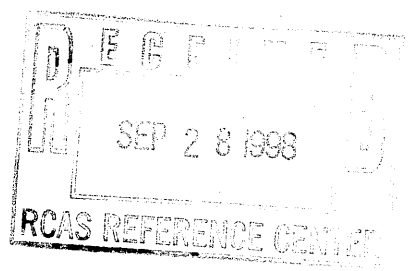
AR 385-61
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Army Regulation 385–61

Safety

The Army Chemical Agent Safety Program



Headquarters
Department of the Army
Washington, DC
28 February 1997

Unclassified

SUMMARY of CHANGE

AR 385-61
The Army Chemical Agent Safety Program

This revision--

- Specifies waiver and exemption approval authority (chap 3).
- Describes chemical safety studies and reviews (chap 4).
- Provides chemical agent demilitarization guidance (chap 5).

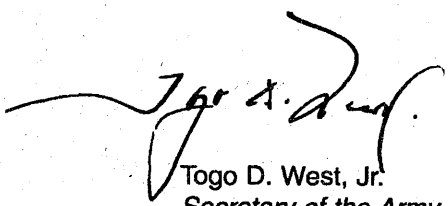
Headquarters
Department of the Army
Washington, DC
28 February 1997

*Army Regulation 385–61

Effective 31 March 1997

Safety

The Army Chemical Agent Safety Program



Togo D. West, Jr.
Secretary of the Army

History. This UPDATE publishes a revision which is effective. Because the entire text has been revised, no attempt has been made to highlight changes from the earlier regulation dated 27 August 1985.

Summary. This regulation on the Army Safety Program for chemical agents and associated weapon systems, has been revised. It implements DOD Instruction 4120.13, chapter 11 of DOD 6055.9-STD, and provides new Department of the Army policy on the management of the Chemical Agent Safety Program. It provides procedures for requesting waivers and exemptions to these standards. This regulation assigns responsibility for safety studies and reviews of chemical agents and associated weapon systems, and prescribes general safety precautions and procedures for both Department of the Army and contractor operations.

Applicability. This regulation applies to the Active Army, the Army National Guard, and the U.S. Army Reserve. It applies to Army civilian employees; Army contractors (applies to contractors only if terms of regulation are incorporated by reference in contract) with a responsibility for chemical agent operations; and other Federal agencies conducting work for the Department of the Army. During mobilization, chapters and policies contained in this regulation may be modified by the proponent.

Proponent and exception authority. The proponent of this regulation is the Assistant Secretary of the Army, Installations, Logistics and Environment (ASA(IL&E). The ASA(IL&E) has the authority to approve exceptions to this regulation that are consistent with controlling law and regulation. Proponents may delegate this approval authority, in writing, to a division chief under their supervision within the proponent agency, in the grade of Colonel or the civilian equivalent.

Army management control process. This regulation contains management control provisions, but does not identify key management controls that must be evaluated.

Supplementation. Supplementation of this regulation and establishment of command and local forms are prohibited without prior approval from the ASA(IL&E).

Interim changes. Rescinded. See AR 25-30, change 2.

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 Army Safety Office, ATTN: DACS-SF, Chief of Staff, 200 Army Pentagon, Washington DC 20310-0200.

Distribution. Distribution of this publication is made in accordance with the Intitial Distribution Number (IDN) 092189, intended for command levels C, D, and E for the Active Army, the Army National Guard, and the U.S. Army Reserve.

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*This regulation supersedes AR 385-61, 27 August 1985.

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Chapter 1
Introduction

1–1. Purpose

a. This regulation prescribes Department of the Army (DA) safety policy, responsibilities, and procedures for the Army Chemical Agent Safety Program.

b. DA Pam 385–61 contains technical safety and health requirements for operations involving chemical agents and associated weapons systems. Implementation of DA Pam 385–61 is mandatory.

1–2. References

Required and related publications and prescribed and referenced forms are listed in appendix A.

1–3. Explanation of abbreviations and terms

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

1–4. Responsibilities

a. The Assistant Secretary of the Army (Installations, Logistics and Environment) (ASA(IL&E)) will provide policies, program direction, and oversight for the Army Chemical Agent Safety Program. The ASA(IL&E) will exercise oversight of the following:

(1) All aspects of environmental, safety, and occupational health statutory compliance.

