives, and other sensitive material moving by commercial trucks and barges within North America using satellite and cellular technology, and 24-hour oversight to facilitate a response to an emergency.

b. Commanders and/or the responsible authority must ensure compliance with applicable requirements of the DTR 4500.9-R-Part II Chapter 205 for shipments requiring satellite motor surveillance service. In addition to other applicable DTR 4500.9-R requirements, installations and activities shipping DoD military munitions by a transportation service provider (commercial carriers) will:

(1) Ensure sufficient personnel maintain an active Transportation Geospatial Information System (TGIS) account.

(2) Release shipments in Global Freight Management or cargo movement operations system with sufficient lead time to allow electronic data interchange between the shipper system and TGIS/DTTS.

(3) Prohibit a transportation service provider with shipments requiring munitions shipments requiring satellite motor surveillance service from departing the installation until the required shipment information is confirmed in TGIS/DTTS. When required, the transportation service provider will be held in safe haven or a vehicle holding area that meets the applicable Army and DoD explosives safety criteria.

(4) Manually input the required information into TGIS/DTTS in the event the required shipment information does not transfer from the shipper's system to TGIS/DTTS.

c. Commanders of installations and activities that are notified of a satellite motor surveillance service shipment that is not in the system (NIS) will—

(1) Report, within 24 hours of notification, the cause for shipments identified as NIS to the command's higher headquarters (for example, AMC, ARNG, USAR, U.S. Army Special Operations Command) and the consignee; and

(2) Conduct a root cause analysis of each NIS shipment and report the results to the command's higher headquarters and, as appropriate, the consignee within 7 days.

d. Commanders of ACOMs, ASCCs, DRUs, and CNGB will provide DCS, G-4, Strategic Mobility's Transportation Policy Division a monthly summary of the root cause analyses for shipments that their subordinate command has listed as NIS.

## **Chapter 23**

### **Army Electrical Safety Program**

#### **23-1. Introduction**

This chapter prescribes requirements for integrating electrical safety consensus standards, techniques, and procedures into Army safety management systems and operations to mitigate the risk of electrical safety hazards.

#### **23-2. Authority**

All applicable DoD, Army, federal, national, and international electrical safety consensus standards will be integrated into all operations and apply to all DA personnel. These requirements include 29 CFR 1910 Subpart S, EM 385-1-1, UFC 4-021-01, TB 385-4, UFC 3-560-01, NFPA 70, NFPA 70E, and ANSI/IEEE C2 and HN requirements, whichever are more stringent. Unless otherwise noted, all documents refer to the version in force at the time of use.

#### **23-3. Technical assistance**

Specific guidance and tools to support hazard identification as well as safe electrical work practices and procedures for the effective implementation of a comprehensive electrical safety program can be found at the Combat Readiness Center program support resource page <https://safety.army.mil/on-duty/workplace/electrical>.

## **23–4. General electrical safety program requirements**

The electrical safety program will include the following elements:

- a.* Policy and procedures for electrically safe work practices.
- b.* Authority having jurisdiction (AHJ) and AHJ hierarchy of authorities for interpreting electrical safety requirements; approving equipment, assemblies, and materials; determining the acceptability of electrical installations; and approving electrical risk assessments.
- c.* A qualified person will be appointed in writing to manage the electrical safety program and will—
  - (1) Provide issue clarifications and interpretations of electrical safety standards, codes, and requirements.
  - (2) Approve alternate methods for implementing electrical safety standards and requirements.
  - (3) Serve as the POC for inquiries, safety concerns, notices, electrical safety bulletins, occurrences, and trends.
  - (4) Identify, communicate, and elevate to line management, as necessary, violations of electrical safety and identify requirements for enforcement and correction in a timely manner.
- d.* Participate in investigations of electrical incidents/occurrences and contribute to recommended mitigation controls.
- e.* Assess status and issues associated with the Army Electrical Safety Program to Army safety management and recommend resolution.
- f.* Establish training priorities and develop training criteria to facilitate success of electrical safety expertise within the U.S. Army.
- g.* An electrical safety SME who will—
  - (1) Serve as a consultant for electrical safety within their domain of expertise including SOP development and safe work practices.
  - (2) Assist in hazard identification and control.
  - (3) Evaluate and approve unlisted electrical equipment.
  - (4) Clarify electrical codes, standards, and regulations.
  - (5) Provide electrical safety awareness and competency training.
- h.* Supervisors who authorize or oversee electrical work who will—
  - (1) Authorize electrical workers to perform hazardous electrical work after verifying they are qualified, have successfully completed required training, and have the proper tools, PPE, and other resources required to perform their work safely under an approved SOP.
  - (2) Maintain electrically safe working conditions in their areas of responsibility and authority, to include the use of nationally recognized testing laboratory (NRTL)-listed or host country equivalent approved equipment.
  - (3) Resolve deficiencies noted in electrical inspections and assessments.
  - (4) Report shocks and mishaps immediately and ensure that any worker receiving an electrical injury or shock obtain immediate medical attention.
- i.* Personnel working on energized electrical equipment will maintain proper qualifications, participate in the pre-job briefings for each work activity, follow work as described in the SOP to mitigate hazards, and follow controls including proper use of PPE, stop work immediately when an operation is perceived to present an imminent danger, and immediately report shock, electrical flash, arcing, or fire incidents.
- j.* The Electrical Safety Committee (ESC) serves as the governing body to execute the Army Electrical Safety Program by adjudicating final technical oversight for matters related to electrical safety, guiding implementation of the Electrical Safety Program, and in the development, maintenance, and revision of institutional electrical safety requirements. The ESC serves as the AHJ for the Army Electrical Safety Program and provides guidance, assistance, and support to the Army's electrical safety office.
- k.* Training and qualification requirements as follows:
  - (1) A qualified person is one who has skills and knowledge related to the construction and operation of the electrical equipment and installations and has received safety training to recognize and avoid electrical hazards. Qualified persons will be trained and re-trained in accordance with applicable consensus standards and NFPA 70E.
  - (2) An unqualified person is one who does not work close to exposed energized circuits and is untrained in recognizing hazards associated with working on such circuits but may be in the vicinity of qualified personnel close to exposed energized circuits. Unqualified persons will receive training to include, at a minimum, the recognition of electrical safety warning signs, the location of shutoff switches and breakers, and emergency call procedures.
  - (3) All Army personnel will receive general electrical safety training as an element of their organization's SOH training program. Training will be specific to the hazards of the command work environment and mission objectives. Training will include, but is not limited to, common hazards of electricity, the proper use of extension cords, power strips, surge protectors, adapters, electrical heaters, and other electrical equipment used in the workplace, and appropriate response procedures for electrical mishaps.

- (4) Training will be documented and retained in accordance with NFPA 70E.

## **23-5. General electrical safety requirements**

*a. Extension cords.* Extension cords will comply with the requirements for temporary wiring, as found in NFPA 70E and 29 CFR 1910 Subpart S. Detailed information can be found at <https://safety.army.mil/on-duty/workplace/electrical>.

- (1) Use only polarized extension cords with polarized appliances.
- (2) Extension cords in use will be placed as to not create a tripping hazard and will be protected by an NRTL-listed cord cover if installed in a location in which it could become caught, pulled, or damaged by equipment or personnel.
- (3) Portable cord-and plug-connected equipment and flexible cord sets (extension cords) will be visually inspected for external defects daily; worn, defective, or damaged items will be immediately removed from service.
- (4) Damaged cords will be discarded. With approval of the AHJ, unique cords may be repaired by qualified personnel in accordance with NEC requirements. Repairs must be inspected and approved by the AHJ.
- (5) Only use extension cords of appropriate capacity and length. Cords that become hot while in use will be disconnected immediately. A hot cord is an indication of current overload. Replace extension cord with one of the appropriate capacity for the equipment in use.
- (6) Coiled or looped extension cords are prohibited.
- (7) Extension cords will not be used in areas where flammable liquids are stored or used unless they are properly rated in accordance with NFPA 70.
- (8) Power strips will only be used for low amperage equipment (for example, computer monitors, fans, computers, printers, and so forth).

(9) Ground fault circuit interrupters (GFCIs) will be used with extension cords in wet or damp locations.

*b. Adapters.* Three-prong electrical plug adaptors for use in two-prong receptacles are prohibited.

*c. Electrical receptacles.* All wall and floor receptacles will be installed and used in accordance with NFPA 70 and manufacturer's instructions.

*d. Tools and equipment.* Electrical equipment that contains or produces energy greater than 50V alternating current (AC) or 100V direct current (DC) must meet one of the following conditions to be safe for use:

(1) Listed by an NRTL and used as intended (for example, as described in the manufacturer's instructions or technical manual). All purchased electrical equipment must be NRTL-listed if available, even if a less expensive unlisted product is available. NRTL approved equipment is stamped with a listing symbol. NRTL listing symbols can be found at <https://www.osha.gov/dts/otpca/nrtl/nrtllist.html>.

(2) Military-unique equipment released to the field under the auspices of AR 770-2 and used as intended is considered equivalent to NRTL-listed equipment.

(3) Manufactured by a reputable manufacturer as defined by the AHJ and used as intended.

(4) Inspected, approved, and labeled as safe for its intended use by the AHJ. Requirements and guidance for inspection and approval is found at <https://safety.army.mil/on-duty/workplace/electrical>. A listing is maintained at that web location.

*e. Authority having jurisdiction equipment.* Equipment inspected and approved by the AHJ must be labeled with name of inspector and date. If representative sample of two units that are built identically are inspected and approved, the remainder may be assumed to be comparable and put into use following a visual external inspection.

*f. Equipment brought into Army facilities.* The AHJ of the facility will ensure that electrical equipment brought into the facility is NRTL-listed or approved by the AHJ.

*g. Rental equipment.* Rental equipment must be NRTL-listed or approved by the AHJ, as well as inspected by the AHJ prior to initial use.

*h. Outside the United States.* Requirements outside the United States are specific to the country of use. Many countries have safe equipment programs which mirror that of the United States of America, requiring the equivalent of third-party inspection and approval by recognized testing laboratories. Details for worldwide safe equipment programs and listing symbols, specified by country, are found at <https://safety.army.mil/on-duty/workplace/electrical>. Equipment sold in the European Union (EU) bears a CE (European Conformity) marking. CE is not accepted as an NRTL equivalent by OSHA or the U.S. Army. It is a self-certification by the party who puts the product on the market in the EU, such as an EU-based manufacturer, importer, or distributor. OSHA requires that electrical equipment marked with CE be inspected, approved, and labeled safe for use by the AHJ prior to use.

*i. Specialized equipment and systems (hospitals, data centers, marine, and boats).* Energized equipment such as lasers, x-rays, and specialized medical equipment may be unlisted. Specialized equipment will be inspected and approved by a qualified SME prior to use. These classes of devices may present lethal electrical hazards due to capacitance; only those inspectors qualified and authorized may inspect such devices.

## 23–6. Electrical safety in Army facilities installation and infrastructure

*a. Guidance.* Electrical safety requirements for Army facilities, installations, and infrastructure will be implemented in accordance with 29 CFR 1910 Subpart S, NFPA 70E, NFPA 70, UFC 3–560–01, and HN standards.

*b. General requirements for electrically safe work practices.*

(1) *Control of hazardous energy (lockout/tagout).* Commanders of ACOMs, ASCCs, DRUs, and USARC and the CNGB will establish, document, and implement a lockout/tagout program. The lockout/tagout program will specify lockout/tagout procedures to safeguard workers from exposure to electrical hazards. The lockout/tagout program will meet the requirements of NFPA 70E and 29 CFR 1910.147. Guidance and a sample of simple and complex lock out tagout procedures can be found at <https://safety.army.mil/on-duty/workplace/electrical>.

*(2) Energized electrical work.*

(a) All equipment, material, or energized electrical systems operating at voltages equal to or greater than 50 volts AC or 100V DC will be put into an electrically safe work condition before personnel perform any work on the equipment.

(b) Work on energized equipment will only be permitted when the commander can demonstrate de-energizing the equipment will introduce additional hazards or increased risk to personnel, or by demonstrating that the task to be performed is infeasible in a de-energized state due to equipment design or operational limitations.

*c. Energized electrical work.* All energized electrical work will be completed by trained and qualified personnel in accordance with NFPA 70E and will require an approved energized electrical work permit. Refer to <https://safety.army.mil/on-duty/workplace/electrical>.

*d. Electrical safety signage and boundaries.*

(1) Signage for electrical equipment or systems will be developed and posted in accordance with 29 CFR 1910 Subpart S, NFPA 70, ANSI Z535.2, and ANSI Z535.4.

(2) Approach boundaries for energized electrical equipment circuits or circuit parts posing a shock hazard (limited, restricted, or prohibited approach) or arc flash hazard will be established and posted in accordance with NFPA 70E.

*e. Arc flash risk assessment.* Arc flash risk assessment will be performed on all facility electrical systems in accordance with NFPA 70E.

*f. Temporary wiring.* Temporary electrical power and lighting wiring methods will comply with 29 CFR 1910.305(a)(2) and NFPA 70.

*g. Permanent wiring.* Methods for the installation, repair, and maintenance of electrical wiring will comply with 29 CFR 1910 Subpart S and NFPA 70 or HN standards and regulations which take precedence.

*h. Grounding.*

(1) *Premise wiring grounding systems.* Premise wiring grounding systems that supply premises wiring will be performed as follows:

(a) All three-wire DC systems will have their neutral conductor grounded.

(b) Two-wire DC systems operating at over 50V through 300V between conductors will be grounded unless they supply only industrial equipment in limited areas and are equipped with a ground detector, they are rectifier-derived from an AC system complying with 29 CFR 1910.304(g)(1)(iii) through 29 CFR 1910.304(g)(1)(v), or they are fire alarm circuits having a maximum current of 0.030 amperes.

(c) AC systems of 50V to 1000V will be grounded as follows:

1. The system will be grounded so that the maximum voltage to ground on the ungrounded conductors does not exceed 150V.

2. If the system is nominally rated three-phase, four-wire connected in which the neutral is used as a circuit conductor; if the system is nominally rated three-phase, four-wire delta connected in which the midpoint of one phase is used as a circuit conductor; or if a service conductor is uninsulated.

(d) AC systems of 50V to 1000V are not required to be grounded under any of the following conditions:

1. If the system is used exclusively to supply industrial electric furnaces for melting, refining, tempering, and the like.

2. If the system is separately derived and is used exclusively for rectifiers supplying only adjustable speed industrial drives.

3. If the system is separately derived and is supplied by a transformer that has a primary voltage rating less than 1000V, provided the entire system is used exclusively for control circuits; the conditions of maintenance and supervision ensure that only qualified persons will service the installation, continuity of control power is required, and ground detectors are installed on the control system.

*(2) Facility grounding systems.*

(a) Install and maintain facility grounding systems in accordance with NFPA 70. All grounding points within a facility will be electrically continuous to a grounding (earth) electrode. The resistance measured from the facility's

most remote grounding point to each electrode should not exceed 2 ohms. The resistance of the grounding electrode to earth should not exceed 25 ohms.

1. Ground mobile facilities in accordance with their operating instructions. If used, ground the power generator to a ground system. If the generator and vehicle are sited less than 25 feet (7.6 m) apart, either a common ground will be used or the two ground systems will be connected with bare copper cable, American wire gauge #6 or larger. If commercial power is used, ground the vehicle to the commercial ground conductor at the first service disconnect.

2. Metal frames of electric equipment and tools, such as handheld power tools, must be connected to a grounding conductor (for example, they must contain a three-wire power cord and plug). Grounding is not required for those portable tools in good condition that are NRTL-listed and used within specification.

3. Maintenance activities will maintain a file of up-to-date descriptions of all facility grounding installations, such as construction specifications and drawings, blueprints, work orders, and so forth. Installation engineers or other qualified personnel (as determined by local policy) should annually inspect grounding systems for compliance with appropriate standards, including conductor continuity. Conduct continuity inspections with a low-resistance ohmmeter. This will include nonpermanent facilities.

4. DA Pam 385-64 describes additional mandatory procedures for grounding operations in explosives safety operations.

*i. Bonding.* Take caution to ensure that the main bonding jumper and equipment bonding jumper are sized and selected correctly. (See NFPA 70, Article 250.) Bonding completes the grounding circuit so that it is continuous. If a ground fault occurs, the fault current will flow and open the overcurrent protection devices. The means of bonding will provide the following to ensure the grounding system is intact:

- (1) A permanent connection.
- (2) A positive continuity at all times.
- (3) Ampacity to conduct fault current.

## **23-7. Power line safety**

### *a. Overhead power lines.*

(1) Power lines are to be treated as energized unless the owner of the utility confirms that the power line has been and continues to be de-energized or it has been tested and confirmed to be de-energized by qualified personnel.

(2) Operators of material handling equipment or other equipment which may come in contact with overhead power lines will maintain a 20-foot clearance from the utility at all times or follow minimum approach clearance distances per 29 CFR 1926.1408. The greater of the two distances will be followed.

### *b. Damaged or downed power lines.*

(1) Damaged or downed power lines will be reported to the electrical utility through the appropriate chain of command.

(2) Do not assume a downed power line is de-energized.  
(3) Do not touch a downed power line unless it is determined to be safe through safe work practices performed by qualified personnel. Do not drive over a downed power line.  
(4) Do not touch low hanging wires.

## **23-8. Batteries and battery banks**

Technical guidance on safe working procedures with batteries and battery banks can be found at <https://safety.army.mil/on-duty/workplace/electrical>.

*a. Follow all safety precautions in the user instructions provided with military batteries. Follow manufacturer's user instructions and safety precautions with commercial batteries. If no precautions or instructions are provided, the following guidance will be used:*

- (1) Exposed terminals will be protected from incidental contact.
- (2) Do not use combinations of new and used batteries or batteries comprised of different chemistries.
- (3) Do not puncture or intentionally damage batteries.
- (4) Protect batteries from exposure to excessive heat or fire.
- (5) Dispose of batteries in accordance with locally established procedures.

*b. Electrical safety requirements to safeguard personnel while working with exposed stationary storage batteries that exceed 50 volts are found in NFPA 70E, Article 320.*

## **23-9. Electrical safety in tactical operations**

Electrical safety work practice requirements apply to tactical military operations, especially in areas that require classified wiring for wet and damp locations. In situations where normal, safe work practices are not feasible. RM

processes will be used under written direction from the commander to identify and assess electrical hazards and implement additional mitigation controls.

*a.* Army equipment will be used in accordance with the system technical manuals, including maintenance instructions. Personnel will be trained and qualified to properly use or maintain equipment.

*b.* Commercial equipment will be used and maintained be in accordance with the manufacturer's specification, instructions, and precautions. Operators and maintainers will be trained and qualified.

*c.* Tactical radio antennas will be used as follows:

(1) Follow precautions found in system technical manuals. If unknown, keep antenna masts twice their height away from power lines and other exposed electrical parts.

(2) Maintain antenna profile down as low as possible for vehicular and man-pack radio antennas. Tie vehicle mounted antennas where possible. Do not grab or hold the antenna down during movement. Accidental antenna contact with power lines or other energized parts can be fatal.

(3) Do not assume plastic or fiberglass-coated antennas are safe for power line contact.

(4) Should a vehicle or its antenna contact an overhead line, do not exit the vehicle unless it is immobile or on fire. Do not touch the antenna or attempt to move it; instead, move the vehicle to break contact. If exit from the vehicle is necessary, do not touch the ground and vehicle at the same time. Land with both feet together and shuffle in small steps to avoid step potential hazards from electrified ground. Be careful to maintain balance.

(5) Should contact with an overhead line occur, do not make physical contact with a victim or render aid to victims until power is off or contact is removed and the area is safe to enter. You will become a victim if you contact an electrified victim or vehicle.

## **23–10. Electrical safety in contingency operations**

All components of contingency base operations will comply with federal, DoD, and Army electrical standards including all chapters in this regulation. Components of contingency base operations will not provide an unsafe condition or unnecessary risk to personnel. Commanders will develop electrical safety policy, procedures, and responsibilities to identify and mitigate electrical safety hazards.

*a.* Electrical equipment associated with force provider expeditionary (FPE) shelters (circuits, receptacles, cord connectors, switches, wiring, and so forth) will be grounded in accordance with NFPA 70. Ground fault protection will be provided as required by NFPA 70, especially when within 6 feet (1.8 m) of water or wet areas. All electrical wiring and live parts will be protected and covered in accordance with NFPA 70. Lightning protection will be installed in all FPE shelters in accordance with NFPA 780.

*b.* System safety engineers will ensure electrical standards are met during review of all components of the FPE shelter at each development stage and prior to fielding.

*c.* Conduct risk assessments prior to placement of FPE shelters in accordance with chapter 6 of this regulation and ATP 5–19.

*d.* Equipment will be NRTL-listed and used as intended or inspected and approved as safe for intended use by the AHJ.

*e.* Contingency construction standards for electrical installations are designed to safeguard electrical hazards by regulating the safe design, construction, and installation of electrical systems and equipment.

(1) Electrical systems will not be erected, constructed, altered, extended, repaired, moved, removed, or demolished in any facility without prior approval from the base operations support commander or designated representative.

(2) The Base Camp Master Plan construction standard will regulate the design, construction, and installation of electrical systems as the project pertains to initial, temporary, or semipermanent contingency construction. All contingency construction must meet personnel and equipment safety requirements for bonding, grounding, and safe building practices.

(3) All workers will comply with the requirements in UFC 3–560–01. This includes safe clearance and lockout and/or tagout procedures, and arc flash PPE requirements. Service contracts and contracts involving construction or dismantling, demolition, or removal of improvements that involve electrical work will include a provision for compliance with UFC 3–560–01.

(4) Electrical work will be inspected and tested by a qualified electrician before occupancy or acceptance. The inspection will be commensurate with United States and HN requirements, as applicable. No person will make connections from a utility or source of energy, fuel, or power to any building or system that has not been inspected and accepted by a qualified person that has conducted such tests to ensure buildings are in compliance with the construction standards.

(5) All manufactured buildings will have a single point to disconnect power at the service entry.

(6) All electrical work will comply with electrical requirements and code of the HN, NFPA 70, or BS 7671. See <https://safety.army.mil/on-duty/workplace/electrical> for additional guidance. In general, the HN code will be used in countries with an existing electrical code; NFPA 70 will be used in countries where 60 Hz power is predominant (but the country does not have an established electric code) and BS 7671 will be used in countries where 50 Hz power is predominant (but no electric code exists).

(7) In any of these instances it is possible to use NFPA 70 if the command deems necessary. Where there is conflict between a general requirement and a specific requirement, the more stringent requirement will be applicable. In any instances where wiring based on different codes will be joined, the different codes will be documented and forwarded through the base operations support commander to the appropriate Service representative of the Tri-Service Electrical Working Group (TSEWG) for a decision as to which code will be used before work commences.

(8) For any expeditionary operating area, the commander will establish a task force with the mission of assessing and analyzing fire and electrical safety issues and directing action to reduce risk. The organization will have master electricians versed in other code requirements for bonding and grounding (for example, BS 7671) and they will be utilized as the U.S. Government's quality assurance for electrical work in theater. At a minimum, fault current calculations and grounding impedance readings will be included as part of acceptance testing. The contractor who provides these assets must not be the contractor currently contracted to perform the electrical work.

(9) The commander may create a theater arbitration cell and staff to provide oversight for electrical work associated with contingency construction and maintenance-related projects, which cannot comply with NFPA 70. The theater arbitration cell will also include AHJ personnel. The AHJ personnel will process and review deviation requests. The AHJ personnel will forward the deviation request and recommendations to the TSEWG for final risk determination and acceptance. The TSEWG is responsible for all DoD unified electrical criteria. The theater ASCC will be responsible for coordinating with TSEWG and disseminating and maintaining records of all deviation rulings.