(2) Safe and efficient handling and disposal of chemical agents, stockpile and non-stockpile including—

(a) Development of policies and procedures and providing nonacquisition guidance for the execution of the Chemical Demilitarization Program.

(b) Approval of policies and procedures for the safe disposal of non-stockpile items found on Army installations or Formerly Used Defense Sites (FUDS).

b. The Assistant Secretary of the Army (Research, Development, and Acquisition) (ASA(RD&A)) has Army Secretariat responsibility for oversight of the Chemical Demilitarization Program and for ensuring that documentation of system safety reviews and recommended corrective actions are provided for DA level in-process reviews.

c. The Inspector General (TIG) will—

(1) Evaluate the safety programs of Army organizations with chemical agent missions according to this regulation.

(2) Inspect new chemical agent operations such as chemical demilitarization activities sponsored by the U.S. Army Program Manager for Chemical Demilitarization (USAPMCD).

(3) Evaluate medical support functions related to the chemical agent program according to this regulation, AR 40–5 and published The Surgeon General (TSG) policy.

d. The Director of Army Safety (DASAF), Office of the Chief of Staff, U.S. Army (OCSA), administers and directs the Army Safety Program as specified in AR 385–10. The DASAF will—

(1) Provide Army-wide safety policy and guidance for the chemical agent and associated weapon systems safety program as a part of the Army Safety Program.

(2) Approve all actions that imply or establish a DA safety position for chemical agents and associated weapon systems.

(3) Represent DA on selected studies and reviews of chemical systems development and procurement.

(4) Establish safety policy and safety standards for chemical agents.

(5) Conduct Chemical Agent Safety Management Evaluations (CASME) of the chemical agent safety programs of major Army commands (MACOMs) to ensure consistency with DA policy.

(6) Advise the Army Secretariat and Army Staff (ARSTAF) of concerns, trends, and needed corrective actions.

(7) Serve as the DA focal point for integration and coordination of chemical agent safety activities within the ARSTAF.

(8) Serve as proponent for Army chemical agent safety training.

(9) Verify that safety reviews are performed for site plans, construction plans, and safety submissions for chemical agent facilities and operations.

(10) Establish procedures for the investigation of chemical agent events as specified in AR 385–40, paragraph 7–1.

(11) Monitor the status of waivers and exemptions to chemical agent safety standards.

(12) Participate in pre-operational surveys of chemical demilitarization operations.

(13) Approve alternate chemical agent protective clothing and equipment.

e. The Deputy Chief of Staff for Operations and Plans (DCSOPS) will—

(1) Establish operational controls for chemical agents, munitions, and related weapons systems.

(2) Verify the safe disposal, demilitarization, and decontamination of chemical agents and munitions.

(3) Develop policy, standards, and procedures for the physical security of chemical weapons.

(4) Develop policy, standards, and procedures for inspections of storage depots, demilitarization facilities, contractor operations, and commands or agencies with chemical agent oversight responsibilities.

f. The Commander, U.S. Army Nuclear and Chemical Agency (USANCA) will—

(1) Conduct safety site assistance visits of Army chemical storage and operational units on a periodic basis as determined necessary by the DCSOPS or the DASAF and advise them of concerns and trends.

(2) Provide a group member for all safety studies and reviews.

(3) Assist the DASAF in performing chemical safety program evaluations and chemical mishap investigations.

(4) Assist the DASAF in maintaining oversight by monitoring chemical safety activities throughout the Army and advising the ARSTAF on concerns, trends, and corrective actions.

(5) Assist the DASAF in developing chemical safety policy by recommending changes to policies and procedures through the DCSOPS.

g. The Deputy Chief of Staff for Logistics (DCSLOG) will—

(1) Develop policy and guidance for the safe transportation, storage, and packaging of chemical agents and munitions.

(2) Ensure the safety of chemical agents and munitions during renovation and maintenance operations.

h. The Commanding General, U.S. Army Corps of Engineers (CG, USACE) will—

(1) Establish procedures to ensure that all chemical agent facilities are designed, constructed, and acquired in accordance with current Federal, State, Department of Defense (DOD), and DA regulatory standards.

(2) Serve as the Army executive agent for chemical agent cleanup operations at FUDS and Defense Environmental Restoration Program (DERP) sites.

(3) Develop guidelines and provide assistance to active Army installations conducting chemical agent cleanup operations.

i. The Surgeon General (TSG) will—

(1) Establish occupational health standards for chemical agents.

(2) Establish policy for all medical support functions, including policy letters on industrial hygiene support to the military chemical agent program and inclusion of industrial hygiene support to the program in updates of AR 40–5, DA Pam 40–8, DA Pam 40–173 and TB MED 503.

(3) Establish policy and guidance for the selection of protective clothing and equipment for use in chemical operations.

j. The Commanding General, U.S. Army Medical Command (MEDCOM) will—

(1) Implement medical policies concerning military chemical agent support.

(2) Provide clinic and industrial hygiene support.

(3) Provide health related chemical agent training to patient care providers and industrial hygienists supporting the chemical agent program.

(4) Provide or designate physician and industrial hygienist augmentees to support chemical agent inspections.

(5) Establish guidance for first aid and first responder training.

(6) Provide a representative to each special safety study group and assist the DASAF in performing chemical mishap investigations.

k. Commander, U.S. Army Program Manager for Chemical Demilitarization (USAPMCD), will ensure safety of chemical agents and munitions during chemical demilitarization and cleanup activities sponsored by USAPMCD. Because of high public visibility, program peculiar requirements, and the political sensitivity of the Chemical Demilitarization Program, the Project Manager for Chemical Stockpile Disposal (PMCSD) will report directly to USAPMCD. PMCSD is responsible for direction of the Chemical Demilitarization Program, including safety management. In this regard, PMCSD will—

(1) Ensure chemical demilitarization and cleanup activities comply with the provisions of this regulation and DA Pam 385–61.

(2) Establish and maintain a written safety program consistent with the requirements of AR 385–10, paragraph 1–1.

(3) Establish and maintain a written systems safety engineering and management program for item and facility design consistent with the applicable requirements of AR 385–16, paragraph 4k.

(4) Establish and maintain a written systems safety engineering and management program for operational risk assessments consistent with DA Pam 385–61.

(5) Maintain a record of waivers and exemptions, and provide a technical review in accordance with this regulation.

(6) Ensure that all chemical demilitarization facilities are designed, constructed, and acquired in accordance with current Federal, State, DOD, and DA regulatory standards.

(7) Ensure that all PMCSD and cleanup facilities and operations, whether operated by or performed by Government or contractors, comply with the following:

(a) Specific requirements imposed by the DOD, the Army, and other Federal and State agencies, including the Environmental Protection Agency (EPA), the Department of Health and Human Services (DHHS), and the National Academy of Science (NAS).

(b) All Federal statutes directed specifically towards the Chemical Demilitarization Program.

(8) Report all chemical events immediately to the installation commander.

(9) Provide the installation commander and his staff representatives with unrestricted access to all documentation and operations within the demilitarization facility.

(10) Provide chemical agent safety training to support the chemical demilitarization aspects of the Army safety program.

(11) Establish and maintain a written quality assurance program consistent with the requirements of the International Standards Organization (ISO) 9000 - ANSI/ASQC Q90 series per DoD guidance.

l. The Commanding General, U.S. Army Medical Research and Materiel Command (USAMRMC) will—

(1) Develop, for issuance by the DASAF, DA Research, Development, Test and Evaluation (RDTE) solution safety program policy, procedures, standards, and objectives for all privately owned and operated contractor facilities possessing RDTE solutions for which DA is accountable.

(2) Provide oversight to ensure the safety of chemical agents during RDTE sponsored by USAMRMC to include both in-house and contract activities.

(3) Provide a group member for safety studies and reviews of chemical agents and munitions, when appropriate.

(4) Perform health hazard research per AR 70–1 and DODI 1000.3, Safety and Occupational Health Policy for the DOD.

m. The Commanding General, U.S. Army Materiel Command (AMC) will—

(1) Recommend to the DASAF whether specific chemical agents or weapons systems are safe for storage, shipment, and deployment, and what safety controls are required.

(2) Provide oversight to ensure the safety of chemical agents during RDTE sponsored by AMC to include both in-house and contractor activities.

(3) Provide oversight to ensure the safety of chemical agents during transportation, storage, maintenance, RDTE, and disposal operations and activities sponsored by AMC.

(4) Implement the system safety requirements of AR 385–16 and the Health Hazard Assessment requirements of AR 40–10.

(5) Provide technical assistance to HQDA in support of the Army Chemical Agent Safety Program in the following areas:

(a) Provide technical services and information to support and enhance the Army Chemical Agent Safety Program.