(10) See mandatory procedures in DA Pam 385-64 and supporting regulations for bonding and grounding of explosive and ammunition facilities and operations.

## **Chapter 24**

### **Emergency Planning**

#### **24-1. Introduction**

Emergency planning establishes the procedures and processes that an organization will follow when responding to an emergency. The goal of emergency planning is to protect life, health, property, and to restore normal operations as soon as possible. The emergency planning process is documented in the emergency plan. The emergency plan should address immediate response actions to protect life and property, and longer-term actions to manage full recovery operations, whether the incident has only local effects or has impact on a broader, regional, or even national basis. The goal is to provide short-term relief immediately while putting into place the necessary actions to maintain or restore full operational capability. This chapter provides general principles that should be followed when developing an emergency plan as required in this chapter and AR 525-27.

#### **24-2. Functions**

During emergencies, there is often the need for action from many different responders. Personnel and equipment from police, fire units, engineering, facilities maintenance/public works, medical, recovery, HAZMAT response teams, EOD, public affairs, and other specialties may be required to respond, depending on the nature of the hazard.

*a.* The commander will ensure that emergency preparedness is part of the command's critical operations and will receive reports of the status of emergency preparedness and associated planning on a regular basis. One means of ensuring the effectiveness of emergency planning is to have regular exercises to test planning. At a minimum, command post exercises (CPXs) should be conducted annually and a full operational exercise involving all elements of the plan should be conducted every 3 years or shortly after a major revision of the plan.

*b.* The commander will ensure that there are resources available to execute the emergency plan. Resources that must be available are determined by the hazards addressed by the emergency plan, but generally will include emergency response personnel and equipment (for example, fire, police, medical) and their associated equipment, other support (for example, kitchen, housing, utility), media relations (for example, newspaper, television, radio) and management (someone in charge).

*c.* A good emergency plan will address each threat or hazard that has been determined to be a valid risk. These may include such elements as natural disaster (for example, tornado, hurricane, earthquake, and so on), accidental release of HAZMAT (for example, chemical; petroleum, oil, and lubricants; radiological), mishaps (aircraft crash, ground

vehicle crash), fire, mass power outages, and other viable elements. The emergency plan will address each threat that has been determined to be a viable risk, appendixes may be used as necessary.

*d.* The emergency plan will also address the process to be followed to return to normal operations. For minor incidents, the return to normal operations may not require major effort.

*(1)* A major incident (generally one that cannot be resolved by routine emergency response arrangements) will most likely require the implementation of special procedures to return to full operation.

*(2)* The emergency plan will provide the guidance required to establish the mechanism for recovery. For example, the loss of hangars and aircraft from a tornado requires an extensive effort to return to combat ready status that may include requesting budget assistance from DA and DoD. Recovery from the loss of a single vehicle obviously requires a much smaller commitment of management and personnel to recover.

*(3)* Emergency planning must take into consideration the surrounding civilian community and the environment. Planning for major incidents may include coordination with civilian authorities to share resources (both to and from the civilian community, as required). Volunteer organizations such as the Salvation Army and Red Cross may also become elements of the response and recovery operation. Coordination with civilian government organizations (city, county, state, and national) should be part of the emergency planning process.

*(4)* Emergency planning must consider relocating to an alternate location if all operations cease and all or most employees are incapacitated at the affected location.

### **24-3. Elements of emergency planning**

*a.* Emergency planning and preparedness have as the basis of the process a need for speed and flexibility at the local operational level, the ability to provide assistance across organizational boundaries (for example, military-civilian and so on) and an ability to manage the operation to provide operational, tactical, and strategic guidance. Emergency planning is not a one-time thing. An emergency plan must be reviewed and updated regularly as new threats and hazards become known and as old ones become less of a risk. All personnel will participate in an evacuation drill at least annually. Paragraphs 24-3*b* through 24-3*f* describe the parts to emergency planning.

*b.* Risk assessment is the first step in emergency planning. Risk assessment begins with identifying the hazards present in the organization/command and its operational environment, including combat associated hazards. Each hazard identified will—

*(1)* Be studied and ranked according to the risk proposed by the hazard.

*(2)* Assess the personnel, equipment, facilities, and other infrastructure that are vulnerable.

*(3)* Have a written hazard analysis prepared that quantifies the overall risk to the organization/command for each hazard. By quantifying the risk, emergency planning can be based on realistic threats and be made proportional to the risk.

*c.* Each organization and sub-organization must complete a risk assessment to identify the hazards present within their operations to aid with the development of the overall emergency plan. The hazard analysis will address the following:

*(1)* What can occur? (Identify the hazards including natural, terrorist threats, manmade.)

*(2)* How often it is likely to occur? (Profile each hazard including magnitude, duration, speed of development, and seasonal pattern.)

*(3)* What damage is it likely to cause? (Develop an installation/command/community profile that addresses geography, property, infrastructure, demographics, and resources available.)

*(4)* How is it likely to affect the community? (Determine vulnerability using standard categories: catastrophic, critical, limited, and negligible.)

*(5)* How vulnerable is the installation/command/community to the hazard? (Create and apply scenarios that address first warning of emergency, potential impact, potential damage/causalities/loss of services, and actions/resources needed to respond to the emergency.)

*(6)* Developing the emergency plan, including functional annexes, hazard-specific sections, and implementing instructions commences as the hazards and associated risks become known. Included as an essential part of the plan will be plans for eliminating, reducing, controlling, or mitigating the effects of each hazard. The emergency plan has to address the action(s) required in case of an incident.

*(7)* Major incident plans will—

*(a)* Define the response that will be made to the incident, incorporating the rules of integrated emergency management (assess the incident, prevention actions, preparation required to respond to an incident, the response mechanism, and plans to recover from the incident).

*(b)* Incorporate the protocols for working within different functions, commands, and civilian agencies and the U.S. Government (as appropriate).

(c) Identify technical experts (for example, public affairs, explosive safety, crowd control, policy) in areas where expertise may be needed and the procedures for contacting and obtaining their input (technical experts include not only how to physically deal with the incident, but with crowd control/policy action, public affairs, and so on).

(d) Describe the process for recovery and restoration to return to full operationally ready status.

(e) Be compatible with commands/organizations above/below the actionable command and with surrounding community.

(f) Be in compliance with all laws and federal regulations.

(g) Be exercised and reviewed by experts, signed by the commander, and tested as established in AR 525–27.

(h) Include continuity of operations. The emergency plan has to address the process by which the command will either remain in operational status or return to operational status as soon as possible. The emergency plan should address human resources, devolution, alternate facilities, facilities, logistics, equipment, utilities, communications, and chain of command.

d. The plan will include references to all laws, regulations, EO<sup>s</sup>, and other authorities that form the legal basis for the plan.

e. Testing the emergency plan is an essential part of the planning process. It is through testing, both CPX and operational type of testing, that weakness is most likely to be uncovered. Areas where the plan is unclear—not providing sufficient guidance and areas where the plan does not work—will surface during testing. From testing lessons learned are produced that can then be used to adjust and modify the plan. AARs will be completed after each CPX or emergency drill with any issues/deficiencies integrated into lessons learned and the emergency plan updated, as required.

f. Review and update the plan regularly to reflect changing hazards, technology, and resources. An updated emergency plan should reflect the most recent information available about every hazard in the original plan, as well as including hazards that may have entered into the picture since the plan was first drafted.

## **24–4. Coordination**

a. Emergency planning has to be a team effort. A typical emergency planning team will consist of representatives from all aspects of the command and the civilian community (as required). Different aspects of the plan require input from different specialty areas. Expertise may be required as the hazards are incorporated into the emergency planning process such as:

- (1) Police.
- (2) Fire.
- (3) Medical.
- (4) HAZMAT coordinator.
- (5) Aviation.
- (6) Explosives safety.
- (7) Safety.
- (8) Health physicist/RSO.
- (9) Public works.
- (10) Community affairs.
- (11) Public information office.
- (12) Environmental office.
- (13) Legal office.
- (14) Others (including surrounding civilian community representatives).

b. The emergency plan has to be coordinated with all involved agencies within the installation/command/organization. The final plan will be approved and signed by the commander.

(1) During the coordination process every effort should be made for all members of the team to agree on terminology, mission, and a commitment to rapid and full response to maintaining and validating the plan.

(2) The team has to agree on the command structure that will be put in place should an emergency occur. Agreement by each element of the response team to implement the plan and follow through as required is essential and must be part of the coordination effort.

(3) Once the emergency plan has been approved it will be distributed to all organizations involved in the emergency planning effort. The letter distributing the plan should be signed by the commander and include instructions for all elements of the command to implement the plan.

## **Chapter 25**

### **Fire and Emergency Services**

#### **25–1. General**

*a.* The F&ES Program provides structural, aircraft fire and rescue, wildland fire response, and control and extinguishment of fires when necessary to protect people, property, equipment, or mission capability. Additionally, F&ES will provide first response capabilities to fire-related/HAZMAT/weapons of mass destruction incidents in an all-hazards environment.

*b.* F&ES is a critical partner of the Army safety community. The F&ES Program, under DoDI 6055.06, is managed at the higher headquarters programmatic level by the DCS, G–9. The DCS, G–9 is the AHJ for the U.S. Army as assigned in Department of the Army General Orders 2020–01. At the installation/activity level, management and administration of F&ES should involve effective communication and collaboration between the garrison commander and the installation fire chief as outlined in AR 420–1.

*c.* F&ES programs include, but are not limited to:

- (1) Management.
- (2) Fire prevention services.
- (3) Fire safety deficiencies.
- (4) Risk assessment coding.
- (5) F&ES training.
- (6) Aircraft rescue firefighting.
- (7) EMS (EMS-as provided off of a fire apparatus).
- (8) Blood borne pathogens.
- (9) Emergency dispatches services.
- (10) Wildland firefighting.
- (11) HAZMAT.
- (12) Fire protection systems.
- (13) Water distribution systems.
- (14) Weapons of mass destruction.
- (15) CBRNE.

#### **25–2. Deployed Fire and Emergency Services**

*a.* The installation fire chief will meet with the local safety office on a regular basis. The purpose of these meetings is to collaborate and coordinate on the programs listed in paragraph 25–1 and services as applicable for the local installation. The installation fire chief is the final authority to determine the RAC on fire safety deficiencies. Installations that do not have a DoD F&ES Program will develop a local mutual aid agreement. Additional information on these programs can be found in AR 420–1.

*b.* Firefighting involving munitions (AE) at deployed locations will adhere to the following:

(1) Advanced planning is essential for firefighting operations that may involve munitions in storage or areas known or suspected to contain UXO or discarded military munitions (for example, operational range impact areas, former impact areas). Servicing fire departments will be informed of the munitions operating facilities and areas where munitions (for example, UXO) are known or suspected to be present. (See DESR 6055.09 and mandatory procedures in DA Pam 385–64.)

(2) As a general rule, fires within munitions operating facilities (for example, storage, production, demilitarization areas) that do not directly involve munitions or in which heat from a fire is not affecting the munitions may be fought.

(3) Fires directly involving munitions or supplying heat to munitions or that are too large to be extinguished with the equipment at hand will not be fought as determined by the installation fire chief or senior fire officer. In such cases, firefighters and firefighting equipment and other personnel must be evacuated in compliance with the senior commander ESMP and evacuation plans that provide the required withdrawal distances.

(4) Senior firefighting personnel should assess whether to fight a fire involving areas known or suspected to contain munitions; however, such fires should not normally be fought. Areas affected by fires that are not fought will be evacuated and not entered until the area has cooled for at least 24 hours.

## **Chapter 26**

### **Contract Safety**

#### **26–1. Requirements for contract safety**

- a.* Contracts will require that contracted activities be conducted in a manner that minimizes the potential for mishaps, impacts on Army operations or critical assets, and unacceptable risk to human health and the environment.
- b.* As a point of information to Army personnel, contractors comply with contract SOH requirements and applicable federal, state, and local laws, regulations, codes, and standards, including SOH requirements.
- c.* In accordance with 40 USC 3704 and 48 CFR 36.513, 52.236–13, 323.70, and 352.223–70, contractors are responsible for safety and health risks to their personnel and the protection of the public, except where DoD has contractually agreed to assume responsibility for the contract employee's health and safety. DoD (Army) responsibilities for the safety and health of contractor operations are generally limited to protecting DoD operations and the safety of DoD personnel, facilities, and equipment.
- d.* DoDM 4145.26 provides safety standards common to DoD and private industry AE operations, and facilities performing AE work or AE services under DoD contracts, subcontracts, purchase orders, or other procurement methods. DFARS 223.370 requires contracting officers to incorporate DoDM 4145.26 al in all AE procurement actions. The purchasing activity may include additional AE or related safety requirements that are not inconsistent with DoDM 4145.26 as it deems necessary.
- e.* For contractor personnel accompanying U.S. military forces in deployments, follow procedures in DoDI 3020.41 and DoDI 6490.03.
- f.* Contract SOH clauses.
  - (1)* Clauses outlining contractor safety requirements and responsibilities will be included in solicitations and contracts as prescribed by the FAR and the DFARS.
  - (2)* Requiring activities will develop performance work statements, contract instructions, and conditions that outline contractor safety requirements and responsibilities based on a risk assessment of the work to be performed and activity and/or command-unique requirements.
  - (3)* CORs, requiring activity, and/or the Defense Contract Management Agency, in consultation with local SOH SMEs, will develop additional and necessary clauses to mitigate risk to government-owned equipment, protect government property and onsite Army personnel from accidental losses, protect the public, and, as applicable, protect the production base. This includes mishap reporting requirements and procedures when contractor mishap reporting is a contract requirement.
- g.* SOH SMEs will consult with contracting officers to ensure that clauses for safety are included in solicitations and contracts. SOH SMEs will assist CORs with monitoring contract SOH compliance.
- h.* Army standards, such as this regulation, should not be referenced as a contract requirement unless the contractor is hired to perform SOH services for DA. The requirements in this regulation do not apply to contractor personnel unless specifically cited in the contract. Contracts for munitions operating facilities (for example, production, storage, demilitarization) that will be conducted within a DoD installation will require compliance with DoD and Army explosives safety criteria.
  - i.* The COR will inform the requiring activity of instances where the contractor has been notified to take immediate action to correct serious or imminent danger conditions.
  - j.* Army SOH professionals will be trained in contracting principles and procedures and contract safety requirements and processes. At the minimum, SOH professionals with responsibilities in contracting will complete the Army Contract Safety Course.
  - k.* Under the Occupational Safety and Health Act of 1970, all employers must comply with OSHA standards and exercise reasonable diligence to determine whether violations of those standards exist. On multiemployer work sites, more than one employer may be considered responsible for a hazardous condition that violates an OSHA standard.
  - l.* Pursuant to 32 CFR 655.10, contractors are required to have appropriate licensing and approvals for possession and use of RAM and RGDs.
  - m.* Pursuant to 32 CFR 655.10, contractors will not possess or use RAM under Army NRC licensing or RGDs under ARAs without the Army NRC licensee or ARA manager approval.

#### **26–2. Army oversight and inspections of contractor operations**

- a.* *Army oversight of contractor operations.* Pursuant to law, federal regulations, and DoD policy, Army oversight of contractor operations is restricted to the following instances:
  - (1)* Where the U.S. Army has statutory authority for oversight, for example, the manufacture or demilitarization of munitions (see DoDM 4145.26).

(2) DoD components may establish additional oversight of contractor operations where they determine it is in the best interest of DoD. In making this determination, the DoD components must consider the relative merits of DoD oversight leading to lower mishap losses, improved services, and ultimate savings to the government, versus the liability for legal and tort claims and compensation liability by acting as a controlling employer. DoD responsibilities must be clearly stated in contract language, including DoD contractor personnel deploying with the force in accordance with DoDI 3020.41. Army oversight has historically contributed to lower mishap rates among certain contractor employees, on-time delivery of products and services (increased readiness), and ultimate savings to the U.S. Government.

(3) Where Army has contractually agreed to assume responsibility for the contractor employee's health and safety (see DoDI 6055.01). For example, contractor personnel deploying with the force where contract terms specify DoD responsibility for the safety and health of contractor personnel in accordance with DoDI 3020.41.

(4) Protecting DoD operations and the safety of DoD personnel, facilities, and equipment (see DoDI 6055.01).

(5) When there is a requirement to provide oversight of GOCO facilities, for example, under an Army NRC license (see NRC license requirements).

*b. Federal and state oversight.* DoD contractors operating on DoD facilities are subject to the authorities of federal and state safety and health officials in accordance with 29 USC Chapter 15, as specified in DoDI 6055.01.

(1) Federal and state OSHA officials must be granted access to DoD contractor workplaces on DoD installations without delay and at reasonable times.

(2) 29 USC Chapter 15 does not authorize the U.S. Secretary of Labor to assert authority over working conditions for which another federal agency or any state agency acting under 42 USC exercises statutory authority to prescribe or enforce standards or regulations affecting SOH.

(3) Pursuant to 33 USC 941, when contractor work is performed aboard vessels in dry dock or afloat within federal maritime jurisdiction, OSHA standards apply and inspections and investigations may be performed by federal OSHA officials.

(4) Contractors have the responsibility of responding to any citations issued by federal or state OSHA officials for violations of applicable standards.

(5) Pursuant to DoDI 6055.01, information regarding citations issued to Army contractors for violations of federal or state OSHA standards involving Army-furnished equipment, facilities, or other property will be referred to all appropriate personnel, to include the COR and contracting officer, for appropriate action.

*c. Inspection of contract activities.*

(1) In peacetime operations performed within the United States, the contractor is responsible directly to federal or state OSHA officials for the safety and health of the contractors' employees.

(2) The Army will conduct safety and health evaluations of all workplaces and operations where Army personnel are regularly employed at fixed installations during peacetime operations and, to the extent feasible, to wartime and peacekeeping operations. Inspections of workplaces and operations on contractor facilities where fewer than 25 Army personnel are employed will be at the ACOM, ASCC, or DRU commander or the CNGB's discretion based on existing conditions and potential risks. While no formal annual inspection is required, the U.S. Army is required to ensure the safety and health of their personnel in the contractor facility. In addition, evaluations will include determining if contractor operations jeopardize the safety and health of Army personnel and endanger Army property.

(3) Risk assessments and dosimetry of environmental and occupational chemical, radiological, biological, and physical hazards to Army personnel and supporting Army contractor personnel during force deployments outside the United States and construction of prospective health surveillance epidemiology databases will be accomplished under DoDI 6050.05 and DoDI 6490.03. Risk assessments of toxic hazards to which Army personnel and contractors are exposed during wartime and other contingency operations should cover all aspects of the potential hazard, from the source and levels of exposure to health effects of individuals and groups.

(4) In peacetime operations within the United States, Army SOH programs will not perform any measurements; that is, perform worker exposure monitoring of contractor worker exposure to Army equipment, unless specifically provided for in contracts between the U.S. Government and the contractor.

## **Appendix A**

### **References**

#### **Section I**

##### **Required Publications**

Unless otherwise indicated, DA publications are available on the Army Publishing Directorate website at <https://armypubs.army.mil/>. The CFR is available at <https://www.ecfr.gov/>. DoD issuances are available at <https://www.esd.whs.mil/dd/>. The USC is available at <https://uscode.house.gov/>.

##### **ADP 5-0**

The Operations Process (Cited in para 12-1.)

##### **ADP 6-0**

Mission Command: Command and Control of Army Forces (Cited in para 12-1.)

##### **AF Pam 91-206**

Participation in Military or Civil Aircraft or Space Safety Investigations (Cited in para 3-13h.) (Available at <https://www.e-publishing.af.mil/>.)

##### **AR 11-35**

Occupational and Environmental Health Risk Management (Cited in para 12-1.)

##### **AR 15-6**

Procedures for Administrative Investigations and Boards of Officers (Cited in para 3-19b.)

##### **AR 15-39**

Department of the Army Intergovernmental and Intragovernmental Committee Management Program (Cited on title page.)

##### **AR 20-1**

Inspector General Activities and Procedures (Cited in para 2-7b.)

##### **AR 25-400-2**

Army Records Management Program (Cited in para 3-28.)

##### **AR 27-20**

Claims (Cited in para 3-19d.)

##### **AR 27-40**

Litigation (Cited in para 3-23f.)

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

Army Public Health Program (Cited in para 2-7c.)

##### **AR 40-8**

Temporary Flying Restriction Due to Exogenous Factors Affecting Aircrew Efficiency (Cited in para 18-7d.)

##### **AR 40-10**

Health Hazard Assessment Program in Support of the Army Acquisition Process (Cited in para 2-23j.)

##### **AR 40-66**

Medical Record Administration and Healthcare Documentation (Cited in para 3-23g(3)(c).)

##### **AR 40-400**

Patient Administration (Cited in para 16-18f(3).)

##### **AR 50-5**

Nuclear Surety (Cited in table 3-1.)

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

Chemical Surety (Cited in para 2-17a(8).)

##### **AR 50-7**

Army Reactor Program (Cited in table 3-1.)

**AR 56–3**

Management of Army Rail Equipment (Cited in table 3–1.)

**AR 56–9**

Army Intratheater Watercraft Systems (Cited in table 3–1.)

**AR 58–1**

Management, Acquisition, and Use of Motor Vehicles (Cited in paras 13–3e.)

**AR 70–1**

Army Acquisition Policy (Cited in para 16–2a.)

**AR 75–1**

Malfunctions Involving Ammunition and Explosives (Cited in para 2–17a(6).)

**AR 95–1**

Flight Regulations (Cited in para 3–7b(1).)

**AR 190–5/OPNAV 11200.5D/AFI 31–218(1)/MCO 5110.1D/DLAR 5720.1**

Motor Vehicle Traffic Supervision (Cited in para 13–5d.)

**AR 200–1**

Environmental Protection and Enhancement (Cited in paras 16–2f.)

**AR 360–1**

The Army Public Affairs Program (Cited in paras 16–16d(5).)

**AR 385–63/MCO 3570.1C**

Range Safety (Cited in para 17–4f.)

**AR 420–1**

Army Facilities Management (Cited in table 3–1.)

**AR 525–27**

Army Emergency Management Program (Cited in para 24–1.)

**AR 600–3**

The Army Personnel Development System (Cited in para 5–4d.)

**AR 600–8–22**

Military Awards (Cited in para 5–12d.)

**AR 611–75**

Management of Army Divers (Cited in table 3–1.)

**AR 690–11**

Department of the Army Expeditionary Civilian Workforce and Civilian Deployments, in Support of Military Contingency and Emergency Operations (Cited in para 12–9.)

**AR 690–950**

Career Program Management (Cited in para 5–4h(2).)

**AR 700–13**

Worldwide Department of Defense Military Munitions (Ammunition) Logistics/Surveillance/Explosives Safety Review and Technical Assistance Program (Cited in para 22–6a.)

**AR 700–48**

Management of Radiologically Contaminated Equipment Outside the United States (Cited in para 2–17a(13).)

**AR 710–3**

Inventory Management Asset and Transaction Reporting System (Cited in para 16–3k(7).)

**AR 750–1**

Army Materiel Maintenance Policy (Cited in para 3–10a.)

**AR 750–43**

Army Test, Measurement, and Diagnostic Equipment (Cited in para 2–17a(11).)

**AR 770–2**

Materiel Fielding (Cited in para 19–3g(4).)

**Army Directive 2016–24**

Department of Defense Biological Select Agent and Toxins Biosafety Program (Cited in para 2–13*l*.)

**ATP 4–43**

Petroleum Supply Operations (Cited in para 13–12*c*.)