(b) Provide technical advice and assistance on chemical safety to the DASAF, and other agencies as requested.

(c) Collect, analyze, and disseminate chemical safety information to HQDA, and activities with a chemical mission.

(d) Assist the DASAF in performing chemical agent safety management evaluations.

(e) Maintain a record of chemical waivers and exemptions, and provide a technical review to include abatement actions necessary to meet the Army goal of eliminating waivers and exemptions.

(f) Assist in developing and maintaining HQDA chemical agent safety standards and procedures for incorporation into regulations and related publications.

(g) Analyze chemical agent event data and recommend remedial actions to DASAF.

(h) Provide chemical event investigation assistance as requested by MACOMs or directed by HQDA.

(i) Provide a member for all safety studies and reviews.

(j) Provide final engineering review of specialized equipment used in chemical operations for compliance with DA chemical agent standards. Examples of such equipment are lifting devices and slings; agent containers for the purpose of providing vapor containment for operation, transportation, or storage; nonstandard or locally fabricated equipment. Provide final safety review for Ammunition Peculiar Equipment (APE) associated with chemical operations.

n. The Commander, U.S. Army Chemical and Biological Defense Command (USACBDCOM) will ensure completion of the following tasks on behalf of AMC—

(1) Appoint a safety manager in accordance with AR 385–10, who is occupationally qualified under Office of Personnel Management Standards TS–23 and TS–55. This safety manager should be the single point of contact for all aspects of the CBDCOM Chemical Agent Safety Program.

(2) Serve as the focal point for the development, maintenance and distribution of Chemical Agent Standard Analytical Reference Materials (CASARM) for all Federal agencies and designated chemical agent contractors.

(3) Establish and manage a Quality Assurance program for all chemical agent storage and use sites.

(4) Provide quality systems certification to organizations that conduct agent monitoring activities for personnel and environmental protection.

o. The Commanding General, U.S. Army Training and Doctrine Command (TRADOC) will—

(1) Provide representatives to participate in special safety studies and reviews of chemical agents or weapon systems.

(2) Provide the weapons system operational and training concept to HQDA for use in Army safety reviews of the system.

(3) Ensure chemical agent and munitions safety training and instruction is consistent with this regulation and DA Pam 385–61.

(4) Monitor operation of the Chemical Defense Training Facility (CDTF) to ensure compliance with this regulation and DA Pam 385–61.

p. The Commander, Forces Command (FORSCOM) will provide qualified representatives to participate in special safety studies and reviews of chemical agents or weapon systems, as requested by HQDA.

q. MACOM commanders with a chemical agent mission or responsibility will establish and operate an effective safety program to include the following:

(1) Supervision of subordinate organizations to ensure that an

effective chemical agent safety program which complies with this regulation and DA Pam 385–61 is implemented and maintained. This will include specific plans and programming of resources to correct violations of chemical agent safety standards.

(2) Conduct annual review of subordinate chemical agent safety programs.

r. The Director, U.S. Army Edgewood Research, Development and Engineering Center (USAERDEC) will ensure completion of the following tasks on behalf of USACBDCOM—

(1) Develop, for issuance by the DASAF, DA chemical agent safety program policy, procedures, standards, and objectives for all privately owned and operated contractor facilities possessing chemical agents for which DA is accountable.

(2) Perform an annual evaluation under the direction of the DASAF of the DA chemical contractor safety program.

(3) Prepare and coordinate Materiel Safety Data Sheets (MSDS) for military unique chemicals and make the MSDS available to installations/activities possessing chemical agents.

(4) Advise the DASAF on technical matters pertaining to acquisition, use, storage, transportation, and disposal of RDTE chemical agents.

(5) Prepare Hazardous Component Safety Data Sheets for chemical material, and make the Data Sheets available to MACOMs.

(6) Develop, for issuance by the DASAF, DA chemical agent safety program policy, procedures, standards, and objectives for all DA chemical laboratories possessing chemical agents for which DA is accountable.

(7) Appoint a safety manager in accordance with AR 385–10, who is occupationally qualified under Office of Personnel Management Standards TS–23 and TS–55. This safety manager should be the single point of contact for all aspects of the ERDEC Chemical Agent Safety Program.

(8) Maintain records of all "use scenarios", commercial clothing test results, and HQDA approved commercial clothing and products.

s. Commanders of installations, arsenals, depots, proving grounds, Army ammunition plants, and other organizations with custody of chemical agents or munitions will—

(1) Ensure all chemical agent and munitions safety programs comply with the provisions of this regulation and DA Pam 385–61.

(2) Appoint a safety manager in accordance with AR 385–10, who is occupationally qualified under Office of Personnel Management Standards. This safety manager should be the single point of contact for all aspects of the Installation Safety Program, including management of the Chemical Agent Safety Program.

(3) Develop a written Chemical Agent Safety Program plan as a supplement to the overall installation or organization safety program document.

(4) Approve standing operating procedures (SOPs) for all chemical agent operations.

(5) Develop a detailed Emergency Response Program.

(6) Provide all necessary assistance, including personnel protection equipment, required by HQDA-directed chemical event investigations.

(7) Ensure that all chemical demilitarization and research and development facilities are designed, constructed, and acquired in accordance with current Federal, State, DOD, and DA regulatory standards.

(8) Approve and process chemical demilitarization and research and development facility site plans and safety submissions and hazards analyses.

(9) Suspend demilitarization operations if unsafe conditions exist or are imminent.

(10) Maintain overall command and control of chemical mishap occurring within a demilitarization facility.

(11) Maintain a respiratory protection program for military protective ensembles and masks in accordance with AR 11–34 and national consensus standards. Minimal requirements must include proper selection and use (related to potential workplace exposure levels), training, fit testing, maintenance, storage and medical surveillance.

(12) Establish and maintain a systems safety engineering and management program consistent with the applicable requirements of DA Pam 385–61 and approved by the command safety office above the installation/activity level.

t. The Director, U.S. Army Technical Center for Explosives Safety (USATCES) will—

(1) Provide final Army review and approval of safety site and construction plans being submitted for approval to the Department of Defense Explosives Safety Board (DDESB).

(2) Track corrective actions resulting from DDESB chemical safety surveys.

(3) Process chemical exemption requests.

(4) Provide chemical agent safety support to HQDA, MACOMs, and installations.

(5) Support land disposal site plan development.

(6) Provide chemical agent safety training to support Army safety career program requirements with the exception of the chemical demilitarization program.

u. The U.S. Army Materiel Command Chemical Agent Safety and Health Policy Action Committee will—

(1) Serve as a technical working group with responsibility to resolve chemical agent safety and health issues for the Executive Director for Chemical Agent Safety (EDCAS) and AMC Safety Community.

(2) Coordinate with other elements and agencies to identify and evaluate chemical agent safety issues.

(3) Provide DASAF with technical guidance regarding the provisions contained in this regulation and DA Pam 385–61.

(4) Serve as a forum for the exchange and distribution of information, lessons learned and ideas relative to chemical agent safety.

(5) Develop for DASAF approval, chemical agent safety and health policy.

Chapter 2
Chemical Agent and Munitions Safety Policy and Procedures

2–1. Policy

a. This regulation applies to blister agents H, HD, HT, and L and to nerve agents GA, GB, GD, and VX and other experimental chemical agents (see glossary for definition) exhibiting toxicity similar to nerve or blister agents.

b. For RDTE solutions of chemical agents as defined in Table 9–1 of AR 50–6, the mandatory provisions of this regulation and those of DA Pam 385–61 do not apply.

(1) The provisions contained in DA Pam 385–61 should be used as a guide in conjunction with a hazard analysis, SOPs, and good laboratory practices to ensure safe operations with RDTE solutions.

(2) Each installation or activity conducting RDTE solution operations must have a program document that describes how these operations will be conducted.

c. This regulation does not apply to the Binary Chemical Program or to contractor-owned/contractor-operated sites. Any Army activity contracting for a requirement in which toxic chemical agents are/will be involved, will incorporate, by reference, the "Guidebook of Performance Standards for Operations of a RDTE CSM Laboratory" as part of the statement of work/technical requirements enumerated in such contract. A copy of the guidebook can be obtained from, Director, ERDEC, ATTN: SCBRD-ODR-C, APG, MD 21010–5423.

d. Specific chemical safety requirements and guidance are contained in DA Pam 385–61 and 29 CFR 1910.119. Additional health standards are contained in DA Pam 40–8 and DA Pam 40–173.

(1) These standards apply to explosives ordnance disposal (EOD) operations in support of chemical stockpile and demilitarization operations. They do not apply to emergency response operations involving chemical agents. AR 75–15 contains EOD requirements.