**ATP 5–19**

Risk Management (Cited in para 4–5*a*.)

**ATP 7–22.01**

Holistic Health and Fitness Drills and Exercises (Cited in para 12–7.)

**DA Pam 40–8**

Occupational Health Guidelines for the Evaluation and Control of Occupational Exposure to Nerve Agents GA, GB, GD, and VX (Cited in para 2–7*c*.)

**DA Pam 40–11**

Army Public Health Program (Cited in para 2–7*c*.)

**DA Pam 40–173**

Occupational Health Guidelines for the Evaluation and Control of Occupational Exposure to Mustard Agents H, HD, and HT (Cited in para 2–7*c*.)

**DA Pam 40–503**

The Army Industrial Hygiene Program (Cited in para 20–13*e*.)

**DA Pam 40–506**

The Army Vision Conservation and Readiness Program (Cited in para 17–3*b*(11).)

**DA Pam 70–3**

Army Acquisition Procedures (Cited in para 16–2*a*.)

**DA Pam 385–10**

Army Safety Program (Cited in para 1–7*a*.)

**DA Pam 385–16**

System Safety Management Guide (Cited in para 1–7*e*.)

**DA Pam 385–40**

Army Mishap Investigations and Reporting (Cited in para 1–7*e*.)

**DA Pam 385–63**

Range Safety (Cited in para 1–7*e*.)

**DA Pam 385–64**

Ammunition and Explosives Safety Standards (Cited in para 1–7*d*.)

**DA Pam 385–69**

Safety Standards for Microbiological and Biomedical Laboratories (Cited in para 1–7*e*.)

**DA Pam 750–8**

The Army Maintenance Management System (TAMMS) User's Manual (Cited in para 3–10*a*.)

**DoDD 4715.11**

Environmental and Explosives Safety Management on Operational Ranges Within the United States (Cited in para 16–27*a*.)

**DoDD 4715.12**

Environmental and Explosives Safety Management on Operational Ranges Outside the United States (Cited in para 16–27*a*.)

**DoDD 6055.09E**

Explosives Safety Management (ESM) (Cited in para 2–1*c*.)

**DoDI 3020.41**

Operational Contract Support (OCS) (Cited in para 26–2a(2).)

**DoDI 4715.27**

DoD Low-Level Radioactive Waste (LLRW) Program (Cited in para 2–4a(17).)

**DoDI 5000.02**

Operation of the Adaptive Acquisition Framework (Cited in para 2–2a(2).)

**DoDI 5000.69**

DoD Joint Services Weapon and Laser System Safety Review Processes (Cited on title page.)

**DoDI 5000.81**

Urgent Capability Acquisition (Cited in para 2–2a(2).)

**DoDI 5000.82**

Requirements for the Acquisition of Digital Capabilities (Cited in para 2–2a(2).)

**DoDI 5000.83**

Technology and Program Protection to Maintain Technological Advantage (Cited in para 2–2a(2).)

**DoDI 5000.85**

Major Capability Acquisition (Cited in para 2–2a(2).)

**DoDI 5000.88**

Engineering of Defense Systems (Cited in para 2–2a(2).)

**DoDI 5000.89**

Test and Evaluation (Cited in para 2–2a(2).)

**DoDI 5000.90**

Cybersecurity for Acquisition Decision Authorities and Program Managers (Cited in para 2–2a(2).)

**DoDI 5210.88**

Security Standards for Safeguarding Biological Select Agents and Toxins (BSAT) (Cited in para 2–1d.)

**DoDI 6050.05**

DoD Hazard Communication (HAZCOM) Program (Cited in para 9–1.)

**DoDI 6055.01**

DoD Safety and Occupational Health (SOH) Program (Cited on title page.)

**DoDI 6055.04**

DoD Motor Vehicle and Traffic Safety (Cited on title page.)

**DoDI 6055.05**

Occupational and Environmental Health (OEH) (Cited in para 17–3b(4)(b).)

**DoDI 6055.07**

Mishap Notification, Investigation, Reporting, and Record Keeping (Cited on title page.)

**DoDI 6055.08**

Occupational Ionizing Radiation Protection Program (Cited on title page.)

**DoDI 6055.11**

Protecting Personnel from Electromagnetic Fields (Cited on title page.)

**DoDI 6055.15**

DoD Laser Protection Program (Cited on title page.)

**DoDI 6490.03**

Deployment Health (Cited in para 17–4n(1).)

**DoDM 4160.21**

Defense Materiel Disposition (Cited in para 17–11b.)

**DoDM 6055.05**

Occupational Medical Examinations: Medical Surveillance and Medical Qualification (Cited in para 9–1.)

**DoDM 6055.18**

Safety Standards for Microbiological and Biomedical Laboratories (Cited in para 20–1c.)

**DTR 4500.9-R–Part II**

Cargo Movement (Cited in para 2–16g.) (Available at <https://www.ustranscom.mil/dtr/index.cfm>.)

**EM 385–1–1**

Safety and Health Requirements (Cited in para 2–22b.) (Available at <https://www.publications.usace.army.mil/>.)

**Emergency Response Guidebook**

(Cited in para 2–20h.) (Available at <https://www.phmsa.dot.gov/hazmat/erg/emergency-response-guidebook-erg>.)

**EO 12196**

Occupational safety and health programs for Federal employees (Cited in para 1–6b.) (Available at <https://www.archives.gov>.)

**EP 1130–2–500**

Partners and Support (Work Management Guidance and Procedures) (Cited in para 15–3.) (Available at <https://www.publications.usace.army.mil/>.)

**ER 385–1–91**

Training, Testing, and Licensing for Operators of Class A and Blass I Motorboats (Cited in para 15–3.) (Available at <https://www.publications.usace.army.mil/>.)

**FAR Subpart 1.3**

Agency Acquisition Regulations (Cited in para 2–18a(2).) (Available at <https://www.acquisition.gov>.)

**FED–STD–313**

Material Safety Data, Transportation Data and Disposal Data for Hazardous Materials Furnished to Government Activities (Cited in para 9–2d.) (Available for purchase at <https://global.ihs.com>.)

**Federal Select Agent Program Policy Statement, dated 14 August 2017**

Subject: Revised FSAP Policy Statement: Inactivated Bacillus anthracis and Bacillus cereus Biovar anthracis (Cited in para 20–21.) (Available at <https://www.selectagents.gov/regulations/policy/index.htm>.)

**FMVSS 218**

Motorcycle Helmets (Cited in para 13–14h(2).) (Available at <https://www.nhtsa.gov/laws-regulations/fmvss>.)

**HSPG Number 17**

Pupil Transportation Safety (Cited in para 13–7c(3).) (Available at [https://one.nhtsa.gov/nhtsa/whatsup/tea21/grant-man/html/05h\\_progguidlines1.html](https://one.nhtsa.gov/nhtsa/whatsup/tea21/grant-man/html/05h_progguidlines1.html).)

**IEEE C95.1–2345**

Standard for Military Workplaces—Force Health Protection Regarding Personnel Exposure to Electric, Magnetic, and Electromagnetic Fields, 0 Hz to 300 GHz (Cited in para 17–2d.) (Available at <https://standards.ieee.org>.)

**IEEE C95.3**

Recommended Practice for Measurements and Computations of Electric, Magnetic, and Electromagnetic Fields with Respect to Human Exposure to Such Fields 0 Hz to 300 GHz (Cited in para 17–7i.) (Available at <https://standards.ieee.org>.)

**IEEE C95.7**

Recommended Practice for Radio Frequency Safety Programs, 3 kHz to 300 GHz (Cited in para 17–2d.) (Available at <https://standards.ieee.org>.)

**Memorandum of Understanding between The U.S. Nuclear Regulatory Commission and The Occupational Safety and Health Administration**

(Cited in para 16–10d(2).) (Available at <https://www.osha.gov>.)

**MIL–STD–882E**

System Safety (Available at <https://quicksearch.dla.mil/qssearch.aspx>.) (Cited in para 2–2a(1).)

**MIL–STD–1180B(1)**

Safety Standards for Military Ground Vehicles (Cited in para 13–3h.) (Available at <https://quicksearch.dla.mil/qssearch.aspx>.)

**National Response Framework**

(Cited in para 2–21a(5).) (Available at <https://www.fema.gov/>.)

**NUREG 1556**

Consolidated Guidance about Materials Licenses (Cited in para 16–21b.) (Available at <https://www.nrc.gov/>.)

**NUREG 1757, Volume 1**

Consolidated Decommissioning Guidance: Decommissioning Process for Materials Licensees (Cited in para 16–15e.) (Available at <https://www.nrc.gov/>.)

**OSHA Standard 1910.1096**

Toxic and Hazardous Substances–Ionizing radiation (Cited in para 16–3b(3).) (Available at <https://www.osha.gov/>.)

**PL 83–703**

The Atomic Energy Act of 1954 (Cited on title page.) (Available at <https://www.nrc.gov/>.)

**PL 91–596**

Occupational Safety and Health Act of 1970 (Cited on title page.) (Available at <https://www.osha.gov/>.)

**PL 93–438**

Energy Reorganization Act of 1974 (Cited on title page.) (Available at <https://www.nrc.gov/>.)

**PWTB 200–1–144**

Toxics Management (Cited in para 16–10d(4).) (Available at <https://www.wbdg.org/>.)

**TB MED 523**

Control of Hazards to Health from Microwave and Radio Frequency Radiation and Ultrasound (Cited in para 17–2d.)

**TB MED 524**

Occupational and Environmental Health: Control of Hazards to Health from Laser Radiation (Cited in para 17–2b.)

**TB 43–0133**

Hazard Controls for CECOM Radiofrequency and Optical Radiation Producing Equipment (Cited in para 17–2a.)

**TB 750–25**

Maintenance of Supplies and Equipment: Army Test, Measurement and Diagnostic Equipment (TMDE) Calibration and Repair Support (C&RS) Program (Cited in para 16–3d(1).)

**TC 3–21.60**

Visual Signals (Cited in para 13–10b.)

**TC 21–305–20/AFMAN 24–306(I)**

Manual for the Wheeled Vehicle Operator (Cited in para 13–10b.)

**TC 21–306**

Tracked Combat Vehicle Driver Training (Cited in para 13–10b.)

**TC 55–88–1**

Rail Handbook for Air Brake and Train Handling Rules (Cited in para 14–3c(2)(d).)

**TM 4–14.21**

Rail Safety (Cited in para 14–3c(1)(d).)

**TM 55–203**

Maintenance of Railway Cars (Cited in para 14–3c(2)(c).)

**UFC 3–560–01**

Operation and Maintenance: Electrical Safety, with Change 3 (Cited in para 23–2.) (Available at <https://www.wbdg.org/>.)

**UFC 4–021–01**

Design And O&M: Mass Notification Systems, with Change 1 (Cited in para 23–2.) (Available at <https://www.wbdg.org/>.)

**UFC 4–860–03**

Railroad Track Maintenance and Safety Standards (Cited in para 14–3c(2)(b).) (Available at <https://www.wbdg.org/>.)

**7 CFR 331**

Possession, Use, and Transfer of Select Agents and Toxins (Cited in para 14–5a.)

**9 CFR 121**

Possession, Use, and Transfer of Select Agents and Toxins (Cited in para 14–5a.)

**10 CFR**

Energy (Cited on title page.)

**10 CFR 19.13**

Notifications and reports to individuals (Cited in para 16–3b(5).)

**10 CFR 20**

Standards for Protection Against Radiation (Cited in para 16–10c(2)(b)1.)

**10 CFR 20.1003**

Definitions (Cited in para 16–1.)

**10 CFR 20.1501**

General (Cited in para 2–17a(10).)

**10 CFR 20.2106**

Records of individual monitoring results (Cited in para 16–3b(3).)

**10 CFR 20.2110**

Form of records (Cited in para 16–3b(3).)

**10 CFR 20.2201**

Reports of theft or loss of licensed material (Cited in para 16–16g(1).)

**10 CFR 20.2206**

Reports of individual monitoring (Cited in para 16–3b(6).)

**10 CFR 30.14**

Exempt concentrations (Cited in para 16–6b(2).)

**10 CFR 30.18**

Exempt quantities (Cited in para 16–6b(2).)

**10 CFR 31**

General Domestic Licenses for Byproduct Material (Cited in para 16–6c(1).)

**10 CFR 34**

Licenses for Industrial Radiography and Radiation Safety Requirements for Industrial Radiographic Operations (Cited in para 16–23d(2).)

**10 CFR 35**

Medical Use of Byproduct Material (Cited in para 16–23d(2).)

**10 CFR 36**

Licenses and Radiation Safety Requirements for Irradiators (Cited in para 16–11e(5).)

**10 CFR 39**

Licenses and Radiation Safety Requirements for Well Logging (Cited in para 16–11e(7).)

**10 CFR 40**

Domestic Licensing of Source Material (Cited in para 16–23d(2).)

**10 CFR 40.36**

Financial assurance and recordkeeping for decommissioning (Cited in para 16–24c(1).)

**10 CFR 70.19**

General license for calibration or reference sources (Cited in para 16–6c(1).)

**10 CFR 70.25**

Financial assurance and recordkeeping for decommissioning (Cited in para 16–24c(1).)

**10 CFR 71**

Packaging and Transportation of Radioactive Material (Cited in para 16–25d.)

**10 CFR 150**

Exemptions and Continued Regulatory Authority in Agreement States and in Offshore Waters Under Section 274 (Cited in para 16–9d(2)(c).)

**10 CFR 150.20**

Recognition of Agreement State licenses (Cited in para 16–9b(1)(c).)

**21 CFR**

Food and Drugs (Cited on title page.)

**21 CFR 1020.40**

Cabinet x-ray systems (Cited in para 16–6c(5).)

**21 CFR 1040**

Performance standards for light-emitting products (Cited in para 17–7d.)

**21 CFR 1040.10**

Laser products (Cited in para 17–7c.)

**21 CFR 1040.11**

Specific purpose laser products (Cited in para 17–7c.)

**29 CFR 1904.39**

Reporting fatalities, hospitalizations, amputations, and losses of an eye as a result of work-related incidents to OSHA (Cited in para 3–1.)

**29 CFR 1910**

Occupational Safety and Health Standards (Cited in para 5–7b.)

**29 CFR 1910.95**

Occupational noise exposure (Cited in para 3–9d(4).)

**29 CFR 1910.119**

Process safety management of highly hazardous chemicals (Cited in para 21–6.)

**29 CFR 1910.120**

Hazardous waste operations and emergency response (Cited in para 21–6.)

**29 CFR 1910.146**

Permit-required confined spaces (Cited in para 10–9.)

**29 CFR 1910.147**

The control of hazardous energy (lockout/tagout) (Cited in para 10–4.)

**29 CFR 1910.1096**

Ionizing radiation (Cited in para 16–1.)

**29 CFR 1910.1200**

Hazard communication (Cited in para 9–1.)

**29 CFR 1910.1450**

Occupational exposure to hazardous chemicals in laboratories (Cited in para 20–17h(7).)

**29 CFR 1926**

Safety and Health Regulations for Construction (Cited in para 6–6a.)

**29 CFR 1926.53**

Ionizing radiation (Cited in para 16–3b(5).)

**29 CFR 1960**

Basic Program Elements for Federal Employee Occupational Safety and Health Programs and Related Matters (Cited in para 1–13.)

**32 CFR 651**

Environmental Analysis of Army Actions (Cited in para 16–2f.)

**32 CFR 655.10**

Oversight of radiation sources brought on Army land by non-Army entities (Cited in para 16–6c(4)(e).)

**40 CFR**

Protection of Environment (Cited on title page.)

**42 CFR**

Public Health (Cited in para 14–5a.)

**46 CFR**

Shipping (Cited in para 15–5a.)

**48 CFR 223.370**

Safety precautions for ammunition and explosives (Cited in para 2–17a(17).)

**49 CFR**

Transportation (Cited on title page.)

**49 CFR 173.1**

Purpose and scope (Cited in para 16–4c.)

**42 USC**

The Public Health and Welfare (Cited in para 26–2b(2).) (Available at <https://uscode.house.gov/>.)

**50 USC 1512**

Transportation, open air testing, and disposal; Presidential determination; report to Congress; notice to Congress and State Governors (Cited in para 20–2c.) (Available at <https://uscode.house.gov/>.)

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

A related publication is a source of additional information. The user does not have to read it to understand this publication. Unless otherwise indicated, DA publications are available on the Army Publishing Directorate website at <https://armypubs.army.mil/>. The CFR is available at <https://www.ecfr.gov/>. DoD issuances are available at <https://www.esd.whs.mil/dd/>. ICRP publications are available at <https://www.icrp.org/>. Military standards are available at <https://quicksearch.dla.mil/qsearch.aspx>. NRC publications are available at <https://www.nrc.gov>. NCRP reports are available for purchase at <http://www.ncrponline.org/publications/>. The USC is available at <https://uscode.house.gov/>.

**ACGIH Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices**  
(Available for purchase at <https://www.acgih.org/>.)

**AFARS 5101.3**

Agency Acquisition Regulations (Available at <https://www.acquisition.gov/afars/afars>.)

**AFARS 5101.4**

Deviations From the FAR (Available at <https://www.acquisition.gov/afars/afars>.)

**AFMAN 24–604/TM 38–250/NAVSUP PUB 505/MCO P4030.19J/DLAI 4145.3**

Preparing Hazardous Materials for Military Air Shipments (Available at <https://www.e-publishing.af.mil/>.)

**ANSI/ASSP Z490.1**

Criteria for Accepted Practices in Safety, Health and Environmental Training (Available for purchase at <https://www.assp.org/standards/standards-topics/osh-training-z490/>.)

**ANSI/HPS N2.1**

Warning Symbols—Radiation Symbol (Available for purchase at <https://global.ihs.com/standards.cfm>.)

**ANSI/HPS N43.3**

General Radiation Safety—Installations Using Non-Medical X-Ray and Sealed Gamma-Ray Sources, Energies Up to 10 MeV (Available for purchase at <https://global.ihs.com/standards.cfm>.)

**ANSI/ISEA Z87.1**

American National Standard Occupational and Educational Personal Eye and Face Protection Devices (Available for purchase at <https://global.ihs.com/standards.cfm>.)

**ANSI N13.12**

Surface and Volume Radioactivity Standards for Clearance (Available for purchase at <https://global.ihs.com/standards.cfm>.)

**ANSI Z136.1**

Safe Use of Lasers (Available for purchase at <https://global.ihs.com/standards.cfm>.)

**ANSI Z136.6**

Safe Use of Lasers Outdoors (Available for purchase at <https://global.ihs.com/standards.cfm>.)

**ANSI Z359.1**

The Fall Protection Code (Available for purchase at <https://global.ihs.com/standards.cfm>.)

**ANSI Z359.2**

Minimum Requirements for a Comprehensive Managed Fall Protection Program (Available for purchase at <https://global.ihs.com/standards.cfm>.)

**ANSI Z535.2**

Environmental and Facility Safety Signs (Available for purchase at <https://global.ihs.com/standards.cfm>.)

**ANSI Z535.4**

Product Safety Signs and Labels (Available for purchase at <https://global.ihs.com/standards.cfm>.)

**APHC Technical Guide 211**

Radiobioassay Collection Labeling and Shipping Requirements (Available at [https://phc.amedd.army.mil/phc%20resource%20library/tg211\\_radiobioassaycollectionlabelingandshippingrequirements.pdf](https://phc.amedd.army.mil/phc%20resource%20library/tg211_radiobioassaycollectionlabelingandshippingrequirements.pdf).)

**AR 11–2**

Managers' Internal Control Program

**AR 25–30**

Army Publishing Program

**AR 25–50**

Preparing and Managing Correspondence

**AR 73–1**

Test and Evaluation Policy

**AR 190–17**

Biological Select Agents and Toxins Security Program

**AR 190–45**

Law Enforcement Reporting

**AR 190–59**

Chemical Agent Security Program

**AR 195–2**

Criminal Investigation Activities

**AR 215–4**

Nonappropriated Fund Contracting

**AR 600–20**

Army Command Policy

**AR 600–55**

The Army Driver and Operator Standardization Program (Selection, Training, Testing, and Licensing)

**AR 602–2**

Human Systems Integration in the System Acquisition Process

**AR 608–10**

Child Development Services

**AR 700–141**

Hazardous Materials Information Resource System

**AR 750-6**

Army Equipment Safety and Maintenance Notification System

**BS 6658**

Specification for Protective Helmets for Vehicle Users (Available for purchase at <https://global.ih.com/standards.cfm>.)

**BS 7671**

Requirements for Electrical Installations: IET Wiring Regulations (Available for purchase at <https://web-store.ansi.org/>.)

**CJCSI 4360.01C**

Explosives Safety and Munitions Risk Management for Joint Operations Planning, Training, and Execution (Available at <https://www.jcs.mil/library>.)

**DA Pam 25-403**

Army Guide to Recordkeeping

**DA Pam 40-21**

Ergonomics Program

**DA Pam 385-30**

Risk Management

**DA Pam 385-61**

Toxic Chemical Agent Safety Standards

**DA Pam 710-7**

Hazardous Material Management Program

**DA Pam 738-751**

Functional User's Manual for the Army Maintenance Management System—Aviation

**Department of the Army General Orders 2020-01**

Assignment of Functions and Responsibilities within Headquarters, Department of the Army

**DESR 6055.09**

Defense Explosives Safety Regulation (Volumes 1 through 8) (Available at <https://www.denix.osd.mil/ddes/home/>.)

**DFARS 201.3**

Agency Acquisition Regulations (Available at <https://www.acquisition.gov/dfars/>.)

**DFARS 201.4**

Deviations From the FAR (Available at <https://www.acquisition.gov/dfars/>.)

**DoD Dictionary of Military and Associated Terms**

(Available at <https://www.jcs.mil/doctrine/>.)

**DoD 4145.26-M**

DoD Contractors Safety Manual for Ammunition and Explosives

**DoDI 3222.03**

DoD Electromagnetic Environmental Effects (E3) Program

**DoDM 5000.04**

Cost and Software Data Reporting

**FAR Subpart 1.4**

Deviations from the FAR (Available at <https://www.acquisition.gov/>.)

**FAR 52.236-13**

Accident Prevention (Available at <https://www.acquisition.gov/>.)