(2) When the chemical agent operation or mission requires technical information that is not in safety publications, or if information

in technical manuals or field manuals requires clarification or is in conflict with this regulation or DA Pam 385–61, requests for resolution or additional information will be submitted through channels to the Chief of Staff, ATTN: DACS-SF, 200 Army Pentagon, Washington DC 20310–0200.

e. For chemical agent operations, both the 1–percent lethality distance, as defined in DA Pam 385–61, calculated for selected maximum credible event (MCE) scenarios, and explosives quantity distance (QD) criteria, contained in AR 385–64, will be used to determine required safety distances. The greater of these distances will be used to provide the required separation distances on the installation, and to the general public.

f. For commercially available chemicals such as chlorine, phosgene, cyanogen chloride, and hydrogen cyanide the requirements of this regulation do not apply; however, the requirements of AR 385–10 do apply.

g. Ammunition items containing chemical agents may present additional hazards such as blast, fragments, and thermal effects. Standards relating to explosives hazards are addressed in AR 385–64 and DA Pam 385–64.

h. Public and worker safety and environmental protection is the paramount concern of the Army Chemical Agent Safety Program. To ensure safe operations, the Army Risk Management Process must beused to ensure hazards are identified, assessed, and eliminated or controlled.

(1) When hazards cannot be completely eliminated, the installation/activity commander/director will ensure the associated risk is reduced to an acceptable level and accept any remaining risk using the waiver or exemption process found in chapter 3 of this regulation.

(2) Risk management provides a useful tool for estimating the effectiveness of existing and proposed control measures to prevent chemical agent mishaps. The risk management process must include not only the traditional MCEs and resulting consequences, but also the probabilities and consequences of any realistic accident scenario that could present a risk to workers, the public, or the environment. Risk assessment assumptions should be verified for accuracy to the maximum extent possible.

(3) The risk management process can also be used to establish priorities for corrective action. A detailed discussion of the risk management process is contained in DA Pam 385–61.

(4) Decisions regarding the acceptability of chemical agent facilities, equipment, protective clothing, and proposed operations will be made based on the risk management process.

i. Airborne exposure limits (AEL) for agents are contained in this regulation and DA Pams 40–8 and 40–173. Unless otherwise noted, AEL in this document refers to the 8–hour Time Weighted Average (TWA) for unmasked agent workers.

2–2. Maximum credible event

An MCE is analogous to a worst case analysis. The best available credible information is applied to estimate the results of various MCEs. Assumptions used are those that yield the potential for more severe consequences, as opposed to assumptions that administrative or operational controls will always perform as intended. The rule of reason is applied to confine the MCE to realistic or believable occurrences (there should be a reasonable probability of occurrence). All MCE assumptions should be verified for accuracy to the maximum extent possible.

a. An MCE can provide a useful tool for estimating the effectiveness of existing safeguards against chemical agent events. The potential for events must be carefully analyzed to determine the MCE that could occur and cause agent release.

b. When considering an MCE, it is appropriate to consider both the full range of consequences that could be associated with a potential chemical event and the redundancy of the safety systems engineered into the facilities. Efforts should be made to address all likely threats that could result in hazardous events at chemical agent facilities.

2–3. Chemical event reporting and investigation

Chemical agent events will be reported according to AR 50–6 and investigated per AR 385–40.

2–4. Administrative and work practice controls

a. The cardinal principle. The cardinal principle for an operation involving chemical agents or munitions is to limit the potential exposure to a minimum number of personnel, for a minimum period of time, to a minimum amount of the chemical agent consistent with safe and efficient operations. This includes prohibiting concurrent, unrelated work, within the same work area.

b. Risk management. Because of the toxicity and hazardous nature of chemical agents, each operation or process must be carefully and fully evaluated to determine the safety precautions and personal protection necessary to prevent personnel exposure or release of chemical agent to the environment.

c. Personal protective equipment. Guidance for operations will emphasize, as a minimum, the proper use, maintenance, care, decontamination, testing, and disposition of personal protective equipment.

d. Hazard analysis. A hazard analysis, to determine safety precautions and personal protection necessary to prevent agent exposure, will be completed and documented for all operations involving chemical agents and changes in chemical agent process, or control measures that may result in increased airborne or contact concentrations of chemical agents.

(1) The hazard analysis should be performed by a team with expertise in Operations, Safety, Health and Industrial Hygiene.

(2) The team should include at least one employee who has experience and knowledge specific to the operation being evaluated.

(3) The hazard analysis will be reviewed during the annual SOP review.

e. Chemical agent SOP. An SOP is required for all chemical agent operations. The SOP will be strictly followed. If a worker has a concern involving the SOP, or feels the SOP is in error, the worker will immediately bring the concern to the attention of management. Management will immediately address the issue. The SOP must be reviewed by safety personnel at least annually. SOPs will—

(1) Describe, in detail, all necessary operational and safety and health requirements.

(2) Describe actions to be taken during an event or emergency (for example, actions to evacuate the immediate area).

(3) Describe, in detail, the location of all required equipment.

(4) Be available at the work site.

f. Training and information. All personnel who work with or have an association with chemical agents and munitions, or have a potential for exposure, (e.g. maintenance workers, clerical, firefighters, security) will be trained as outlined in this regulation and DA Pam 385–61 prior to being assigned to chemical areas. Refresher training is required at least annually. Hazardous Waste Operators (HAZWOPER) training is required IAW 29 CFR 1910.120 for remediation sites, treatment, storage, and disposal sites.

(1) The training will include signs and symptoms of agent exposure, information on sources of exposure, possible adverse health effects, and practices and controls used to limit exposures. Environmental and medical monitoring procedures and purposes, and worker responsibilities in health protection programs, including instruction in first-aid, self-aid, and buddy-aid techniques will also be included in the training program. This training will provide employee awareness to help employees assess personal risks to safety and health.

(2) The training must enable workers to take appropriate actions in the event of a chemical agent mishap.

(3) All workers must demonstrate proficiency prior to performing hazardous operations.

(4) Worker attendance at initial and refresher training will be documented and kept on file for the duration of employment plus 3 years.

g. Medical surveillance. Medical surveillance programs will be

established according to the specific guidance contained in DA Pam 40–8 and/or DA Pam 40–173.

h. Emergency preparedness.

(1) In the event of an accidental release of agent that may result in personnel exposure, all nonessential and unprotected personnel will be immediately evacuated or utilize in-place sheltering. Emergency procedures will be implemented. The source of the release will be contained and affected areas monitored and decontaminated, as appropriate, to applicable AEL before normal operations are resumed.

(2) Medical evaluations for personnel who may have been exposed should follow the procedures outlined in DA Pam 40–8 and DA Pam 40–173.

(3) The installation must maintain current chemical accident/incident response and assistance (CAIRA) plans in accordance with AR 50–6 and DA Pam 50–6. These plans will include those actions necessary to save life, preserve health, safety and the environment, secure chemical agent materiel, protect property, and help maintain public confidence in the ability of the Army to respond to a mishap. Installations will establish a central control point to coordinate all chemical agent emergency actions and conduct periodic exercises of CAIRA plans.

(4) Local emergency support agencies, such as police departments, fire departments, health departments, and local governments, will be informed of chemical agent activities being conducted within their jurisdictions. Local support agencies will be advised of equipment, personnel, and other forms of support which may be required in the event of an emergency involving a chemical agent.

i. Labeling and posting of hazards.

(1) When verified chemical agent contamination exists, rooms, equipment, tools, or other items will be marked or tagged to indicate degree of contamination (see glossary). Inactive equipment or decontaminated facilities will be marked to indicate the level of decontamination. Records will be maintained for historical documentation.

(2) Items containing chemical agent will be marked or labeled according to the requirements of DA Pam 385–61. Facilities, transport vehicles, and transport containers will be marked, labeled, or placarded according to the requirements of DA Pam 385–61.

j. Disposal controls. Disposal of hazardous waste will comply with Federal, State, local, or host nation environmental standards. Procedures for disposal of hazardous waste are described in DA Pam 385–61.

(1) The preferred method of disposal of chemical agent is by thermal destruction using specially designed incinerators approved by the Environmental Protection Agency, State, or host nation approval agencies.

(2) Where containment facilities are available, chemical neutralization of agent may be used.

(3) Emergency disposal may be by chemical neutralization to avoid personnel contamination.