**FM 1-02.1**

Operational Terms

**FM 4-30**

Ordnance Operations

**HSPG Number 1**

Periodic Motor Vehicle Inspection (Available at <https://www.nhtsa.gov/.>)

**ICAO Doc 9284**

Technical Instructions for the Safe Transport of Dangerous Goods by Air (Available at <https://www.icao.int/.>)

**ICRP Publication 23**

Report on the Task Group on Reference Man

**ICRP Publication 26**

Recommendations of the ICRP

**ICRP Publication 60**

1990 Recommendations of the International Commission on Radiological Protection

**ICRP Publication 103**

The 2007 Recommendations of the International Commission on Radiological Protection

**IEEE C2**

National Electric Safety Code (Available for purchase at <https://standards.ieee.org/ieee/c2/6681/.>)

**IMDG Code**

(Available for purchase at <https://www.imo.org/en/publications/pages/home.aspx.>)

**International Air Transport Association Dangerous Goods Regulations**

(Available for purchase at <https://www.iata.org/.>)

**JP 3-0**

Joint Operations (Available at <https://www.jcs.mil/doctrine/.>)

**JP 3-02**

Amphibious Operations (Available at <https://www.jcs.mil/doctrine/.>)

**JP 3-09**

Joint Fire Support (Available at <https://www.jcs.mil/doctrine/.>)

**JP 3-11**

Operations in Chemical, Biological, Radiological, and Nuclear Environments (Available at Available at <https://www.jcs.mil/doctrine/.>)

**JP 3-13**

Information Operations (Available at <https://www.jcs.mil/doctrine/.>)

**MIL-HDBK-240A**

Hazards of Electromagnetic Radiation to Ordnance Test Guide

**MIL-HDBK-828C**

Range Laser Safety

**MIL-STD-1425A**

Safety Design Requirements for Military Lasers and Associated Support Equipment

**NBS HDBK 123**

Radiological Safety Standard for the Design of Radiographic and Fluoroscopic Industrial X-Ray Equipment (Available for purchase at <https://global.ihc.com/standards.cfm.>)

**NCRP Report No. 122**

Use of Personal Monitors to Estimate Effective Dose Equivalent and Effective Dose to Workers For External Exposure to Low-LET Radiation

**NCRP Report No. 123**

Screening Models for Releases of Radionuclides to Atmosphere, Surface Water, and Ground

**NFPA 30**

Flammable and Combustible Liquids Code (Available for purchase at <https://www.nfpa.org/.>)

**NFPA 70**

National Electrical Code (Available for purchase at <https://www.nfpa.org.>)

**NFPA 70E**

Standard for Electrical Safety in the Workplace (Available for purchase at <https://www.nfpa.org/.>)

**NFPA 780**

Standard for the Installation of Lightning Protection Systems (Available for purchase at <https://www.nfpa.org/.>)

**NIH Guidelines for Research Involving Recombinant or Synthetic Nucleic Acid Molecules**

(Available at <https://osp.od.nih.gov/biotechnology/nih-guidelines/.>)

**NRC Regulatory Guide 8.10, Revision 2**

Operating Philosophy for Maintaining Occupational and Public Radiation Exposures As Low As Is Reasonably Achievable

**NRC Regulatory Guide 8.13**

Instruction Concerning Prenatal Radiation Exposure

**NRC Regulatory Guide 8.31, Revision 1**

Information Relevant to Ensuring that Occupational Radiation Exposures at Uranium Recovery Facilities Will Be As Low As Is Reasonably Achievable

**NRC Regulatory Guide 8.37**

ALARA Levels for Effluents from Materials Facilities

**NRC Regulatory Issue Summary 2002-06**

Evaluating Occupational Dose for Individuals Exposed to NRC-Licensed Material and Medical X-Rays

**OPNAVINST 3150.27C**

Navy Diving Policy and Joint Military Diving Technology and Training Program (Available at <https://www.secnav.navy.mil/doni/directives/.>)

**OPNAVINST 5102.1D**

Navy and Marine Corps Mishap and Safety Investigation, Reporting, and Record Keeping Manual (Available at <https://www.secnav.navy.mil/doni/directives/.>)

**OSHA 3165 Publication**

Job Safety and Health: It's the Law! (Available at <https://www.osha.gov/publications/osha3165.pdf.>)

**TB MED 521**

Occupational and Environmental Health: Management and Control of Diagnostic, Therapeutic, and Medical Research X-Ray Systems and Facilities

**TB 43-0002-3**

Maintenance Expenditure Limits for Army Aircraft and UAS (Available at <https://www.logsa.army.mil/.>)

**TB 385-4**

Safety Requirements for Maintenance of Electrical and Electronic Equipment

**TB 700-2**

Department of Defense Ammunition and Explosives Hazard Classification Procedures

**TC 21-24**

Rappelling

**UCMJ, Art. 92**

Failure to obey order or regulation (Available at <https://jsc.defense.gov.>)

**9 CFR 122**

Organisms and Vectors

**10 CFR 20 Appendix B**

Annual limits on intake (ALIs) and derived air concentrations (DACs) of radionuclides for occupational exposure; effluent concentrations; concentrations for release to sewerage

**10 CFR 20.1004**

Units of radiation dose

**10 CFR 20.1208**

Dose equivalent to an embryo/fetus

**10 CFR 20.2202**

Notification of incidents

**10 CFR 20.2203**

Reports of exposures, radiation levels, and concentrations of radioactive material exceeding the constraints or limits

**10 CFR 20.2204**

Reports of planned special exposures

**10 CFR 20.2205**

Reports to individuals of exceeding dose limits

**10 CFR 30.5**

Interpretations

**10 CFR 30.35**

Financial assurance and recordkeeping for decommissioning

**10 CFR 36.55**

Personnel monitoring

**10 CFR 40.11**

Persons using source material under certain Department of Energy and Nuclear Regulatory Commission contracts

**10 CFR 40.13**

Unimportant quantities of source material

**10 CFR 61**

Licensing Requirements for Land Disposal of Radioactive Waste

**10 CFR 62.2**

Definitions

**21 CFR 1002**

Records and Reports

**21 CFR 1020**

Performance Standards for Ionizing Radiation Emitting Products

**29 CFR**

Labor

**29 CFR 1904.7**

General recording criteria

**29 CFR 1910.269**

Electric power generation, transmission, and distribution

**29 CFR 1960 Subpart F**

Occupational Safety and Health Committees

**42 CFR 73**

Select Agents and Toxins

**48 CFR**

Federal Acquisition Regulations System

**49 CFR Subtitle B Chapter I**

Pipeline and Hazardous Materials Safety Administration, Department of Transportation

**49 CFR 172 Subpart H**

Training

**49 CFR 173**

Shippers—General Requirements for Shipments and Packagings

**49 CFR 240**

Qualification and Certification of Locomotive Engineers

**49 CFR 242**

Qualification and Certification of Conductors

**49 CFR 571**

Federal Motor Vehicle Safety Standards

**5 USC 7902**

Safety programs

**5 USC 8101**

Definitions

**10 USC 101**

Definitions

**10 USC 2710**

Inventory of unexploded ordnance, discarded military munitions, and munitions constituents at defense sites (other than operational ranges)

**10 USC 10142**

Ready Reserve

**10 USC 12301**

Reserve components generally

**10 USC 12302**

Ready Reserve

**29 USC Chapter 15**

Occupational Safety and Health

**31 USC 6301**

Purposes

**33 USC 941**

Safety rules and regulations

**40 USC 3704**

Health and safety standards in building trades and construction industry

**Section III****Prescribed Forms**

Unless otherwise indicated, DA Forms are available on the Army Publishing Directorate website at <https://armypubs.army.mil/>. DD Forms are available at <https://www.esd.whs.mil/directives/forms/>.

**DA Form 3337**

Application for Army Radiation Authorization (Prescribed in para 16–6e(1).)

**Section IV****Referenced Forms**

Unless otherwise indicated, DA Forms are available on the Army Publishing Directorate website at <https://armypubs.army.mil/>. DD Forms are available at <https://www.esd.whs.mil/directives/forms/>. NRC Forms are available at <https://www.nrc.gov>. SFs are available at <https://www.gsa.gov/reference/forms>.

**APHIS/CDC Form 3**

Report of a Release/Loss/Theft of a Select Agent or Toxin (Available at <https://www.selectagents.gov/form3.html>.)

**DA Form 11-2**

Internal Control Evaluation Certification

**DA Form 67-10 series**

Officer Evaluation Reports

**DA Form 759**

Individual Flight Record and Flight Crew Certificate—Army (Flight Hours)

**DA Form 1119-1**

Certificate of Achievement in Safety

**DA Form 2028**

Recommended Changes to Publications and Blank Forms

**DA Form 2166-9 series**

NCO Evaluation Reports

**DA Form 2696**

Operational Hazard Report

**DD Form 2890**

DOD Multimodal Dangerous Goods Declaration

**DA Form 3946**

Military Police Traffic Accident Report

**DA Form 4137**

Evidence/Property Custody Document

**DA Form 4753**

Notice No.\_\_\_\_ of Unsafe or Unhealthful Working Condition

**DA Form 4754**

Violation Inventory Log

**DA Form 4755**

Employee Report of Alleged Unsafe or Unhealthful Working Conditions

**DA Form 5775**

Army Accident Prevention Award of Accomplishment in Safety

**DA Form 5984-E**

Operator's Permit Record (EGA)

**DA Form 7632**

Deviation Approval and Risk Acceptance Document (DARAD)

**DA Form 7689**

Bioassay Information Summary Sheet (BISS)

**DD Form 314**

Preventive Maintenance Schedule and Record

**DD Form 1391**

FY \_\_\_\_ Military Construction Project Data

**DD Form 1494**

Application for Equipment Frequency Allocation

**DD Form 1952**

Dosimetry Application and Record of Previous Occupational Radiation Exposure

**DD Form 2796**

Post Deployment Health Assessment (PDHA)

**DD Form 2977**

Deliberate Risk Assessment Worksheet

**DoD Laser Exemption from Federal Standards**

(Available at <https://www.denix.osd.mil/soh/references/memoranda/military-lasers-dod-laser-exemption-from-federal-standards-form/>)

**DOL Form CA-1**

Federal Employee's Notice of Traumatic Injury and Claim for Continuation of Pay/Compensation (Available at <https://www.dol.gov/owcp/dfec/regs/compliance/forms.htm>.)

**DOL Form CA-2**

Notice of Occupational Disease and Claim for Compensation (Available at <https://www.dol.gov/owcp/dfec/regs/compliance/forms.htm>.)

**NRC Form 3**

Notice to Employees

**NRC Form 241**

Report of Proposed Activities in Non-Agreement States, Areas of Exclusive Federal Jurisdiction, or Offshore Waters

**NRC Form 313**

Application for Materials License

**OSHA 2H Form**

Notice of Unsafe or Unhealthful Working Conditions (Form generated by OSHA and unavailable for non-OSHA use.)

**OSHA 300 Form**

Log of Work-Related Injuries and Illnesses (Available at <https://www.osha.gov>.)

**SF 50**

Notification of Personnel Action (Available at <https://www.gsa.gov/reference/forms>.)

**SF 368**

Product Quality Deficiency Report (PQDR) (Available at <https://www.gsa.gov/reference/forms>.)

## Appendix B

### Determining Whether a Radiation Safety Program is Required

#### B-1. Requirements

If any of the conditions in paragraph B-2 pertain to a garrison activity or tenant activities, they will be required to execute the requirements of an RSP, which include designating, in writing, an RSO who will establish, maintain, and manage a written RSP according to this regulation and Army, DoD, and federal regulations.

#### B-2. Conditions requiring a radiation safety program

A radiation program is required if the activity has:

- a. An NRC license, Army reactor permit, ARA, or an applicable technical publication that requires the function.
- b. Any personnel in the activity who are required to wear dosimetry.
- c. Any personnel in the activity who are required to participate in a bioassay program.
- d. A class 3B or class 4 or military-exempt laser (see ANSI Z136.1).
- e. An EMF or RF system that exceeds the MPE.
- f. A unit possessing radioactive commodities or radiation emitting equipment (to include x-rays and accelerators) requiring the implementation of an RSP (for example, leak testing, radiation postings, and shipping requirements).
- g. Any x-ray systems, except for small, self-shielded security type x-ray systems (for example, airport x-ray security machines and mail screening systems), that may expose the operator to scatter radiation. Radiation safety functions for x-ray systems are outlined in TB MED 521, ANSI standards, or NCRP standards.
- h. A non-Army agency using, storing, or possessing ionizing radiation sources on an Army installation (requires an NRC license and an ARP).
- i. A unit with CBRN equipment utilized within MTOE/TDA organizations with radiation detection equipment, radioactive sources, and/or radioactive commodities.
- j. A unit in possession of licensed RAMs/items. This includes storage, transporting, and maintenance.

#### B-3. Annual radiation safety audit

*a. Function.* The function covered by this evaluation is radiation safety.

*b. Purpose.* The purpose of this evaluation is to assist commanders/directors and RSOs in evaluating the key program elements listed in this paragraph. It is not intended to cover all aspects of the program.

*c. Instructions.* Answers must be based on the actual testing of key program elements (for example, document analysis, direct observation, sampling, and simulation). Answers that indicate deficiencies must be explained and corrective action indicated in supporting documentation. These questions are the minimum used to adequately assess an RSP for the annual audit. However, some questions may not apply to a specific program and may be rated as not applicable.

*d. Questions.*

- (1) If required, has a person been designated in writing by the command to be RSO? Has the RSO been trained (see chap 15)?
- (2) If required, has a written radiation safety SOP or local regulation been established and reviewed annually?
- (3) Are all personnel occupationally exposed to radiation receiving radiation safety training?
- (4) Are all radiation sources secured against unauthorized use and removal per NRC license conditions, ARAs, and regulations?
- (5) Are all controllable quantities of RAM and radiation-producing sources held by the unit under appropriate authority (for example, an NRC license, an ARA, or as part of a radioactive commodity)?
- (6) Is all radioactive waste disposed of properly through the item manager and JMC?
- (7) Are all radiation survey instruments used for health and safety appropriately calibrated per AR 750-43 and TB 750-25?
- (8) For Army laser ranges, have all type-classified or commercial class 3B or class 4 lasers received appropriate evaluation before their use?
- (9) Are all unwanted military-exempt lasers disposed of properly per paragraph 17-11?
- (10) Are all mishaps involving personnel radiation exposure or radioactive contamination of facilities, equipment, or the environment, damaged, or loss of RAMs promptly reported through appropriate channels per chapter 15?
- (11) Do all personnel occupationally exposed to ionizing radiation or RAM as specified by applicable regulatory requirements, NRC license requirements, and ARAs with a likelihood of receiving 10 percent of the annual dose limit participate in an appropriate dosimetry or bioassay program?

- (12) Is the dose in all unrestricted areas less than 2 millirems (0.02 mSv) in any one hour?
- (13) Are historical records maintained for licenses, ARA, ARP, disposal, and personnel exposures per AR 25-400-2?
- (14) Are radiation surveys and leak tests performed at the prescribed interval?
- (15) Is there a need for an RSC and is it meeting the intent?
- (16) Is there an environmental impact based on the impact of the RSP?
- (17) Are inventories of RAMs and RGDs being completed at required intervals?
- (18) Are inventories provided to the installation RSO?
- (19) Are EMF sources that need an RSP being inventoried at required intervals?
- (20) Are NRC posting requirements being met and are emergency contact numbers posted conspicuously?

## Appendix C

### Internal Control Evaluation

#### C-1. Function

The function covered by this evaluation is the ASOHP.

#### C-2. Purpose

The purpose of this evaluation is to assist commanders in evaluating the key internal controls outlined in this appendix. It is not intended to cover all controls.

#### C-3. Instruction

Answers must be based on the actual testing of key internal controls (for example, document analysis, direct observation, sampling, and simulation). Answers that indicate deficiencies must be explained and corrective action indicated in supporting documentation. These key internal controls must be formally evaluated at least once every 5 years. Certification that this evaluation has been conducted must be accomplished on DA Form 11-2 (Internal Control Evaluation Certification).

#### C-4. Test questions

Questions for key internal controls for system safety management in accordance with DoDI 6055.01 are as follows:

- a. Has each responsible organization established policies and procedures to execute its responsibilities and is each organization in compliance with those policies and procedures?
- b. Have rating elements measuring application and use of RM and health and safety responsibilities been included in all DA Form 67-10 series (Officer Evaluation Reports) and DA Form 2166-9 series (NCO Evaluation Reports) for military leaders as well as performance plans for DA Civilian managers and supervisors?
- c. Has a written safety program (including system safety management) providing policy and procedures been developed which incorporates the various elements based on the organization's mission?
- d. Has an SOH manager been designated in writing to exercise staff supervision over the SOH program?
- e. Does the designated SOH manager have access to the commander or director?
- f. Are the various SOH safety councils, boards, and committees meeting as required?
- g. Have strategic goals, objectives, and planning been executed and a plan developed to implement them?
- h. Have formal agreements been developed with tenant organizations, as necessary?
- i. Have command integrating agents developed and implemented plans and programs to integrate RM into their functional area of responsibility?
- j. Have both quantitative and qualitative metrics been developed and are they being used to measure their safety program effectiveness?
- k. Do command safety and health managers meet Office of Personnel Management standards for the position of SOH manager?
- l. Has the command requested, obtained, and designated sufficient funds and other resources to carry out all responsibilities designated in this regulation?
- m. Are safety offices conducting and documenting annual programmatic audits of their safety program execution using their performance indicators and matrices?
- n. Is each level of command auditing each of their subordinate organizations' safety program execution using their performance indicators and matrices at least once every 4 years?
- o. Are procedures in place and in operation to determine if facilities and equipment meet or exceed safety and health standards established in pertinent host government regulations, federal, state, and local statutes and regulations, and in Army regulations?
- p. Are deficiencies abated or is there a corrective action plan in place with a defined timeline to ensure abatement?
- q. Are practices and procedures that minimize mishap risk incorporated into regulations, directives, SOPs, special orders, training plans, operations plans, and SOPs developed for all operations?
- r. Are commanders, supervisors, and SOH staff provided specialized training to enable them to properly execute their SOH leadership and staff responsibilities?
- s. Are there specific plans to ensure continuity of SOH and the RM process during tactical operations or mobilization?
- t. Is there a program or policy for reporting unsafe or unhealthful conditions?
- u. Are standard Army SOH inspections performed to evaluate the status of the SOH program and RM integration?

v. Are mishaps being reported as required and correctly?

#### **C-5. Supersession**

This evaluation replaces the evaluation previously published in AR 385-10, dated 24 February 2017.

#### **C-6. Comments**

Help make this a better test for evaluating internal controls. Submit comments to the Assistant Secretary of the Army (Installations, Energy and Environment), Safety and Occupational Health Director, 110 Army Pentagon, Suite 3D453, Washington, DC 20310-0110.

## **Glossary**

### **Section I**

#### **Abbreviations**

##### **AAE**

Army Acquisition Executive

##### **AAR**

after action review

##### **AASA**

Administrative Assistant to the Secretary of the Army

##### **ABSL**

animal biosafety level

##### **AC**

alternating current

##### **ACGIH**

American Conference of Government Industrial Hygienists

##### **ACL**

arthropod containment level

##### **ACOD**

actual cost of damage

##### **ACOM**

Army command

##### **ACTEDS**

Army Civilian Training, Education, and Development System

##### **ACV**

Army combat vehicle

##### **ADC**

U.S. Army Dosimetry Center

##### **ADP**

Army doctrine publication

##### **ADR**

automated dosimetry report

##### **AE**

ammunition and explosives

##### **AEC**

U.S. Army Evaluation Center

##### **AESMNS**

Army Equipment Safety and Maintenance Notification System

##### **AF Pam**

Air Force pamphlet

##### **AFARS**

Army Federal Acquisition Regulation Supplement

##### **AFC**

U.S. Army Futures Command

##### **AFMAN**

Air Force manual

**AHJ**

authority having jurisdiction

**AI**

artificial intelligence

**ALARA**

as low as reasonably achievable

**ALI**

annual limit on intake

**ALSE**

aviation life support equipment

**AMC**

U.S. Army Materiel Command

**ANSI**

American National Standards Institute

**AOC**

area of concentration

**APHC**

U.S. Army Public Health Center

**APHIS**

Animal and Plant Health Inspection Service

**AR**

Army regulation

**ARA**

Army radiation authorization

**ARAP**

Army Readiness Assessment Program

**ARC**

Advanced Rider Course

**ARIMS**

Army Records Information Management System

**ARMS**

Armament Retooling and Manufacturing Support

**ARNG**

Army National Guard

**ARP**

Army radiation permit

**ARSO**

Army radiation safety officer

**ARSOF**

Army special operations forces

**ARSOHP**

Army Radiation Safety and Occupational Health Program

**ARSTAF**

Army Staff

**ASA (ALT)**

Assistant Secretary of the Army (Acquisition, Logistics, and Technology)

**ASA (FM&C)**

Assistant Secretary of the Army (Financial Management and Comptroller)

**ASA (IE&E)**

Assistant Secretary of the Army (Installations, Energy and Environment)

**ASA (M&RA)**

Assistant Secretary of the Army (Manpower and Reserve Affairs)

**ASARC**

Army System Acquisition Review Council

**ASCC**

Army service component command

**ASMIS**

Army Safety Management Information System

**ASO**

aviation safety officer

**ASOHMS**

Army Safety and Occupational Health Management System

**ASOHP**

Army Safety and Occupational Health Program

**ASSE**

American Society of Safety Engineers

**ATEC**

U.S. Army Test and Evaluation Command

**ATP**

Army techniques publication

**ATSTP**

Army Traffic Safety Training Program

**ATV**

all-terrain vehicle

**BACM**

biological agent contaminated materiel

**BBPO**

Biological Select Agents and Toxins Biorisk Program Office

**BMBL**

Biosafety in Microbiological and Biomedical Laboratories

**BR**

Basic Rider Course

**BS**

British standard

**BSAT**

biological select agents and toxins

**BSL**

biosafety level

**BSO**

biosafety officer

**BSPM**

biosafety program manager

**BWM**  
biological warfare materiel

**CAC**  
common access card

**CAPDEV**  
capability developer

**CAS**  
Chemical Abstracts Service

**CBC**  
Chemical Biological Center

**CBRN**  
chemical, biological, radiological, and nuclear

**CBRNE**  
chemical, biological, radiological, nuclear, and explosives

**CCPM**  
command career program manager

**CDC**  
Centers for Disease Control and Prevention

**CDE**  
committed dose equivalent

**CDRR**  
Central Dosimetry Records Repository

**CECOM**  
U.S. Army Communications-Electronics Command

**CEDE**  
committed effective dose equivalent

**CFR**  
Code of Federal Regulations

**CG**  
commanding general

**CID**  
Criminal Investigation Division

**CJCSI**  
Chairman of the Joint Chiefs of Staff instruction

**cm**  
centimeters

**CMA**  
U.S. Army Chemical Materials Activity

**CNGB**  
Chief, National Guard Bureau

**CONUS**  
continental United States

**COR**  
contracting officer representative

**COTS**  
commercial off-the-shelf

**CPA**  
Chief, Public Affairs

**CPR**  
cardiopulmonary resuscitation

**CPX**  
command post exercise

**CSA**  
Chief of Staff of the Army

**CSP**  
chemical site plan

**CWC**  
Chemical Weapons Convention

**CYS**  
child, youth, and school

**DA**  
Department of the Army

**DA Pam**  
Department of the Army pamphlet

**DABSHC**  
Department of the Army Biological Safety and Health Council

**DAC**  
derived air concentration

**DACASC**  
Department of the Army Chemical Agent Safety Council

**DARAD**  
Deviation Approval and Risk Acceptance Document

**DASAF**  
Director of Army Safety

**DASHO**  
designated agency safety and health official

**DC**  
direct current

**DCPH-A**  
Defense Centers for Public Health—Aberdeen

**DCS**  
Deputy Chief of Staff

**DD Form**  
Department of Defense form

**DDE**  
deep dose equivalent

**DDESB**  
Department of Defense Explosives Safety Board

**DFARS**  
Defense Federal Acquisition Regulation Supplement

**DL**  
distance learning

**DoD**

Department of Defense

**DoDD**

Department of Defense directive

**DoDI**

Department of Defense instruction

**DoDM**

Department of Defense manual

**DOE**

U.S. Department of Energy

**DOEHRS**

Defense Occupational and Environmental Health Readiness System

**DOL**

U.S. Department of Labor

**DOT**

U.S. Department of Transportation

**DRL**

dosimetric reference level

**DRU**

direct reporting unit

**DSN**

Defense Switched Network

**DTR**

Defense Travel Regulations

**DTTS**

Defense Transportation Tracking System

**DU**

depleted uranium

**DUSD**

Deputy Under Secretary of Defense

**EARO**

Executive Agent Responsible Official

**ECOD**

estimated cost of damage

**EDES**

Executive Director of Explosives Safety

**EDEX**

effective dose equivalent

**EID**

electrically initiated device

**EM**

engineering manual

**EME**

electromagnetic environment

**EMF**

electromagnetic field

**EMR**  
electromagnetic radiation

**EMS**  
emergency medical services

**EO**  
executive order

**EOD**  
explosive ordnance disposal

**EP**  
engineer pamphlet

**EPA**  
U.S. Environmental Protection Agency

**ER**  
engineer regulation

**ERC**  
Experienced Rider Course

**ERL**  
exposure reference level

**ES**  
exposed site

**ESAV**  
explosives safety assistance visit

**ESC**  
Electrical Safety Committee

**ESMP**  
Explosives Safety Management Program

**ESOH**  
environment, safety, and occupational health

**ESP**  
explosives site plan

**ESQD**  
explosives safety quantity distance

**ESS**  
explosives safety siting

**ESSP**  
explosives safety site plan

**EU**  
European Union

**eV**  
electron volt

**F&ES**  
fire and emergency services

**FA**  
functional advisor

**FAA**  
Federal Aviation Administration

**FAR**

Federal Acquisition Regulation

**FASS**

facilities system safety

**FC**

functional community

**FCC**

Family childcare

**FDA**

Food and Drug Administration

**FM**

field manual

**FMVSS**

federal motor vehicle safety standard

**FOD**

foreign object damage

**FOIA**

Freedom of Information Act

**FORSCOM**

U.S. Army Forces Command

**FPE**

force provider expeditionary

**FY**

fiscal year

**GA**

Tabun

**GB**

Sarin

**GCMCA**

general court-martial convening authority

**GD**

Soman

**GL**

generally licensed

**GOCO**

government-owned, contractor-operated

**H**

Levinstein mustard

**HAZCOM**

hazard communication

**HAZMAT**

hazardous materials

**HD**

distilled mustard

**HERF**

hazards of electromagnetic radiation to fuels

**HERO**

hazards of electromagnetic radiation to ordnance

**HERP**

hazards of electromagnetic radiation to personnel

**HHA**

health hazard assessment

**HIOS**

high intensity optical sources

**HME**

homemade explosives

**HMIRS**

Hazardous Materials Information Resource System

**HN**

host nation

**HPS**

Health Physics Society

**HQDA**

Headquarters, Department of the Army

**HSI**

human systems integration

**HSPG**

Highway Safety Program Guideline

**HT**

mustard T-mixture

**Hz**

Hertz

**IAT**

infectious agents and toxins

**IBC**

Institutional Biosafety Committee

**ICAO**

International Civil Aviation Organization

**ICD**

initial capabilities document

**IDP**

individual development plan

**IE**

improvised explosives

**IEEE**

Institute of Electrical and Electronics Engineers

**IL**

investigation level

**IMCOM**

U.S. Army Installation Management Command

**IMDG**

International Maritime Dangerous Goods

**ISA**  
independent safety assessment

**ISD**  
installation safety director

**ISO**  
installation safety office

**JHA**  
job hazard analysis

**JMC**  
U.S. Army Joint Munitions Command

**JP**  
Joint publication

**kHz**  
kilohertz

**L**  
Lewisite

**LAP**  
load assemble pack

**LCH**  
laser clearinghouse

**LCMC**  
Life cycle management command

**LDE**  
lens dose equivalent

**LED**  
light emitting diodes

**LHE**  
laser hazard evaluation

**LSC**  
Leader's Safety and Occupational Health Course

**LSO**  
laser safety officer

**MA**  
materiel acquirer

**MATDEV**  
materiel developer

**MDA**  
milestone decision authority

**MDR**  
milestone decision review

**MEC**  
munitions and explosives of concern

**MEDCOM**  
U.S. Army Medical Command

**METAR**  
meteorological terminal aviation report

<b>mg</b>	milligram
<b>MIL-HDBK</b>	military handbook
<b>MIL-STD</b>	military standard
<b>ml</b>	milliliter
<b>mm</b>	millimeter
<b>MMDF</b>	Maintenance Master Data File
<b>MOS</b>	military occupational specialty
<b>MPE</b>	maximum permissible exposure
<b>mrem</b>	one-thousandth of one rem
<b>MRT</b>	Motorcycle Refresher Training
<b>MSF</b>	Motorcycle Safety Foundation
<b>MSRC</b>	Military Sports Bike Rider Course
<b>mSv</b>	milliSievert
<b>MTF</b>	medical treatment facility
<b>MTOE</b>	modified table of organization and equipment
<b>NARM</b>	naturally-occurring and accelerator-produced radioactive material
<b>NATO</b>	North Atlantic Treaty Organization
<b>NCO</b>	noncommissioned officer
<b>NCRP</b>	National Council on Radiation Protection and Measurements
<b>NDI</b>	nondevelopmental item
<b>NEC</b>	National Electric Code
<b>NFPA</b>	National Fire Protection Association
<b>NGB</b>	National Guard Bureau

**NIH**

National Institutes of Health

**NIOSH**

National Institute for Occupational Safety and Health

**NIS**

not in the system

**NRC**

Nuclear Regulatory Commission

**NRD**

Nonionizing Radiation Division

**NRSO**

nonionizing radiation safety officer

**NRSOHP**

Nonionizing Radiation Safety and Occupational Health Program

**NRTL**

nationally recognized testing laboratory

**NTA**

non-traditional agent

**NTASC**

Non-Traditional Agent Safety Committee

**NTASO**

non-traditional agent safety officer

**NTSB**

National Transportation Safety Board

**NUREG**

Nuclear Regulatory Commission regulation

**NVLAP**

National Voluntary Laboratory Accreditation Program

**ODASAF**

Office of the Director of Army Safety

**OEH**

occupational and environmental health

**OH**

occupational health

**OPNAVINST**

Chief of Naval Operations instruction

**OPORD**

operation order

**OSHA**

Occupational Safety and Health Administration

**OTSG**

Office of The Surgeon General

**PCE**

protective clothing and equipment

**PEO**

program executive officer

**PESHE**

programmatic environment, safety, and occupational health evaluation

**PHA**

process hazard analysis

**PL**

public law

**PM**

program manager

**PMCS**

preventive maintenance checks and services

**PMG**

Provost Marshal General

**POC**

point of contact

**POV**

privately-owned vehicle

**PPE**

personal protective equipment

**PSE**

planned special exposure

**PSM**

process safety management

**PWTB**

public works technical bulletin

**QASAS**

quality assurance specialist (ammunition surveillance)

**QC**

quality control

**QD**

quantity distance

**RAC**

risk assessment code

**RAM**

radioactive material

**RCR**

response, characterization, or remediation

**RCWM**

recovered chemical warfare material

**RDT&E**

research, development, test, and evaluation

**rem**

roentgen equivalent man (mammal)

**RESS**

required explosives safety submission

**RF**

radio frequency

**RGD**  
radiation generating device

**RM**  
risk management

**RRS-A**  
Records Retention Schedule—Army

**RSC**  
Radiation Safety Council

**RSO**  
radiation safety officer

**RSP**  
radiation safety program

**RSSO**  
radiation safety staff officer

**S4**  
stockpile-to-safe separation sequence

**SASOHI**  
standard Army safety and occupational health inspection

**SDDC**  
Military Surface Deployment and Distribution Command

**SDE**  
shallow dose equivalent

**SDS**  
safety data sheet

**SEC**  
Senior Executive Council

**SECARMY**  
Secretary of the Army

**SecCert**  
Secretarial Certification

**SES**  
senior executive service

**SF**  
standard form

**SI**  
Système Internationale

**SIB**  
Safety Investigation Board

**SIR**  
serious incident report

**SMCA**  
single manager for conventional ammunition

**SME**  
subject matter expert

**SMR**  
source, maintenance, and recoverability

**SO&EH**

safety occupational and environmental health

**SOFA**

status of forces agreement

**SOH**

safety and occupational health

**SOHA**

safety and occupational hazard assessment

**SOHAC**

Safety and Occupational Health Advisory Council

**SOP**

standard operating procedure

**SoS**

system of systems

**SSE**

system safety engineering

**SSMP**

system safety management plan

**SSRA**

system safety risk assessment

**Sv**

Sievert

**T**

dose to some specific organ or tissue of reference

**T&E**

test and evaluation

**TACOM**

U.S. Army Tank-Automotive and Armaments Command

**TB**

technical bulletin

**TB MED**

technical bulletin medical

**TC**

training circular

**TDA**

table of distribution and allowance

**TDY**

temporary duty

**TEDE**

total effective dose equivalent

**TGIS**

Transportation Geospatial Information System

**TIC**

toxic industrial chemical

**TIG**

The Inspector General

**TIM**  
toxic industrial material

**TLV**  
threshold limit value

**TM**  
technical manual

**TNT**  
trinitrotoluene

**TOE**  
table of organization and equipment

**TRADOC**  
U.S. Army Training and Doctrine Command

**TSEWG**  
Tri-Service Electrical Working Group

**TSG**  
The Surgeon General

**UAS**  
unmanned aircraft system

**UBSO**  
unit biological safety officer

**UCMJ**  
Uniform Code of Military Justice

**UFC**  
United Facilities Criteria

**USACBRNS**  
U.S. Army Chemical, Biological, Radiological, and Nuclear School

**USACE**  
U.S. Army Corps of Engineers

**USACID**  
U.S. Army Criminal Investigation Division

**USACRC**  
U.S. Army Combat Readiness Center

**USAG**  
U.S. Army garrison

**USAMRIID**  
U.S. Army Medical Research Institute of Infectious Diseases

**USAR**  
U.S. Army Reserve

**USARC**  
U.S. Army Reserve Command

**USASOC**  
U.S. Army Special Operations Command

**USATCES**  
U.S. Army Technical Center for Explosives Safety

**USC**  
United States Code

**USCG**  
U.S. Coast Guard

**USO**  
unit safety officer

**USSOCOM**  
U.S. Special Operations Command

**UV**  
ultraviolet

**UXO**  
unexploded ordnance

**VC**  
vehicle commander

**VCSA**  
Vice Chief of Staff of the Army

**VX**  
O-ethyl S-(2-Disopropylaminoethyl) methylphosphonothiolate

**W**  
recorded whole-body dosimeter exposure

**3Rs**  
Recognize, Retreat, Report

## **Section II**

### **Terms**

#### **Acceptable risk**

That part of identified risk which is allowed by the managing activity to persist without further engineering or management action.

#### **Acquisition phase**

Phases that provide a logical means of progressively translating broadly stated mission needs into well-defined, system-specific requirements and ultimately into operationally effective, suitable, and survivable systems. All the tasks and activities needed to bring the program to the next milestone occur during acquisition phases.

#### **Acquisition program**

A directed, funded effort that provides a new, improved, or continuing materiel, weapon, or information system or service capability in response to an approved need.

#### **Activity**

The rate of disintegration (transformation) or decay of RAM. The units of activity are the curie (Ci) and the becquerel (Bq) (see 10 CFR 20.1003). Ci =  $3.7 \times 10^{10}$  disintegrations/second; Bq = 1 disintegration/second; 1 Ci =  $3.7 \times 10^{10}$  Bq; 1  $\mu$ Ci =  $3.7 \times 10^4$  disintegrations/second.

#### **Administrative dose**

The dose that an RSO assigns when dosimetry is inaccurate or has been misused or lost.

#### **Adult**

An individual 18 years of age or older (see 10 CFR 20.1003).

#### **Advanced manufacturing**

Activities that depend on the use and coordination of information, automation, computation, software, sensing, and networking and/or make use of cutting-edge materials and emerging capabilities enabled by the physical and biological sciences. It encompasses new ways to manufacture existing products and the manufacturing of new products resulting from advances in technology. It includes, but is not limited to, additive manufacturing (also known as three-dimensional (3D) printing), AI, robotics, and advanced composite materials.

**Agreement state**

Any state with which the Atomic Energy Commission or NRC has entered into an effective agreement in which the state assumes many of NRC's functions.

**Aircraft**

Free balloons, gliders, airships, and flying machines, whether manned or unmanned; weight-carrying structure for navigation of the air that is supported by its own buoyancy or the dynamic action of the air against its surfaces.

**Ammunition and explosives**

Includes, but is not limited to, all items of ammunition, propellants (liquid and solid), high and low explosives, guided missiles, warheads, devices, pyrotechnics, chemical munitions, and components and substances associated therewith, presenting real or potential hazards to life and property.

**Ammunition and explosives mission**

Operations that involve the storage, issue, receipt, RDT&E, production, transport, demilitarization, maintenance, or surveillance of military munitions.

**Animal biosafety level**

A set of four BSLs are provided for work with vertebrate animals exposed to agents which may infect humans. ABSLs 1 through 4 provide for practices, equipment, and facilities that are comparable to the laboratory BSLs. However, there are unique hazards associated with infected animals that must be understood by those personnel with animal contact and addressed in the animal facility. ABSLs are designed to protect personnel from exposure to potentially infectious materials. Quarantine facilities and procedures must be utilized to prevent spread of infectious materials from animal to animal.

**Annual limit on intake**

The derived limit for the amount of RAM taken into the body of an adult worker by inhalation or ingestion in a year (40 hours per week for 50 weeks or 2,000 hours per year). ALI is the smaller value of intake of a given radionuclide in a year by the reference man; ALIs that would result in a CEDE of 5 rem (0.05 Sv) or a CDE of 50 rem (0.5 Sv) to any individual organ or tissue (see 10 CFR 20.1003). The ALI values are based on the intake rate and standards for "reference man" as defined in ICRP Publication 23.

**Annually**

From the month of the current year to the same month of the following year. However, the time will not exceed 13 months. This does not apply to items covered under the Army Maintenance Management System.

**Army Acquisition Executive**

Principal advisor and staff assistant to the SECARMY for acquisition of Army systems. Senior acquisition executive responsible for administering acquisition programs in accordance with established policies and guidelines. The AAE is also the senior procurement executive.

**Army chemical agent**

Includes Schedule 1 chemicals in Army possession, as listed in the Convention on the Prohibition of the Development, Production, Stockpiling, and Use of Chemical Weapons and on their Destruction (also known as the CWC); NTA in Army possession as defined in DoDI 5210.65; or munitions with a chemical fill at the declared chemical weapons storage facilities. Schedule 1 chemicals are identified in the CWC Annex on Chemicals. The CWC Annex provides the chemical composition of the group of toxic chemicals included in the "type" (V-type, G-type, and others).

**Army combat vehicle**

A tactical motor vehicle, with or without armor, designed for a specific fighting function such as armored security vehicles, light armored vehicles, STRYKERS, Bradleys, M1 tanks, armored personnel carriers, self-propelled Howitzers, armored vehicle-launched bridges, and so forth. Armor protection or armament mounted as supplemental equipment on noncombat vehicles will not change the classification of such vehicles to combat vehicles.

**Army mishap**

An unplanned event, or series of events, which results in one or more of the following:

- a.* Occupational illness to Army military or DA Civilian personnel.
- b.* Injury to on-duty DA Civilian personnel.
- c.* Injury to Army military personnel on and off duty.
- d.* Damage to Army property.
- e.* Damage to public or private property and/or injury or illness to non-Army personnel caused by Army operations (the U.S. Army had a causal or contributing role in the mishap).

**Army motor vehicle**

Any vehicle that is owned, leased, or rented by DA and/or Reserve Components. A vehicle that is primarily designed for over-the-road operation. A vehicle whose general purpose is the transportation of cargo or personnel. Examples are passenger cars, station wagons, trucks, ambulances, buses, motorcycles, fire trucks, and refueling vehicles.

**Army personnel**

Members of the Regular Army, USAR, and ARNG serving on active duty or performing inactive duty training; U.S. Military Academy cadets; officer candidates in Officer Candidate School; Reserve Officer Training Corps cadets when engaged in directed training activities; and DA Civilians.

**Army property**

Any item of Army property, or property leased by the U.S. Army for which the U.S. Army has assumed risk of loss, such as aircraft, vehicle, building, structure, system, and so on.

**Army tactical vehicles**

Any vehicle designed for field requirements in direct support of combat and tactical operations used to provide transportation or for training personnel for such operations (to include ATVs, mopeds, and motorcycles).

**Army vessel**

Any waterborne craft used or capable of being used for water transportation (see AR 56-9).

**Artificial intelligence**

Software and system functionality with the capacity to learn, understand, reason, plan, cognate, and/or problem solve.

**As low as reasonably achievable**

Making every reasonable effort to maintain exposures to radiation as far below applicable dose limits as is practically consistent with the purpose for which the licensed activity is undertaken, taking into account the state of technology, the economics of improvements in relation to benefits to the public health and safety, and other societal and socioeconomic considerations and in relation to utilization of nuclear energy and licensed material in the public interest (see 10 CFR 20.1003). Samples of good ALARA practices may be found in NRC Regulatory Guide 8.10, Revision 2; NRC Regulatory Guide 8.31; and NRC Regulatory Guide 10.8, Revision 2.

**As low as reasonably achievable investigational level**

A radiation dose to the worker while occupationally exposed that justifies further investigation. Such an investigation generally includes a review of the circumstances associated with the apparently abnormal internal or external dose, assessment of the consequences, and mitigation or prevention of such a dose of similar magnitude in the future.

**Audit**

A process of collecting information about an organization's SOH management system and making judgments about its adequacy and performance, identifying both the strengths and weaknesses of the safety and health program as implemented by the organization. To ensure that all necessary safety and health program elements are operating and that procedures are in place for thorough implementation. The aims of auditing should be to establish that appropriate management arrangements are in place, an adequate RM control system exists which reflects the hazard profile of the organization and is properly implemented, and appropriate workplace precautions are in place.

**Background radiation**

Radiation from cosmic sources; naturally occurring RAM, including radon (except as a decay product of source or special nuclear material or when workplace radon levels require compliance with 29 CFR 1910.1096); and global fallout as it exists in the environment from the testing of nuclear explosive devices or from past nuclear mishaps such as Chernobyl that contribute to background radiation and are not under the control of the licensee. Background radiation does not include radiation from the source, byproduct, or special nuclear materials that NRC regulates or from NARM that the U.S. Army regulates (see 10 CFR 20.1003).

**Becquerel**

The SI unit of radioactivity equivalent to one nuclear transformation per second.

**Bioassay**

The determination of kinds, quantities or concentrations, and, in some cases, the locations of RAM in the human body, whether by direct measurement (in vivo counting) or by analysis and evaluation of materials excreted or removed from the human body (see 10 CFR 20.1003).

**Biological mishap**

An event in which the failure of laboratory facilities, equipment, or procedures appropriate to the level of potential pathogenicity of an IAT may allow an occupational exposure or release of an agent or toxin outside of the primary barriers of the biocontainment area. An event in which the failure of laboratory facilities, equipment, or procedures appropriate to the level of potential pathogenicity or toxicity of a given etiologic agent (organism or toxin) may allow the unintentional, potential exposure of humans or the laboratory environment to that agent. Mishaps can be categorized into those resulting in confirmed exposures and those resulting in potential exposures.

**Biological select agent and toxin**

Biological agents and toxins selected by the U.S. Department of Health and Human Services and the U.S. Department of Agriculture that present a high bioterrorism risk to national security and have the greatest potential for adverse public health impact with mass casualties of humans and/or animals or that pose a severe threat to plant health or to plant products. The lists of select agents and toxins are reviewed and updated by the CDC and APHIS and are found in 42 CFR 73, 7 CFR 331, and 9 CFR 121.

**Biomedical research**

The application of biological science in medical RDT&E for the purpose of illness prevention and product development.

**Biosafety level**

A combination of facility design features and safety equipment (primary and secondary barriers), facility practices and procedures, and PPE (see the NIH/CDC BMBL).

- a.* BSL-1 standard practices, safety equipment, and facility specifications are generally appropriate for undergraduate and secondary educational training and teaching laboratories and for other laboratories that work with defined and characterized strains of viable biological agents not known to consistently cause disease in healthy adult humans.
- b.* BSL-2 standard practices, safety equipment, and facility specifications are applicable to laboratories in which work is performed using a broad-spectrum of biological agents and toxins that are associated with causing disease in humans of varying severity. With good practices and procedures, these agents and toxins can generally be handled safely on an open bench, provided the potential for producing splashes and aerosols is low.
- c.* BSL-3 standard practices, safety equipment, and facility specifications are applicable to laboratories in which work is performed using indigenous or exotic biological agents with a potential for respiratory transmission and those that may cause serious and potentially lethal infection.
- d.* BSL-4 standard practices, safety equipment, and facility specifications are applicable primarily for laboratories working with dangerous and exotic biological agents that pose a high individual risk of life-threatening disease that may be transmitted via the aerosol route and for which there is no available vaccine or therapy.

**Blister agent**

See DoD Dictionary of Military and Associated Terms.

**Byproduct material**

- a.* Any RAM (except special nuclear material) yielded in, or made radioactive by, exposure to the radiation incident to the process of producing or using special nuclear material. Generally, byproduct material is any RAM inevitably produced as a byproduct from the neutron-induced fission process within nuclear reactors.
- b.* The tailings or wastes produced by the extraction or concentration of uranium or thorium from ore processed primarily for its source material content, including discrete surface wastes resulting from uranium solution extraction processes. Underground ore bodies depleted by these solution extraction operations do not constitute "byproduct material" regulated by NRC under 10 CFR.
- c.* Any discrete source of radium-226 that is produced, extracted, or converted after extraction, before, on, or after August 8, 2005, for use for a commercial, medical, or research activity (see 10 CFR 20.1003).

**Calendar quarter**

A period of time of not less than 12 consecutive weeks nor more than 14 consecutive weeks. The first calendar quarter will begin in January of each year or begin with the dosimetry issue cycle closest to January of each year. Subsequent calendar quarters will begin within 12 or 14 weeks of that date, so that no day is included in both quarters or omitted from both quarters (see 29 CFR 1910.1096(b)(4)).

**Capability developer**

Command or agency that formulates and documents operational doctrine, concepts, organizations, and/or materiel requirements for assigned mission areas and functions. Serves as the user representative during acquisitions for their approved materiel requirements as well as doctrine and organization developments. CAPDEV is the command or

agency that formulates warfighting requirements for doctrine, organization, training, materiel, leadership and education, personnel, and facilities. May be used generically to represent the user and user maintainer community role in the materiel acquisition process (counterpart to generic use of MATDEV).

#### **Capability objective**

ASOHMS capability objectives are the criteria of the ASOHMS and serve as the framework in which every DA organization will execute their SOH programs. The capability objectives are used to integrate ASOHMS criteria into manageable and related sets of Army SOH requirements. These capability objectives are used to organize identified gaps and develop strategic action plans to help Army organizations incrementally implement a safety management system through a three-stage approach of process, execution, then improvement (in other words, Plan-Do-Check Act). They are designed to fully integrate risk based mission focused written programs, policies, tactics, techniques, and procedures into daily activities to enhance readiness by reducing preventable injuries and illnesses, by proactively assessing risk, implementation of control measures, and trending and measurement. The end state will support the documentation, refinement, and validation of non-materiel and materiel changes needed to achieve required capabilities and result in sustained program performance and continuing improvements to protect our greatest asset, our people.

#### **Chemical agent**

See DoD Dictionary of Military and Associated Terms. Excluded are RDT&E solutions, riot control agents, chemical defoliants and herbicides, smoke, flame and incendiaries, and industrial chemicals.

#### **Chemical agent operation**

Any activity that involves DoD chemical agents, including storage, shipping, handling, manufacturing, maintenance, test chamber activities, laboratory activities, surveillance, demilitarization, decontamination, disposal, and training.

#### **Chemical munitions**

A munition that, through its chemical properties, produces lethal or other damaging effects to human beings, except that such term does not include riot control agents, chemical herbicides, smoke, and other obscuration materials.

#### **Class**

A classification scheme for inhaled RAM according to its rate of clearance from the pulmonary region of the lung. Materials are classified as D, W, or Y, which applies a range of clearance half-times: for Class D (Days) of less than 10 days, for Class W (Weeks) from 10 to 100 days, and for Class Y (Years) of greater than 100 days (see 10 CFR 20.1003).

#### **Command responsibility**

The philosophy that commanders down the entire chain of command are responsible for the safety of their personnel.

#### **Commander**

An individual that lawfully exercises leadership authority over subordinates by virtue of rank or assignment. This includes the authority and responsibility for effectively using available resources for planning the employment of, organizing, directing, coordinating, and controlling military forces for the accomplishment of assigned missions. This also includes responsibility for health, welfare, morale, and discipline of assigned personnel in his or her "command," according to FM 1-02.1 and ADP 6-0.

#### **Commercial off-the-shelf**

An existing item determined by a material acquisition decision process review (DoD, military component, or subordinate organization, as appropriate) to be available for acquisition to satisfy an approved materiel requirement with no expenditure of funds for development, modification, or improvement (such as commercial products or materiel developed by other countries). This item may be procured by the contractor or furnished to the contractor as government-furnished equipment or government-furnished property.

#### **Committed dose equivalent (HT,50 or H50)**

The dose to some specific organ or tissue of reference (T) that will be received from an intake of RAM by an individual during the 50-year period following the intake (see 10 CFR 20.1003).

#### **Committed effective dose equivalent (HE,50)**

the sum of the products of the CDEs for each of the body organs or tissues that are irradiated multiplied by the weighting factors applicable to each of those organs or tissues ( $H_{E,50} = \sum W_T H_{T,50}$ ) (see 10 CFR 20.1003).

**Competent authority**

An individual of the Armed Forces designated in command, responsible for the direction, coordination, and control of military forces. The commander alone is responsible for everything his or her unit does or fails to do. He or she cannot delegate responsibility or any part of it although he or she may delegate portions of his or her authority to competent individuals. An individual designated by the commander to address areas of primary interest within that individual's technical expertise.

**Concentration**

The amount of a chemical agent present in a unit volume of air. Usually expressed in milligrams per cubic meter (mg/m<sup>3</sup>).

**Confirmed exposure**

Any mishap with a biological program agent in which there was direct evidence of an actual exposure such as a measurable rise in antibody titer to the agent or a confirmed diagnosis of intoxication or disease.

**Contract**

A mutually binding legal relationship obligating the seller to furnish the supplies or services (including construction) and the buyer to pay for them. It includes all types of commitments that obligate the U.S. Government to an expenditure of appropriated funds and that, except as otherwise authorized, are in writing. In addition to bilateral instruments, contracts include (but are not limited to) awards and notices of awards, job orders or task letters issued under basic ordering agreements, letter contracts, orders such as purchase orders under which the contract becomes effective by written acceptance or performance, and bilateral contract modifications. Contracts do not include grants and cooperative agreements covered by 31 USC 6301 and those that follow.

**Contracting officer**

See DoD Dictionary of Military and Associated Terms.

**Contractor**

A private sector enterprise or the organizational element of DoD or any other government agency engaged to provide services or products within agreed limits specified by the managing activity.

**Control**

Action taken to eliminate hazards or reduce their risk.

**Controlled area**

An area outside of a restricted area but inside the site boundary, access to which can be limited by the licensee for any reason (see 10 CFR 20.1003).

**Cost**

Defense systems total ownership cost is defined as life-cycle cost. Per DoDM 5000.04, life-cycle cost includes not only acquisition programs direct costs but also the indirect costs attributable to the acquisition program (that is, costs that would not occur if the program did not exist). For example, indirect costs would include the infrastructure that plans, manages, and executes a program over its full life and common support items and systems.

**Curie**

A unit of radioactivity equal to 37 billion Bq.

**Cyclosarin**

The chemical methylphosphonofluoridic acid, cyclohexyl ester. Chemical Abstracts Service (CAS) number 329-99-7, in pure form and in the various impure forms that may be found in storage as well as in industrial, depot, or laboratory operations.

**Damage**

The partial or total loss of hardware caused by component failure; exposure of hardware to heat, fire, or other environments; human errors; or other inadvertent events or conditions.

**Days away from work**

*a.* Those days when a person loses one or more work days as a result of an injury or illness, starting with the day after the injury occurred or the illness began and including calendar days the person was unable to work, regardless of whether the person was scheduled to work on those days (see 29 CFR 1904.7).

*b.* For military personnel, days away from work for onand off-duty injuries and occupational illnesses include inpatient hospitalization, medical restrictions to quarters, convalescent leave, and commander directed removal from duties (see DODI 6055.07).

**Days of restricted work or transfer to another job**

Days on which a person is working but restricted from completing assigned tasks, works less than a full day or shift, or is transferred to another task to accommodate the injury or illness. Calendar days not scheduled to work are included in the count of days. Count of days is stopped when the person is either returned to their pre-injury or pre-illness job or permanently assigned to a job that has been modified or permanently changed to eliminate the routine functions the person was restricted from performing. For military personnel, restricted work or transfer to another job includes limited and light-duty assignments (see DoDI 6055.07).

**Declared pregnant woman**

A woman who has voluntarily informed her employer, in writing, of her pregnancy and the estimated date of conception. The declaration remains in effect until the declared pregnant woman withdraws the declaration in writing or is no longer pregnant (see 10 CFR 20.1003).

**Decommission**

To remove a facility or site safely from service and reduce residual radioactivity to a level that permits release of the property for unrestricted use and termination of the NRC license, Army reactor permit, or ARA, or release of the property under restricted conditions and the termination of the license (see 10 CFR 20.1003).

**Decommissioning**

The process of safely closing a facility where nuclear materials were handled to retire it from service after its useful life has ended. This process primarily involves decontaminating the facility to reduce residual radioactivity and then releasing the property for unrestricted use.

**Decontamination**

See DoD Dictionary of Military and Associated Terms.

**Deep dose equivalent (H<sub>d</sub> or H<sub>10mm</sub> or H<sub>p(10mm)</sub>)**

Applies to external whole-body exposure and is the dose equivalent at a tissue depth of 1 cm (1000 mg/cm<sup>2</sup>).

**Demilitarization**

The mutilation, destruction, or neutralization of chemical agent materiel, rendering it harmless and ineffectual for military purposes.

**Derived air concentration**

The concentration of a given radionuclide in air which, if breathed by the reference man for a working year of 2,000 hours (40 hours per week for 50 weeks) under conditions of light work (inhalation rate 1.2 cubic meters of air per hour), results in an intake of one ALI. DAC values are given in 10 CFR 20 Appendix B (see 10 CFR 20.1003).

**Detection**

See DoD Dictionary of Military and Associated Terms.

**Deviation**

A departure from the requirements of this regulation.

**Dilute chemical agent**

Schedule 1 chemicals or NTAs that have been reduced in strength (less than neat) by admixture (dilution) with a solvent. Limiting quantities and concentrations are considered a means of reducing the potential hazard or threat. However, even at the dilute exempt concentrations, acute Schedule 1 chemical or NTA properties are still present, thus appropriate health and safety precautions are warranted. See also definition of ultra-dilute concentrations (see AR 50-6). The following levels are considered dilute chemical agents:

- a. Concentrations of H, HD, or HT not greater than 10 mg/ml and containing not greater than 100 mg of chemical agent.
- b. Concentrations of GB not greater than 2 mg/ml and containing a maximum quantity of 20 mg of chemical agent.
- c. Concentrations of VX not greater than 1 mg/ml and containing a maximum quantity of 10 mg of chemical agent.

**Distilled mustard**

Bis-(2-chloroethyl)-sulfide, CAS number 505-60-2. HD is H that has been purified by washing and vacuum distillation to reduce sulfur impurities. It is a vesicant (blister agent) and alkylating agent, producing cytotoxic action on the hematopoietic (blood-forming) tissues. The rate of detoxification of HD in the body is very slow, and repeated exposures produce a cumulative effect. Its toxic hazard is high for inhalation, ingestion, and skin and eye absorption, but the most common acute hazard is from liquid contact with eyes or skin.

**Dose**

A generic term that means absorbed dose, dose equivalent, EDEX, CDE, CEDE, or TEDE (see 10 CFR 20.1003).

**Dose equivalent (HT or HT)**

The product of the absorbed dose in tissue (D) and the quality factor (Q), and all other necessary modifying factors, at the location of interest. The units of dose equivalent are the rem and the Sv (see 10 CFR 20.1003). The dose equivalent in rem is equal to the absorbed dose in rad multiplied by Q; 1 rem = 0.01 Sv. The dose equivalent in Sv is equal to the absorbed dose in Gy multiplied by Q; 1 Sv = 100 rem. Its purpose is to have a single unit, regardless of the type of radiation, describing the risk of fatal cancer.

**Dose of record**

The official estimate of the DDE to the whole body, LDE, SDE to the skin, and SDE to the extremities based on an assessment of a dosimeter assigned to an individual and processed by a facility holding current personnel dosimetry accreditation from the NVLAP of the National Institutes of Standards and Technology. The dose of record may differ from the dosimeter assessment if independent investigation demonstrates the individual did not receive the dose the dosimeter measured. Dose of record can also include internal doses (TEDE = CEDE + EDEX).

**Dosimeter**

A device intended to measure radiation or evaluate any quantity of irradiation for the purpose of determining an occupationally exposed individual's ionizing radiation dose.

**Effective dose equivalent (H<sub>E</sub>) or HE**

The sum of the products of the dose equivalent to the organ or tissue and the weighting factors applicable to each of the body organs or tissues that are irradiated ( $H_E = \sum w_T H_T$ ). The units of dose equivalent are the rem and Sv (see 10 CFR 20.1003).

**Effectiveness**

The overall degree of mission accomplishment by a system under realistic conditions (tactics, threat, personnel, battlefield and natural environments, and so on).

**Electromagnetic radiation**

Radiation made up of oscillating electric and magnetic fields and propagated with the speed of light. Electric and magnetic fields that oscillate at right angles to each other and to their direction of propagation and that travel at the speed of light in a vacuum (300,000 kilometers per second). EMR includes gamma rays, x-rays, UV radiation, visible light, infrared radiation, RF radiation, and extremely low frequency EMR (see table 16-1).

**Electron volt**

A unit of energy equal to  $1.6 \times 10^{19}$  joule.

**Embryo or fetus**

The developing human organism from conception until the time of birth (see 10 CFR 20.1003).

**Engineering controls**

Regulation of facility operations using prudent engineering principles such as facility design, operation sequencing, equipment selection, and process limitations.

**Engineering or construction**

Those activities associated with surveying, building, and erecting, disassembling, or destroying things. Examples include lay/clear minefields, bridging, quarrying, welding, brazing, roofing, installing electrical wiring, painting, land surveying, demolition, clearing, digging, concrete work, masonry work, dredging, and trenching.

**Environment, safety, and occupational health**

All of the individual, but interrelated, disciplines that encompass the processes and approaches for addressing laws, regulations, EOs, policies, and hazards associated with environmental compliance, environmental impacts, system safety, occupational safety and health, HAZMAT management, and pollution prevention. The system safety methodology is used across the ESOH disciplines to identify hazards and mitigate risks through the systems engineering process.

**Establishment**

A single physical location where business is conducted or where services or operations are performed. Where distinctly separate activities are performed at a single physical location, each activity will be treated as a separate establishment. Typically, an establishment refers to a field activity, regional office, area office, installation, or facility.

**Evaluation**

A specialized inspection designed to determine the effectiveness of a unit's safety and health program.

**Experimental chemical agents**

Chemical substances being tested, developed, or altered for chemical defense purposes that are used solely by the military, are contained in items configured as a weapon, and have toxicities equal to or greater than current nerve or mustard agents.

**Explosion**

A chemical reaction of any chemical compound or mechanical mixture that, when initiated, undergoes a very rapid combustion or decomposition, releasing large volumes of highly heated gases that exert pressure on the surrounding medium. Depending on the rate of energy release, an explosion can be categorized as a deflagration or a detonation.

**Explosive license**

An installation-generated document which shows the allowable net explosives weight at each explosive site.

**Explosive ordnance disposal**

*a.* See DoD Dictionary of Military and Associated Terms.

*b.* May also include the rendering safe or disposal of explosive ordnance that have become hazardous by damage or deterioration when the disposal of such explosive ordnance is beyond the capabilities of personnel normally assigned the responsibility for routine disposal. In this case, this includes applicable weapon systems, all munitions, all similar or related items, or components explosive, energetic, or hazardous in nature. This includes explosive ordnance training aids and items, items that could be misidentified as explosive ordnance or bombs, remotely piloted vehicles, and Army aircraft and vehicles.

**Exposed site**

A location exposed to the potential hazardous effects (blast, fragments, debris, and heat flux) from an explosion at a potential explosion site.

**Exposure**

The frequency and length of time personnel and equipment are subjected to a hazard. Ionizing radiation may be either produced from machines (for example, x-ray machines and accelerators) or spontaneously emitted by RAM. An individual located near such machines or materials may be "exposed" to possible ionizing radiation emissions and sustain an exposure.

**Extremely low frequency electromagnetic radiation**

EMR with a frequency less than 3 kHz.

**Extremity**

The hand, elbow, arm below the elbow, foot, knee, or leg below the knee (see 10 CFR 20.1003).

**Fair wear and tear**

Loss or impairment of appearance, effectiveness, worth, or utility of an item that has occurred solely because of normal and customary use of the item for its intended purpose.

**Family of systems**

A set or arrangement of independent systems that can be arranged or interconnected in various ways to provide different capabilities. The mix of systems can be tailored to provide desired capabilities, dependent on the situation. An example of a family of systems is a unit of action that included armor, infantry, artillery, and combat support systems.

**Field operations**

Operations conducted outdoors or outside of manmade enclosures or structures that contain built-in alarms or engineered chemical agent controls. Short-term operations in storage structures are also considered field operations.

**First aid**

See 29 CFR 1904.7(b)(5)(ii).

**Foreign object damage**

Damage to Army vehicle/equipment/property as a result of objects alien to the vehicle/equipment damaged. Excludes aircraft turbine engines defined as an FOD incident.

**Foreign radioactive sources**

Like U.S. military equipment, some foreign materiel contains RAM. In most instances, there is only a very small amount of RAM involved, and it is in a container called a "source." These RAMs do not present a hazard to personnel

working close to them unless a radioactive source is unwittingly tampered with or in some way damaged. To preclude a potentially hazardous situation, it is important that radioactive sources on foreign materiel be properly handled.

**Friendly fire/fratricide**

A circumstance in which authorized members of U.S. or friendly military forces, U.S. or friendly official government employees, DoD or friendly nation contractor personnel, and nongovernmental organizations or private volunteer organizations, who, while accompanying or operating with the U.S. Armed Forces, are mistakenly or accidentally killed or wounded in action by U.S. or friendly forces actively engaged with an enemy or who are directing fire at a hostile force or what is thought to be a hostile force (see DoDI 6055.07).

**Fuze (fuzing system)**

A physical system designed to sense a target or respond to one or more prescribed conditions such as elapsed time, pressure, or command and initiate a train of fire or detonation in a munition. Safety and arming are primary roles performed by a fuze to preclude ignition of the munition before the desired position or time.

**Garrison**

An organization that operates the installation and provides base operations services to tenant organizations. The garrison normally belongs to the IMCOM.

**Giga**

An SI unit prefix indicating a factor of one billion ( $1 \times 10^9$ ).

**Government motor vehicle**

A motor vehicle that is owned, leased, or rented by a DoD component (not an individual), primarily designed for over-the-road operations, and whose general purpose is the transportation of cargo or personnel. Examples are passenger cars, station wagons, vans, ambulances, buses, motorcycles, trucks, and tractor-trailers. Vehicles on receipt to and operated by non-DoD persons, agencies, or activities such as the U.S. Postal Service or the American Red Cross are not government motor vehicles (see DoDI 6055.04).

**Government-furnished equipment**

Property in the possession of or acquired directly by the U.S. Government, and subsequently delivered to or otherwise made available for use.

**Ground mishap**

A mishap that occurs on land, involves DoD activities, and results in occupational illness to DoD personnel, injury to DoD military personnel on or off duty, injury to on-duty civilian personnel or DoD-supervised contractor employees, damage to DoD property, and damage to private property or injury or illness to non-DoD personnel caused by DoD activities, but does not involve damages to DoD aircraft, missiles, explosives, chemical agents, motor vehicles, space systems and support equipment, or nuclear weapons or reactors (see DoDI 6055.07, glossary).

**Guided missile**

A military-unique item consisting of all missiles propelled through air or water that are unmanned, guided by internal or external systems, and self-propelled. This term includes individual major missile components such as stages, guidance and control sections, payloads other than nuclear re-entry vehicles; system equipment required to place the missile in an operational status while at the launch or launch control facility or on the launching aircraft; and system equipment required to launch and control the missile. Examples are intercontinental ballistic missiles; surface-to-air, air-to-air, and air-to-surface guided missiles; and torpedoes. This term includes all missiles that are owned in whole or in part by a DoD component; operationally controlled by a DoD component; on bailment or loan to a non-DoD entity for modification, testing, or as an experimental project for a DoD component; or under test by a DoD component (see DoDI 6055.07).

**Hardware**

The physical, touchable, material parts of a computer or other system. The term is used to distinguish these fixed parts of a system from the more changeable software or data components it executes, stores, or carries. Computer hardware typically consists chiefly of electronic devices (central processing unit, memory, and display) with some electromechanical parts (keyboard, printer, disk drives, tape drives, and loudspeakers) for input, output, and storage.

**Hazard**

See FM 1-02.1.

**Hazard analysis**

A hazard analysis is a clear, systemic, concise, well-defined, orderly, consistent, closed-loop, quantitative or qualitative, and objective methodology used to identify possible hazards within a mission, system, equipment, or process that can cause losses to the mission, equipment, process, personnel, or damage to the environment. Examples of hazard analyses are what-if, preliminary hazard analysis, sneak circuit analysis, hazard and operability study, fault tree analysis, failure mode and effects analysis, and fault hazard analysis.

**Hazard classification**

Process by which HAZMAT are assigned to one of the nine United Nations-recognized classes of dangerous goods (see DESR 6055.09).

**Hazardous chemicals**

Any chemical which is classified as a physical hazard or a health hazard, a simple asphyxiant, combustible dust, pyrophoric gas, or hazard not otherwise classified (see 29 CFR 1910.1200).

**Hazardous materials**

Hazardous chemicals, hazardous substances, hazardous wastes, or engineered nanomaterials, where applicable (see DoDI 6050.05.)

**Hazardous waste**

A waste or combination of wastes as defined in 40 CFR 261.3, or those substances defined as hazardous wastes in 49 CFR 171.8.

**Health hazard**

A chemical which is classified as posing one of the following hazardous effects: acute toxicity (any route of exposure); skin corrosion or irritation; serious eye damage or eye irritation; respiratory or skin sensitization; germ cell mutagenicity; carcinogenicity; reproductive toxicity; specific target organ toxicity (single or repeated exposure); or aspiration hazard. The criteria for determining whether a chemical is classified as a health hazard are detailed in 29 CFR 1910.1200, Appendix A (see AR 602-2).

**Health hazard assessment**

The application of biomedical knowledge and principles to document and quantitatively determine the health hazards of Army systems. This assessment identifies, evaluates, and recommends controls to reduce risks to the healthy and effectiveness of personnel who test, use, or service Army systems. This assessment includes:

- a. The evaluation of hazard severity, hazard probability, risk assessment, consequences, and operational constraints.
- b. The identification of required precautions and protective devices.
- c. Training requirements (see AR 40-10).

**Hertz**

The SI unit of frequency equivalent to one vibration (cycle) per second.

**High intensity optical source**

Includes nonlaser sources of high intensity UV, visible radiation, and infrared radiation. These include, but are not limited to, welding and cutting arcs, searchlights, UV germicidal/disinfection lamps and UV gel trans-illuminator lamps, xenon arc lamps, UV phototherapy lamps in dermatology clinics, therapy lamps in neonatal clinics (not including bili blankets), UV LEDs, fluorescence inspection lamps, operating microscopes, and curing lamps.

**High radiation area**

An area accessible to individuals in which radiation levels from radiation sources external to the body could result in an individual receiving a dose equivalent in excess of 100 mrem (1 mSv) in 1 hour at 30 cm from the radiation source or 30 cm from any surface that the radiation penetrates (see 10 CFR 20.1003).

**Human error**

Human performance that deviated from that required by the operational standards or situation. Human error in mishaps can be attributed to a system inadequacy/root cause in training, standard, leader, individual, or support failure indicated by human factors and/or human factors engineering.

**Human factors**

Human interactions (man, machine, and/or environment) in a sequence of events that were influenced by, or the lack of, human activity which resulted or could result in an Army mishap.

**Human systems integration**

A comprehensive management and technical strategy, initiated early in the acquisition process, to ensure that human performance, the burden the design imposes on manpower, personnel, and training, and safety and health aspects are considered through the system design and development process (see AR 602-2).

**Identified risk**

That risk which has been determined through various analysis techniques.

**Imminent danger**

Any conditions or practices in any workplace which are such that a danger exists which could reasonably be expected to cause death or serious physical harm immediately or before the imminence of such danger can be eliminated through normal procedures (see 29 CFR 1960.2(u)).

**Impact area**

The ground and associated airspace within the training complex used to contain fired or launched AE and the resulting fragments, debris, and components from various weapon systems. A weapon system impact area is the area within the surface danger zone used to contain fired or launched AE and the resulting fragments, debris, and components. Indirect fire weapon system impact areas include probable error for range and deflection. Direct fire weapon system impact areas encompass the total surface danger zone from the firing point or positions down range to distance X.

*a. Temporary impact area.* An impact area within the training complex used for a limited period of time to contain fired or launched AE and the resulting fragments, debris, and components. Temporary impact areas are normally used for non-dud producing AE and should be able to be cleared and returned to other training support activities following termination of firing.

*b. Dedicated impact area.* An impact area that is permanently designated within the training complex and used indefinitely to contain fired or launched AE and the resulting fragments, debris, and components. Dedicated impact areas are normally used for less sensitive AE than that employed in high-hazard impact areas. However, any impact area containing fused high explosive or white phosphorous duds represent a high risk to personnel and access must be limited and strictly controlled.

*c. High-hazard impact area.* An impact area that is permanently designated within the training complex and used to contain sensitive high explosive AE and the resulting fragments, debris, and components. High-hazard impact areas are normally established as part of dedicated impact areas where access is limited and strictly controlled because of the extreme hazard of dud ordnance such as improved conventional munitions, high explosive anti-tank, 40mm, and other highly sensitive AE.

**Industrial chemical**

Chemicals developed or manufactured for use in industrial operations or research by industry, government, or academia. Man does not primarily manufacture these chemicals for the specific purpose of producing human casualties or rendering equipment, facilities, or areas dangerous for use.

**Infectious agents and toxins**

Fungi, virus, bacteria, prions, rickettsia, parasites, or a viable microorganism or its toxin, or a prion that lacks nucleic acids that causes or may cause disease; includes clinical cultures.

**Infrared radiation**

EMR with a wavelength between 760–780 nm and 1 mm.

**Initial capabilities document**

Documents the need for a materiel approach to a specific capability gap derived from an initial analysis of materiel approaches executed by the operational user and, as required, an independent analysis of materiel alternatives. It defines the capability gap in terms of the functional area, the relevant range of military operations, desired effects, and time. The ICD summarizes the results of the doctrine, organization, training, materiel, leadership and education, personnel, and facilities analysis and describes why non-materiel changes alone have been judged inadequate in fully providing the capability (see AR 70-1).

**Injury or illness**

*a.* See DoD Dictionary of Military and Associated Terms.

*b.* An abnormal condition or disorder. Illness includes both acute and chronic illnesses, such as, but not limited to, a skin disease, respiratory disorder, or poisoning (see 29 CFR 1960.2(l)).

**In-process review**

Review of a project or program at critical points to evaluate the status and make recommendations to the decision authority.

**Inspection**

A comprehensive survey of all or part of a workplace in order to detect safety and health hazards. Inspections are normally performed during the regular work hours of the agency, except as special circumstances may require. Inspections do not include routine, day-to-day visits by agency occupational safety and health personnel, or routine workplace surveillance of OH conditions (see 29 CFR 1960.2(k)). It is also the process of determining compliance with safety and health standards through formal and informal surveys of workplaces, operations, and facilities.

**Installation**

An aggregation of contiguous, or near contiguous, common mission-supporting real property holdings under the jurisdiction of or possession controlled by the DA or by a state, commonwealth, territory, or the District of Columbia and at which an Army unit or activity (Active Reserve, Army Reserve, or ARNG) is assigned.

**Installation radiation safety officer**

Appointed in writing by the senior commander of the Army installation. It is recommended the installation RSO be the senior full-time radiation professional responsible for providing radiation support to Army installations, including camps, stations, military communities, and USAR organizations that have, use, store, and transport RAMs that are under an NRC license. The 72A nuclear medical science officer, GS-1306 health physicist, or the senior Level 3 RSO on the installation would be the ideal person to have oversight of the installation radiation program.

**Installation safety director**

The ISD leads the ISO and is responsible to direct, synchronize, and deliver installation safety functions, in accordance with senior commander direction, as well as federal, DoD, and Army regulations. He or she is normally assigned to either the senior commander's safety office or the garrison safety office and is appointed on orders by the senior commander.

**Installation safety office**

The ISO is a general term referring to personnel who facilitate the installation safety functions, under the authority of the senior commander. The ISO is comprised of personnel assigned to the senior commander's safety office and the garrison safety office, under the general direction of the ISD with oversight by the senior commander and garrison commander. These offices may be co-located at the senior commander's discretion, but all personnel authorizations and resources remain assigned to and support the primary mission of their parent command. Additionally, each safety director reports to, and is rated by, their parent command.

**Institutional Army**

The institutional Army supports the operational Army. Institutional organizations provide the infrastructure necessary to raise, train, equip, deploy, and ensure the readiness of all Army forces. The training base provides military skills and professional education to every Soldier as well as members of sister services and allied forces. It also allows the Army to expand rapidly in time of war. The industrial base provides world-class equipment and logistics for the Army. Army installations provide the power-projection platforms required to deploy land forces promptly to support combatant commanders. Once those forces are deployed, the institutional Army provides the logistics needed to support them.

**Intake**

The amount of RAM taken into the body by inhalation, absorption through the skin, injection, ingestion, or through wounds.

**Intent for flight**

Exists when aircraft brakes are released or takeoff power is applied for commencing an authorized flight. For catapult-assisted takeoffs, flight begins at first motion of the catapult after the pilot has indicated readiness for launch. Intent for flight continues until either the fixed-wing aircraft taxis clear of the runway or, for helicopters or vertical takeoff and landing aircraft, the aircraft has alighted and the aircraft weight is wholly supported by the landing gear (see DoDI 6055.07, glossary).

**Internal dose**

The portion of the dose equivalent received from RAM taken into the body.

**Investigation**

A systematic study of a mishap, incident, injury, or occupational illness circumstances.

**Ionizing radiation**

*a.* See DoD Dictionary of Military and Associated Terms.

*b.* Charged subatomic particles and ionized atoms with kinetic energies greater than 12.4 eV, EMR with photon energies greater than 12.4 eV, and all free neutrons and other uncharged subatomic particles (except neutrinos and anti-neutrinos).

**Kilo**

SI units prefix indicating a factor of 1000.

**Laboratory**

An individual room or rooms within a facility that provide space in which work with etiologic or chemical agents may be performed. It contains appropriate engineering features and equipment required for either a given BSL or chemical agent to protect personnel working in the laboratory and the environment and personnel outside of the laboratory.

**Laser**

Light amplification by stimulated emission of radiation; a device that produces an intense, coherent, directional beam of light by stimulating electronic or molecular transitions to higher energy levels. Lasers are classified by the degree of potential hazard (see 21 CFR 1040.10, ANSI Z136.1, for comprehensive definitions of laser hazard classes and TB MED 524 and JP 3-09 for more information on lasers.)

**Lens dose equivalent (H<sub>3</sub>mm or Hp (3 mm))**

The dose equivalent to the lens of the eye from external exposure of the lens of the eye to some ionizing radiation source. It is measured at an eye lens tissue depth of 0.3 cm (300 mg/cm<sup>2</sup>) (see 10 CFR 20.1003).

**Levinstein mustard**

A chemical consisting of a mixture of 70 percent bis(2-chloroethyl) sulfide and 30 percent sulfur impurities produced by the Levinstein process.

**Lewisite**

The chemical dichloro-(2-chlorovinyl)-arsine, CAS number 541-25-3, in pure form and in the various impure forms that may be found in storage as well as in industrial, depot, or laboratory operations. L is a lethal vesicant (blister agent). The toxic hazard of L is high for inhalation, ingestion, and skin and eye exposure, although the most severe effects occur from liquid contact with eyes or skin.

**Lifecycle**

See DoD Dictionary of Military and Associated Terms.

**Life-cycle management**

A management process applied throughout the life of a system that bases all programmatic decisions on the anticipated mission-related and economic benefits derived over the life of the system.

**Limits**

The permissible upper bounds of radiation doses (see 10 CFR 20.1003).

**Maintenance/repair/servicing**

Activities associated with the maintenance, repair, or servicing of equipment and other property. Excludes janitorial, housekeeping, or grounds keeping activities. Examples include install/remove/modify equipment, tune/adjust/align/connect, hot-metal work, cold-metal work, plastic working, soldering, repairing tires, inspecting tires/batteries, fueling/defueling, changing/inflating tires, and charging batteries.

**Malfunction**

Failure of an ammunition item to function as expected when fired, launched, or when explosive items function under conditions that should not cause functioning. Malfunctions include hang-fires, misfires, duds, abnormal functioning, and premature functioning of explosive items under normal handling, maintenance, storage, transportation, and tactical deployment. Malfunctions do not include mishaps or incidents that arise solely from negligence, all practice, or situations such as vehicle mishaps or fires.

**Maritime (afloat) mishaps**

An unplanned event that involves a collision, grounding, sinking, fire, or explosion as a result of the operation of any Army watercraft. They also involve military and operational diving (which does not include recreational diving) and hyperbaric exposure mishaps or amphibious swimming operations resulting in injury or illness to persons or damage to watercraft, cargo, or other property.

*a.* Maritime mishaps include mishaps occurring while loading, off-loading, or receiving services at dockside; damage to Army property handled as an onboard commodity; mishaps occurring during amphibious or on-shore warfare training operation; and damage and all injuries to Army personnel occurring onboard.

*b.* Maritime mishaps do not include mishaps that are reportable under other major categories prescribed in this regulation and DA Pam 385-40. For example, aviation, missile, or chemical agent mishaps.

**Materiel acquisition decision process**

Those milestone reviews held to determine if a system is ready to progress to the next phase of the acquisition process.

**Materiel developer**

Command or agency responsible for the functional support for the research, development, and acquisition process. The research, development, and acquisition command, agency, or office assigned responsibility for the system under development or being acquired. The term may be used generically to refer to the research, development, and acquisition community in the materiel acquisition process (counterpart to the generic use of CAPDEV).

**Materiel development**

The conception, development, and execution of solutions to materiel requirements identified and initiated through the capability developments process, translating equipment requirements into executable programs within acceptable performance, schedule, and cost parameters.

**Maximum credible event**

The most disastrous maximum credible loss identified for a given system or operation. In explosives and chemical agent hazards evaluation, the maximum credible event from a hypothesized accidental explosion, fire, or toxic chemical agent release (with explosives contribution) is the worst single event that is likely to occur from a given quantity and disposition of AE. The event must be realistic, with a reasonable likelihood of occurrence considering the means of initiation, explosion propagation, burning rate characteristics, and physical protection given to the items involved.

**Medical surveillance**

A program composed of preplacement, job transfer, periodic, and termination examinations that are provided to all personnel potentially exposed to chemical agent health hazards in the work environment.

**Medical treatment**

The management and care of a patient to combat disease or disorder. It does not include visits to a physician or licensed health care professional solely for observation or counseling, diagnostic procedures, or first aid.

**Member of the public**

Any individual except when that individual is receiving an occupational dose (see 10 CFR 20.1003).

**Micro**

SI units prefix indicating a factor of one one-millionth ( $1 \times 10^6$ ).

**Milestone**

The major decision point that initiates the next phase of an acquisition program. Major Defense Acquisition Program milestones may include, for example, the decisions to begin engineering and manufacturing development, or to begin either low-rate initial or full-rate production. Major Automated Information System program milestones may include, for example, the decision to begin program definition and risk reduction.

**Milestone decision authority**

The person in whom is vested the authority to make milestone decisions. This may be the Defense Acquisition Executive, the component acquisition executive (for the Army, this is the AAE), or the PEO.

**Military personnel**

All U.S. military personnel on active duty, USAR or ARNG personnel on active duty or performing inactive duty training, Service Academy midshipmen/cadets, officer candidates in officer candidate school and Aviation Officer Candidate School, Reserve Officers' Training Corps cadets when engaged in directed training activities, and foreign national military personnel assigned to the DoD components (see DoDI 6055.04).

**Military treatment facility**

Civilian or uniformed services medical centers, hospitals, clinics, or other facilities that are authorized to provide medical, dental, or veterinary care.

### **Military-exempt lasers**

Those lasers and laser systems that the FDA has exempted from the provisions of 21 CFR 1040.10, 21 CFR 1040.11, and 21 CFR 1002 (except 21 CFR 1002.20) (exemption no. 76-EL-01 DoD). These laser products are used exclusively by DoD components and are designed for actual combat or combat training operations or are classified in the interest of national security.

### **Military-unique equipment, systems, and operations**

Excludes from the scope of 29 CFR 1960 the design of DoD equipment and systems that are unique to the national defense mission, such as military aircraft, ships, submarines, missiles, and missile sites; early warning systems; military space systems; artillery; tanks; and tactical vehicles. Also excludes operations that are uniquely military such as field maneuvers, naval operations, military flight operations, associated research test and development activities, and actions required under emergency conditions. The term includes within the scope of the order DoD workplaces and operations comparable to those of industry in the private sector such as vessel, aircraft, and vehicle repair, overhaul, and modification (except for equipment trials); construction; supply services; civil engineering or public works; medical services; and office work.

### **Milli**

SI units prefix indicating a factor of one one-thousandth (0.001).

### **Minor**

An individual less than 18 years of age (see 10 CFR 20.1003).

### **Mishap**

Any unplanned event or series of events that results in death, injury, or illness to personnel, or damage to or loss of equipment or property. (Within the context of this regulation, mishap is synonymous with accident.)

### **Mishap probability**

The aggregate probability of occurrence of the individual events/hazards that create a specific hazard.

### **Modeling and simulation**

The development and use of live, virtual, and constructive models including simulators, stimulators, emulators, and prototypes to investigate, understand, or provide experiential stimulus to either conceptual systems that do not exist or real life systems that cannot accept experimentation or observation because of resource, range, security, or safety limitations. This investigation and understanding in a synthetic environment will support decisions in the domains of research, development, and acquisition and in advanced concepts and requirements, or will transfer necessary experiential effects in the training, exercises, and military operations domain.

### **Monitoring**

The continued or periodic act of seeking to determine whether a chemical agent is present. Also known as radiation monitoring or radiation protection monitoring. Monitoring is measurement of radiation levels, concentrations, surface area concentration, or quantities of RAM. Monitoring can also mean the use of data to evaluate or document actual or potential personnel occupational exposures to ionizing radiation sources or devices (see 10 CFR 20.1003).

### **Motor vehicle**

Any transportation device (that operates on land) with a motor powered by fossil fuels, electricity, or other external sources of energy, except devices moved by human power or used exclusively on stationary rails or tracks (see DoDI 6055.04). Bicycles are not motor vehicles.

### **Motorcycle**

Any motor vehicle having a seat or saddle for the use of its operator and designed to travel on not more than three wheels (includes mopeds, motor scooters, and pocket bikes; does not include ATVs) (see DoDI 6055.04).

### **Munitions and certain materials of interest**

When recovered, includes munitions that contain an unknown liquid fill, certain materials (for example, laboratory vials and closed cavity containers encountered at a chemical warfare materiel site) that contain an unknown liquid fill, and chemical agent identification sets.

### **Munitions and explosives of concern**

Distinguishes specific categories of military munitions that may pose unique explosives safety risks; UXO, as defined in 10 USC 101(e)(5)(A) through (C), discarded military munitions as defined in 10 USC 2710(e)(2), or munitions constituents (for example, TNT, research department explosive) present in high enough concentrations to pose an explosive hazard.

**Munitions response**

Response actions, including investigation, removal actions, and remedial actions to address the explosives safety, human health, or environmental risks presented by UXO, discarded military munitions, or munitions constituents.

**Mustard**

The chemical bis(2-chloroethyl)sulfide, CAS registry No. 505–60–2, in pure form and in the various impure forms that may be found in munitions as well as field, industrial, or laboratory operations. These include H, HD, and closely related preparations. This standard is not meant to be applied to nitrogen mustards.

**Mustard T-mixture**

A lethal vesicant composed of approximately 60 percent HD [bis(2-chloroethyl) sulfide] and 40 percent agent T {bis[2-(2-chloroethylthio)ethyl]ether}. Both HD and T are alkylating agents. HT is monitored as HD. It is expected that the effects of HT would encompass those of both HD and T.

**Naturally occurring or accelerated produced radioactive material**

RAM not classified as a byproduct, special, or source material; NARM includes naturally occurring RAM.

**Near miss**

An undesired event that, under slightly different circumstances, would have resulted in personal harm, property damage, or an undesired loss of resources (see DoDI 6055.07).

**Nerve agent**

See FM 1–02.1.

**Nonappropriated fund employees**

See AR 215–4.

**Nondevelopmental item**

Items (hardware, software, communications/networks, and so forth) that are used in the system development program, but are not developed as part of the program. NDIs include, but are not limited to, COTS items, government-off-the-shelf, government-furnished equipment, re-use items, or previously developed items provided to the program “as is.”

**Nonionizing radiation**

EMR with photon energies less than 12.4 eV.

**Nonionizing radiation safety officer**

The person that the commander designates, in writing, as the executive lead for the command’s NRSOHP. These individuals are provided training commensurate with the nonionizing radiation hazards they manage.

**Nontactical vehicle**

A governmentor Army-owned, leased, or rented vehicle that is not a tactical vehicle and is primarily designed for over-the-road operations for the general purpose of transporting cargo or personnel. Examples include transportation motor pool/commercial trucks, ambulances, buses, motorcycles, sedans, sport utility vehicles, fire trucks, and refueling vehicles.

**Non-traditional agents**

Chemical agents as defined by DoDI 5210.65.

**Nuclear Regulatory Commission**

A U.S. Government agency that was established by the Atomic Energy Commission’s Energy Reorganization Act of 1974 and was first opened January 19, 1975. The NRC oversees reactor safety and security, reactor licensing and renewal, RAM safety, security and licensing, and spent fuel management (such as storage, security, recycling, and disposal).

**Nuclear weapon**

A device in which the explosion results from the energy released by reactions involving atomic nuclei, either fission, fusion, or both. For the purpose of this regulation, nuclear components of weapons are also included.

**Occupational dose**

The dose received by an individual in the course of employment in which the individual’s assigned duties involve exposure to radiation or to RAM from regulated and unregulated sources of radiation, whether in the possession of the employer or another person. Occupational dose does not include dose received from background radiation, from any medical administration the individual has received, from exposure to individuals administered RAM and released in accordance with applicable regulations, from voluntary participation in medical research programs, or as a member

of the public (see 10 CFR 20.1003). Workplace exposure to naturally occurring RAM, such as radon, considered background radiation by NRC may be considered an occupational exposure by OSHA and regulated under 29 CFR 1910.1096.

#### **Occupational hazard**

Conditions, procedures, and practices directly related to the work environment that creates a potential for producing occupational injuries or illnesses.

#### **Occupational illness**

Nontraumatic physiological harm or loss of capacity produced by systemic infection, continued or repeated stress or strain (for example, exposure to toxins, poisons, or fumes), or other continued and repeated exposures to conditions of the work environment over a long period of time. Includes any abnormal physical or psychological condition or disorder resulting from an injury caused by long or short-term exposure to chemical, biological, or physical agents associated with the occupational environment. For practical purposes, an occupational illness is any reported condition that does not meet the definition of an injury.

#### **Occupational injury**

A wound or other condition of the body caused by external force, including stress or strain. The injury is identifiable as to time and place of the occurrence and a member or function of the body affected and is caused by a specific event, incident, or series of events or incidents within a single day or work shift.

#### **Occupationally exposed individual**

Any individual who receives an occupational dose of radiation as a result of employment in an occupation involving the use of RAM or equipment capable of producing ionizing radiation.

#### **Off duty**

DoD personnel are off duty when they are not on duty. Component 2 and 3 personnel performing inactive duty training (for example, drill, additional flight training program flights) will be considered off duty:

- a.* When traveling to or from the place at which such duty is performed; or
- b.* While remaining overnight, immediately before the commencement of inactive duty training; or
- c.* While remaining overnight between successive periods of inactive duty training, at or in the vicinity of the site of the inactive duty training, unless the site of the inactive duty training is outside reasonable commuting distance of the member's residence.

#### **On duty**

Army personnel are considered on duty for purposes of mishaps when they are—

- a.* Physically present at any location where they are to perform their officially assigned work. Officially assigned work includes organization-sponsored events an employee is permitted to attend, regardless of location. This includes those activities incident to normal work activities that occur on Army installations, such as lunch, coffee, or rest breaks and all activities aboard military vessels (see DoDI 6055.07).
- b.* Being transported by DoD or commercial conveyance to perform officially assigned work. (This includes reimbursable travel in POVs for performing official duty, but not for routine travel to and from work see DoDI 6055.07.)

#### **Operating vehicle**

Activities associated with operating vehicles or vessels under power. Examples include driving, convoying/road marching, towing/pushing, mowing, hauling/transporting, driver testing, flying, and vehicle road testing.

#### **Operational Army**

Consists of numbered armies, corps, divisions, brigades, and battalions that conduct full spectrum operations around the world.

#### **Operational control**

See DoD Dictionary of Military and Associated Terms.

#### **Permanent partial disability**

An injury or occupational illness that does not result in death or permanent total disability, but, in the opinion of competent medical authority, results in permanent impairment through loss of the use of any part of the body with the following exceptions: teeth, fingernails, toe nails, tips of fingers or tips of toes without bone involvement, inguinal hernia, disfigurement, or sprains or strains that do not cause permanent loss of motion (see DoDI 6055.07).

**Permanent total disability**

Any nonfatal injury or occupational illness that in the opinion of competent medical authority permanently or totally incapacitates a person to the extent that he or she cannot follow any gainful occupation and results in a medical discharge or civilian equivalent (see DoDI 6055.07). (The loss, or the loss of use of both hands, both feet, both eyes, or a combination of any of those body parts as a result of a single mishap will be considered as a permanent total disability.)

**Peta**

An SI unit prefix indicating a factor of one million billion ( $1 \times 10^{15}$ ).

**Physical training**

Body conditioning or confidence building activities; excludes combat skills development. Examples include confidence courses, combat football, combat basketball, push-ball, marches, calisthenics, pugil stick, running/jogging, and physical training test.

**Planned special exposure**

An infrequent exposure to radiation, separate from and in addition to the prevailing permissible annual dose limits (see 10 CFR 20.1003).

**Privileged safety information**

Information that is reflective of a deliberative process in the safety investigation or given to a safety investigator pursuant to a promise of confidentiality, which the safety privilege protects from being released outside safety channels or from being used for any purpose except mishap prevention. It includes products such as draft and final findings, evaluations, opinions, preliminary discussions, conclusions, mishap causes, recommendations, analyses, and other material that would reveal the deliberations of safety investigators, including reviews and endorsements. It also includes information given to a safety investigator pursuant to a promise of confidentiality and any information derived from that information or direct or indirect references to that information (see DoDI 6055.07, glossary).

**Probability**

The qualitative or quantitative likelihood of a particular event or sequence of actions initiated by a hazard-related cause resulting in the maximum credible loss. Probability can be expressed as the product of the incident rate and mishap set likelihood.

**Program manager**

An HQDA board-selected manager for a system or program. A PM may be subordinate to the AAE, PEO, or a materiel command commander. Refers to the management level of intensity the U.S. Army assigns to a particular weapon system or information system. As a general rule, a PM is a general officer or SES; a project manager is an O-6 or GS-15; a product manager is an O-5 or GS-14.

**Programmatic environment, safety, and occupational health evaluation**

The PESHE is the program office's acquisition documentation of the ESOH aspects of the program. The PESHE is required at program initiation for ships, Milestones B and C, and full-rate production decision review. It is recommended that the PESHE be updated for the commander.

**Qualified expert**

A person who, by virtue of training and experience, can provide competent, authoritative guidance on specific aspects of radiation safety. Being a qualified expert in one aspect of radiation safety does not necessarily mean that a person is a qualified expert in a different aspect.

**Qualified safety professional**

Includes persons who meet Office of Personnel Management standards for SOH manager/specialist (GS-0018) and safety engineer (GS/GM-0803). Other job specialties will provide support in their respective specialty areas.

**Qualitative**

Relative evaluation methodology using nonmathematical processes.

**Quality assurance specialist–ammunition specialist**

DA Civilian personnel in the grade of GS-09 or above who have received 2 years of ammunition training and are qualified according to AR 75-1 to assist in performing malfunction investigations.

**Quantitative**

Evaluations based on numerical values and mathematical calculations.

**Quantity distance**

The quantity of explosives material and distance separation relationships that provide defined types of protection.

**Rad**

A unit of absorbed dose. One rad is equal to an absorbed dose of 0.01 joule/kilogram (0.01 Gy) (see 10 CFR 20.1004).

**Radiation**

For purposes of this regulation, a generic term that may variously refer to alpha particles, beta particles, gamma rays, x-rays, neutrons, high-speed electrons, high-speed protons, and other particles capable of producing ionization. This term is not intended to connote nonionizing radiation, such as RF, microwave, visible light, infrared, or UV (see 10 CFR 20.1003).

**Radiation area**

An area accessible to individuals in which radiation levels could result in an individual receiving a dose equivalent in excess of 0.005 rem (0.05 mSv) in 1 hour at 30 cm from the radiation source or from any surface that the radiation penetrates (see 10 CFR 20.1003).

**Radiation safety**

For the purposes of this regulation, a discipline whose objective is the protection of people and the environment from unnecessary exposure to radiation. Radiation safety is concerned with understanding, evaluating, and controlling the risks from radiation exposure relative to the benefits derived. Same as "radiation protection." Health physics has the same objective, but is a scientific discipline.

**Radiation Safety Council**

An advisory committee for the commander/director to assess the adequacy of the command's RSP. Same as "Radiation Control Committee" and "Radiation Protection Committee."

**Radiation safety officer**

The person that the commander designates, in writing, as the executive lead for the command's radiation SOH program (same as "radiation protection officer"). These individuals are provided training commensurate with the radiation hazards they manage.

**Radiation safety program**

A program to implement the objective of radiation safety. The Army RSP includes all aspects of:

- a.* Measurement and evaluation of radiation and RAM pertaining to the protection of personnel and the environment.
- b.* Army compliance with federal, DoD, and Army radiation safety regulations.
- c.* The Army's radiation dosimetry, radiation bioassay, radioactive waste disposal, radiation safety training, and radiation instrument test, measurement, and diagnostic equipment and calibration programs.

**Radiation safety staff officer**

The top radiation SME for ACOMs (AMC, AFC, FORSCOM, and TRADOC), ASCCs, and DRUs. Directs the command RSP, establishes the radiation safety policy for the headquarters, and ensures the implementation of Army radiation safety policy across the command. The RSSO provides radiation safety consultation to his or her headquarters command and leadership chains, staffs, and to subordinate commanders and staffs. The RSSO coordinates reporting of mishaps and/or incidents involving radiation, to include when applicable, coordination with the licensee. The RSSO serves as his or her headquarter command's top radiation safety POC. It is recommended the RSSO be a 72A nuclear medical science officer or GS-1306 health physicist.

**Radiation sources**

Material, equipment, or devices which spontaneously generate or are capable of generating ionizing radiation. They include the following:

- a.* Nuclear reactors.
- b.* Medical or dental radiographic or fluoroscopic x-ray systems.
- c.* Particle generators and accelerators.
- d.* Certain electromagnetic generators, such as klystron, magnetron, rectifier, cold-cathode, and other electron tubes operating at electrical potentials that result in the production of x-rays of such energy as to be of radiological concern.
- e.* X-ray diffraction, industrial radiographic, and spectrographic equipment.
- f.* Electron microscopes.
- g.* Electron-beam welding, melting, and cutting equipment.
- h.* Nuclear moisture and density gauges.

*i. RAM.* Natural or accelerator produced RAMs, byproduct materials, source materials, special nuclear materials, fission products, materials containing induced or deposited radioactivity, and radioactive commodities.

#### **Radiation work permit**

Locally developed and completed by the area supervisor and countersigned by the RSO prior to the start of any work in a restricted area. It describes the potential radiation hazards and PCE requirements for a given work assignment. It also provides a record of radiation exposures received by individuals during a given work assignment. The radiation work permit will be initiated by the area supervisor or the RSO when required to minimize the exposure to the radiation worker(s).

#### **Radioactive commodity**

An item of government property made up in whole or in part of RAM to which a national stock number or part number is assigned. Examples of Army radioactive commodities include tritium fire control devices, chemical agent detectors/monitors, lensatic compasses, DU munitions, radioluminescent sights and gauges on vehicles, and moisture density gauges.

#### **Radioactive waste**

Solid, liquid, or gaseous material that contains radionuclides regulated under the Atomic Energy Act of 1954, as amended, or is of sufficient quantity to require an ARA, and is of negligible economic value considering the cost of recovery.

#### **Radioactive waste, low-level**

Material NRC classifies as low-level radioactive waste (see 10 CFR 62.2); waste not classified as high-level radioactive waste (spent nuclear fuel), as transuranic waste, or as uranium or thorium tailings and waste; material acceptable for burial in a land disposal facility (see 10 CFR 61).

#### **Radionuclide**

A radioactive species of atom characterized by its mass number (A), atomic number (Z), and nuclear energy state, provided that the mean life of that state is long enough to be observable.

#### **Reactor mishap**

Reactor mishaps are based upon the International Atomic Energy Agency International Nuclear and Radiological Event Scale <https://www.iaea.org/resources/databases/international-nuclear-and-radiological-event-scale>.

#### **Real time**

A period of less than 15 minutes.

#### **Recommendations**

Those actions advocated to the command to correct system inadequacies that caused, contributed, or could cause or contribute to an Army mishap. Also referred to in this regulation as corrective action, remedial measures, and/or countermeasures.

#### **Recreational off-highway vehicles**

Motorized vehicles designed for off-highway use with the following features: four or more pneumatic tires designed for off-highway use; bench or bucket seats for two or more occupants; automotive-type controls for steering, throttle, and braking; and a maximum vehicle speed greater than 30 miles per hour. Also equipped with rollover protective structures, seat belts, and other restraints (such as doors, nets, and shoulder barriers) for the protection of occupants.

#### **Rem**

A unit of any of the quantities expressed as dose equivalent. The dose equivalent in rems is equal to the absorbed dose in rads multiplied by Q (1 rem=0.01 Sv) (see 10 CFR 20.1004).

#### **Reportable mishap**

All occurrences that cause injury, occupational illness, or property damage of any kind must be reported to the Soldier's/employee's/unit's servicing/supporting safety office.

#### **Research, development, test, and evaluation solution**

Solutions of a chemical agent in concentrations and quantities reduced by admixture (dilution) to levels that can be handled with the same precautions associated with hazardous industrial chemicals (acids, bases, or solvents). The following levels are considered RDT&E solutions:

*a.* Concentrations of H, HD, or HT not greater than 10 mg/ milliliter (ml) and containing not greater than 100 mg of chemical agent.

*b.* Concentrations of GB no greater than 2 mg/ml and containing a maximum quantity of 20 mg of chemical agent.

- c. Concentrations of VX no greater than 1 mg/ml and containing a maximum quantity of 10 mg of chemical agent.
- d. Concentrations of L and mustard-Lewisite mixture (HL) not greater than 5 mg/ml and containing a maximum quantity of 50 mg of chemical agent.

### **Residual hazards**

Hazards that are not eliminated by design.

### **Residual risk**

The levels of risk remaining after controls have been identified and countermeasures selected for hazards that may result in loss of combat power. Risks remaining after hazard mitigation measures have been applied.

### **Restricted area**

Any area, usually fenced, at an establishment where the entrance and egress of personnel and vehicular traffic are controlled for reasons of safety and/or security. An area, access to which is limited by the licensee for the purpose of protecting individuals against undue risks from exposure to radiation and RAMs. Restricted area does not include areas used as residential quarters, but separate rooms in a residential building may be set apart as a restricted area.

### **Risk**

Directly related to the ignorance or uncertainty of the consequences of any proposed action. Risk is an expression of possible loss in terms of hazard severity and hazard probability. Risk is the expected value of loss associated with a loss caused by a hazard expressed in dollars. The risk associated with this loss is mathematically derived by multiplying the probability of the loss's likelihood of occurrence by the probable dollar loss associated with the loss's severity. Note that risk has two dimensions, likelihood and magnitude, while a hazard has only one-varied magnitude.

### **Risk acceptance**

A formal and documented process indicating Army leadership understands the hazard, its associated cause, and the probable consequences to mission, personnel, equipment, public, and/or the environment and that they have determined that the total risk is acceptable because of mission execution. Risk acceptance is an Army leadership prerogative.

### **Risk acceptance level**

Denotes the level of risk a particular level of Army leadership and management may accept. These levels are based on the magnitude of the risk involved and the duration of the risk acceptance.

### **Risk assessment**

An evaluation of a risk in terms of loss should a hazard result in a mishap and against the benefits to be gained from accepting the risk.

### **Risk decision**

The decision to accept or not accept the risk(s) associated with an action.

### **Risk management**

A continuous process applied across the full spectrum of Army training and operations, individual and collective day-to-day activities and events, and base operations functions to identify and assess hazards/risks, develop and implement controls, make decisions, and evaluate outcomes that balance risk cost with mission benefits.

### **Rocket**

A motor which derives its thrust from ejection of hot gases generated from propellants carried within the motor casing.

### **Roentgen**

The special unit of exposure. One roentgen equals  $2.58 \times 10^{-4}$  coulombs per kilogram of air. It applies only to EMR, that is, nonparticulate radiation of photon energies between several kiloelectron volts and 3 million eV that produce ionization in air only.

### **Roentgen equivalent man (mammal)**

The rem is a special unit of any of the quantities expressed as dose equivalent. The dose equivalent in rem is equal to the absorbed dose in rad multiplied by Q (1 rem = 0.01 Sv).

### **Safety**

Freedom from those conditions that can cause death, injury, occupational illness, or damage to, or loss of, equipment or property.

**Safety assessment**

A formal, comprehensive safety report summarizing the safety data that has been collected and evaluated during the lifecycle before a test of an item. It expresses the considered judgment of the developing agency on the hazard potential of the item and any actions or precautions that are recommended to minimize these hazards and to reduce the exposure of personnel and equipment to them.

**Safety certification**

A program established and maintained by the battalion/squadron commander to ensure that personnel under their command designated as officer in charge and RSOs are competent and qualified to carry out the responsibilities and duties of the respective positions.

**Safety confirmation**

A formal document that provides the MATDEV and the decision maker with the test agency's safety findings and conclusions and states whether the specified safety requirements have been met. It includes a risk assessment for hazards not adequately controlled, lists technical or operational limitations, and highlights safety problems requiring further testing.

**Safety controls**

Mandatory procedural safeguards approved by the SECARMY and determined to be necessary per safety studies and reviews. Safety controls ensure maximum safety of chemical agents throughout the life of the chemical weapon. Controls will be consistent with operational requirements.

**Safety release**

A formal document issued to any user or technical test organization before any hands-on training, use, or maintenance by Soldiers. It is a standalone document that indicates the system is safe for use and maintenance by Soldiers and describes the specific hazards of the system (or item) based on test results, inspections, and system safety analyses. Operational limits and precautions are included (see AR 73-1). The test agency uses the data to integrate safety into test controls and procedures and to determine if the test objectives can be met within these limits. A limited safety release is issued on one particular system (for example, Bradley Fighting Vehicle, serial number XXXXX). A conditional safety release is issued when further safety data are pending (for example, completion of further testing or a certain safety test) and restricts a certain aspect of the test.

**Safety-critical**

A term applied to a condition, event, operation, process, or item of whose proper recognition, control, performance, or tolerance is essential to safe system operation or use, such as safety-critical function, safety-critical path, and safety-critical component.

**Sanitized safety information**

Safety investigation information where, after following the established procedures of DoDI 6055.07, enclosure 5, privileged safety information and the identity of a mishap are not revealed.

**Sarin**

The chemical O-isopropyl methylphosphonofluoridate, CAS number 107-44-8, in pure form and in the various impure forms that may be found in storage as well as in industrial, depot, or laboratory operations. GB is a lethal anti-cholinesterase agent. Its toxic hazard is high for inhalation, ingestion, and eye and skin exposure. Due to its high volatility, it is mainly an inhalation threat.

**Schedule 1 chemicals**

Chemicals identified in the CWC Annex on Chemicals, Part B—Schedules of Chemicals (see DoDI 5210.65).

**Secretarial Certification**

Approval from ASA (IE&E), as appropriate, to approve all requests to deviate from DoD and Army explosives safety standards for construction of new potential explosive site or ES, when such construction is properly supported by a SecCert.

**Service contract**

A contract that directly engages the time and effort of a contractor whose primary purpose is to perform an identifiable task rather than to furnish an end item of supply. A service contract may be either a nonpersonal or personal contract. It can also cover services performed by either professional or nonprofessional personnel whether on an individual or organizational basis (see FAR 37.101).

**Severity**

A qualitative or quantitative assessment of the degree of injury, occupational illness, property damage, facility damage, or environmental damage associated with the maximum credible loss. Severity is dependent only on the maximum credible loss. Once established as a maximum credible loss, it does not change. Only the “probability” of a maximum credible loss can be reduced.

**Shallow dose equivalent (Hs or H0.07 mm or Hp (0.07 mm))**

Applies to the external exposure of the skin of the whole body or the skin of an extremity and is taken as the dose equivalent at a tissue depth of 0.007 cm (7 mg/cm<sup>2</sup>) averaged over an area of 1 square cm (see 10 CFR 20.1003).

**Sievert**

The SI unit of any of the quantities expressed as dose equivalent. The dose equivalent in Sv is equal to the absorbed dose in Gy multiplied by Q (1 Sv=100 rem).

**Software**

The instructions executed by a computer, as opposed to the physical device on which they run (the “hardware”). Programs stored on nonvolatile storage built from integrated circuits (for example, read only memory (ROM) or programmable ROM) are usually called firmware. Software can be split into two main types, system software and application software or application programs. System software is any software that is required to support the production or execution of application programs but that is not specific to any particular application. Examples of system software include the operating system, compilers, editors, and sorting programs. Examples of application programs include an accounts package or a computer-aided design program. Software also includes any security information assurance vulnerability alert patches.

**Soman**

The chemical methyl-1,2,2,-trimethylpropylphosphonofluoridate, CAS number 96–64–0, in pure form and in the various impure forms that may be found in storage as well as in industrial, depot, or laboratory operations. GD is a lethal anticholinesterase agent. Its toxic hazard is high for inhalation, ingestion, and eye and skin exposure, although it is primarily a vapor hazard.

**Source material**

Uranium or thorium, or any combination thereof, in any physical or chemical form or ores that contain, by weight, one-twentieth of one percent (0.05%), or more, of uranium, thorium, or any combination thereof. Source material does not include special nuclear material (see 10 CFR 20.1003).

**Special hazard area**

Area identified containing hazards which due to their nature could not be eliminated through design selection and therefore depend upon training, procedures, and PPE for control of the hazards to tolerable levels. Examples are paint booths, kitchens, machine shops, areas around conveyor belts, hazardous chemical storage areas, and so forth.

**Special nuclear material**

Plutonium, uranium-233, uranium enriched in the isotope 233 or in the isotope 235, or any material artificially enriched by any of the foregoing. Any other material NRC determines to be special nuclear material as defined by 10 CFR 20. Special nuclear material does not include source material.

**Specialty vehicle**

A motor vehicle that is generally operated off-road and is primarily designed for specific mission support (in other words, earth moving, construction, material handling, lift, and so forth) or recreational purposes. These vehicles are typically transported to the site where they are used; commanders may authorize these vehicles to be operated over-the-road for short distance, however, this is not the primary function. Includes, but is not limited to, ATVs, low-speed vehicles, gators, warehouse trucks, tug motors, bulldozers, forklifts, and agricultural equipment.

**Standardization**

See DoD Dictionary of Military and Associated Terms.

**Stochastic**

Health effects that occur randomly and for which the probability of the effect occurring, rather than its severity, is assumed to be a linear function of dose without threshold. Hereditary effects and cancer incidence are examples of stochastic effects (see 10 CFR 20.1003).

**Supervisory**

Activities associated with the management of personnel. Examples are inspection tasks, directing workloads/work crews, monitoring work, crews, and planning unit activities.

**Surveillance**

The observation, inspection, investigation, test, study, and classification of ammunition, ammunition components, and explosives in movement, storage, and use with respect to degree of serviceability and rate of deterioration.

**Survey**

An evaluation of the radiological conditions and potential hazards incident to the production, use, transfer, release, disposal, or presence of RAM or other sources of ionizing radiation. When appropriate, such an evaluation includes a physical survey of the location of RAM and measurements or calculations of levels of radiation, or concentrations, or quantities of RAM present (see 10 CFR 20.1003).

**Survivability**

The capability of a system and crew to avoid or withstand a manmade hostile environment without suffering an abortive impairment of its ability to accomplish its designated mission (see AR 73–1). Survivability considers ballistic effects; nuclear, biological, and chemical weapons; information assurance; countermeasures; EME effects; obscurants; and atmosphere and vulnerability.

**System**

*a.* See DoD Dictionary of Military and Associated Terms.

*b.* A composite, at any level of complexity, of trained personnel, procedures, materials, tools, equipment, facilities, and software. The elements of this composite entity are used together in the intended operational or support environment to perform a given task or achieve a specific production, support, or mission requirement.

**System evaluation plan**

Documents integrated T&E planning. The detailed information contained in the system evaluation plan supports parallel development of the T&E master plan and is focused on evaluation of operational effectiveness, operational, suitability, and survivability. While the documents are similar, the T&E master plan establishes “what” T&E will be accomplished and the system evaluation plan explains “how” the T&E will be performed (see AR 73–1).

**System of systems**

A set or arrangement of interdependent systems that are related or connected to provide a given capability (see AR 73–1). The loss of any part of the system will degrade the performance or capabilities of the whole. An example of an SoS could be interdependent information systems. While individual systems within the SoS may be developed to satisfy the peculiar needs of a given user group, the information they share is so important that the loss of a single system may deprive other systems of the data needed to achieve even minimal capabilities.

**System safety**

The application of engineering and management principles, criteria, and techniques to optimize safety within the constraints of operational effectiveness, time, and cost throughout all phases of systems', equipment's, or facilities' lifecycle.

**System safety engineering**

An engineering discipline requiring specialized professional knowledge and skills in applying scientific and engineering principles, criteria, and techniques to identify and eliminate hazards or reduce the risk associated with the hazards.

**System safety management**

An element of management that defines the system safety program requirements and ensures the planning, implementation, and accomplishment of system safety tasks and activities consistent with the overall program requirements.

**System safety management plan**

A management plan that defines the system safety program requirements of the U.S. Government. It ensures the planning, implementation, and accomplishment of system safety tasks and activities consistent with the overall program requirements.

**System safety program**

The combined tasks and activities of system safety management and SSE implemented by acquisition project managers.

**System safety risk assessment**

A document that provides a comprehensive evaluation of the safety risk being assumed for the system under consideration at the MDR.

**System safety risk assessment**

A document that provides a comprehensive evaluation of the safety risk being assumed for the system under consideration at the MDR.

**Tabun**

The chemical ethyl-N, N-dimethylphosphoramidocyanide, CAS number 77-81-6, in pure form and in the various impure forms that may be found in storage as well as in industrial, depot, or laboratory operations. GA is a lethal anticholinesterase agent similar in action to GB. GA vapor does not penetrate the skin, but GA liquid penetrates rapidly. The toxic hazard is high for inhalation, ingestion, and skin and eye exposure.

**Technical tests**

A generic term for testing which gathers technical data during the conduct of development testing, technical feasibility testing, qualification testing, Joint development testing, and contractor or foreign testing.

**Technique**

For analyses, refers to a specific method for analysis using specific engineering expertise (such as fault tree, failure mode, and effect analysis).

**Tera**

An SI unit prefix indicating a factor of one trillion ( $1 \times 10^{12}$ ).

**Termination**

The end of employment with DA, ARNG/Army National Guard of the United States, or USAR. Also, the end of a work assignment in a restricted area.

**Test, measurement, and diagnostic equipment**

Any system or device used to evaluate the operational condition of an end item or subsystem thereof or used to identify or isolate any actual or potential malfunction. The test, measurement, and diagnostic equipment includes diagnostic and prognostic equipment, semiautomatic and automatic test equipment (with issued software), and calibration test and measurement equipment.

**Threat**

Ability of an enemy or potential enemy to limit, neutralize, or destroy effectiveness of current or projected mission, organization, or item of equipment. Statement of that threat is prepared in sufficient detail to support Army planning and development of concepts, doctrine, training, and materiel. Statement of a capability prepared in necessary detail in context of its relationship to specific program or project to provide support for Army planning and development for operational concepts, doctrine, and materiel.

**Total effective dose equivalent**

The sum of the EDEX (for external exposures) and the CEDE (for internal exposures) (see 10 CFR 20.1003).

**Toxic industrial chemical**

See DoD Dictionary of Military and Associated Terms.

**Toxic industrial material**

See DoD Dictionary of Military and Associated Terms.

**Toxicity**

The property possessed by a material that enables it to injure the physiological mechanism of an organism by chemical means, with the maximum effect being incapacitation or death.

**Toxin**

Toxic material of biologic origin that has been isolated from the parent organism. The toxic material of plants, animals, or microorganisms.

**Training devices**

Training aids, devices, simulators, and simulations which simulate or demonstrate the function of equipment or weapon systems. These items are categorized as embedded, nonsystem, simulations, simulators, standalone, and system.

**Training support package**

A package integrating various training products necessary to train one or more critical tasks. Components include a course management plan, lessons plan, training products of an appropriate media mix, and all other materials needed to conduct the training.

**Type classification**

A designation the U.S. Army uses to indicate acceptability for service use.

**U.S. Army Reserve personnel**

Members who are on active duty for training, inactive duty training, annual training, full-time manning, temporary tour active duty, active duty for special work, or Active Guard Reserve (see 10 USC 10142, 10 USC 12301, and 10 USC 12302).

**Ultra-dilute concentrations**

Schedule 1 chemical diluted to concentrations suitable for calibration of analytical instrumentation. These levels are slightly above the drinking water standards in TB MED 577 and the U.S. Army Center for Health Promotion and Preventive Medicine Report No. 47-EM-5863-04 (see AR 50-6).

**Unacceptable risk**

That risk which cannot be tolerated by the managing activity. It is a subset of identified risk. Unacceptable risk is either eliminated or controlled.

**Unexploded ordnance**

See DoD Dictionary of Military and Associated Terms. UXO is synonymous with dud.

**Uniquely military equipment, systems, and operations**

This term excludes from the scope of the order the design of DoD equipment and systems that are unique to the national defense mission, such as military aircraft, ships, submarines, missiles, and missile sites, early warning systems, military space systems, artillery, tanks, and tactical vehicles; and excludes operations that are uniquely military such as field maneuvers, naval operations, military flight operations, associated research test and development activities, and actions required under emergency conditions (see 29 CFR 1960.2(i)).

**Unit safety officer**

Army personnel who perform SOH duties as an additional duty to their permanent job description and are appointed on orders by commander, director, manager, supervisor, or parent organization. USOs are usually appointed at organizations under the brigade/garrison or equivalent levels.

**United States**

See DoD Dictionary of Military and Associated Terms.

**Unmanned aircraft**

See DoD Dictionary of Military and Associated Terms. Includes aerostat balloons.

**Unmanned aircraft system**

See DoD Dictionary of Military and Associated Terms.

**Unrestricted area**

An area, access to which is neither limited nor controlled (for the purposes of ionizing radiation safety) (see 10 CFR 20.1003).

**Validation**

The review of documentation by an operational authority other than the user to confirm the need or operational requirement. As a minimum, the operational validation authority reviews the mission need statement, confirms that a nonmateriel solution is not feasible, assesses the joint service potential, and forwards a recommendation to the MDA for milestones A action.

**Very high radiation area**

An area, accessible to individuals, in which radiation levels from radiation sources external to the body could result in an individual receiving an absorbed dose in excess of 500 rads (5 Gy) in 1 hour at 1 meter from a radiation source or 1 meter from any surface that the radiation penetrates (see 10 CFR 20.1003).

**Volunteers**

An individual rendering personal service to the United States similar to the service of a civil officer or employee of the United States, without pay or for nominal pay, when a statute authorizes the acceptance or use of the service (see

5 USC 8101(1)(B)). Individuals who serve as unpaid assistants to facilitate the commander's ability to provide comprehensive, coordinated, and responsive services that support the readiness of Soldiers, DA Civilians, and their Families by maximizing technology and resources, adapting resources to unique installation requirements, eliminating duplication in service delivery, and increasing service effectiveness. An installation can have many types of volunteers, with each having specific guidelines that govern its management: statutory volunteers, individuals providing gratuitous service, volunteers for private organizations, and student interns.

**VX**

The chemical O-ethyl S-(2-diisopropylaminoethyl) methylphosphonothioate, CAS number 50782-69-9, in pure form and in the various impure forms that may be found in storage as well as in industrial, depot, or laboratory operations. VX is a lethal anticholinesterase chemical materiel. Its toxic hazard is high for inhalation, ingestion, and eye and skin exposure, but due to its low volatility, the primary route of exposure is through ingestion or skin contact.

**Whole body**

The head, trunk (including male gonads), arms above the elbow, or legs above the knee.

**Workplace**

A physical location where the agency's work or operations are performed (see 29 CFR 1960.2(t)).

**UNCLASSIFIED**

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