(4) Explosive detonation may also be authorized in emergency situations after proper approvals are obtained.

k. Maintenance controls. A continuing program for equipment and facility maintenance will be implemented and documented for all chemical agent operations. If feasible, the chemical agent process/operation or a portion of the process/operation will be shut down, and equipment or facilities decontaminated, before maintenance, testing, or repair operations are conducted.

l. Agent Sampling. Routine sampling (drill, sample, tap, and plug) of chemical agent munitions in storage facilities or other locations is prohibited. Approval to conduct sampling operations must be obtained by submitting written justification to the Chief of Staff, ATTN: DACS-SF, 200 Army Pentagon, Washington DC 20310–0200. Justification must include a site plan/safety submission, risk assessment, and identified control measures.

2–5. Policies and procedures for the use of personal protective equipment and workplace monitoring

a. Army policy incorporates positive engineering and administrative controls, such as remote operations, ventilation, isolation, substitution of materials, limitation on the quantity of hazardous materials, and operator exposure limits into all chemical agent operations. These protective measures will preclude or minimize the need for personal protective equipment and ensure that workers do not suffer damaging health effects because of agent release.

b. The minimum level of personal protective equipment (PPE) required for various operations and conditions is based on the criteria in DA Pam 385–61, this regulation, and the results of the risk assessment for the operation and potential emergencies.

c. Respiratory protective equipment requirements will be in accordance with table 2–1, and DA Pam 385–61, figure 4–11.

d. Direct eye or skin contact with chemical agents must be prevented by use of appropriate engineering controls or personal protective devices. Unprotected personnel will never be intentionally exposed to direct eye or skin contact with chemical agents above levels defined in table 2–2.

e. All personnel with exposure potential to agent above the established AEL will be provided protection via engineering controls or personal respirators. Unprotected agent workers will never be intentionally exposed to chemical agent concentrations exceeding 0.0001 mg/m3 (GA or GB); 0.00003 mg/m3 (GD); 0.00001 mg/m3 (VX); and 0.003 mg/m3 (H or L).

(1) Engineering controls are the best way to protect workers. The preferred monitoring method will be determined by Industrial Hygiene, medical, and monitoring personnel.

(2) Each activity or installation will identify the best method of exposure monitoring. The monitoring plan approved by Safety and Industrial Hygiene personnel will specifically describe the method of exposure monitoring.

f. When area samples are relied upon for workplace monitoring, the samples must be representative of the worker's exposure profile. Representative samples should include low level monitoring in the worker's immediate vicinity, at a sufficient number of points to capture the worker's exposure potential, and at a sampling height that most reflects expected agent location or the workers expected breathing zone.

g. Self-contained breathing apparatus (SCBA) or supplied-air respirators are required for entries into immediately dangerous to life or health (IDLH) environments. IDLH limits for nerve agents are listed in table 2–2. The establishment of IDLH values for vesicants HD and L is unnecessary, since workers are required to wear supplied air or SCBA at vesicant concentrations much lower than IDLH levels.

h. All personnel issued respiratory protective devices will be fit tested. Quantitative fit testing is the preferred method for all masks and must be used for the M40 series mask. Quantitative fit testing may be performed using surrogate masks or other validated methods. Chemical agent workers must receive a medical clearance is required prior to being issued respiratory protection devices.

(1) Qualitative fit testing may be performed using the procedures in appendix B of DA Pam 385–61.

(2) Air purifying protective masks will never be used in unknown or oxygen-deficient atmospheres (oxygen concentrations less than 19.5 percent at sea-level).

i. Laboratory operations conducted in well maintained and alarmed engineering controls, such as laboratory hoods or glove boxes, require only periodic low-level monitoring as specified in DA Pam 385–61. Real-time, alarmed agent monitors for instantaneous warning of exposure outside the laboratory engineering controls are not required. Laboratory personnel performing agent operations (relying on engineering controls for protection) will verify face velocity of engineering controls before conducting agent work, e.g., swinging vaneometer, to determine operational efficiency of the engineering control in use.

j. Workers conducting nerve agent operations (for example GA, GB, GD or VX) where—

(1) The nerve agent concentration is at or below the AEL must meet the following conditions to work unmasked—

(a) Must have continuous real-time low-level monitoring with alarm set at or below the AEL for unmasked workers (Table 2–3). Excursions up to a maximum of 3 times the AEL are allowed as long as they are compensated for by the excursions below the AEL and the AEL is not exceeded.

(b) Full-facepiece, chemical-canister, air-purifying protective masks are immediately available for emergency escape. The M9–, M17–, or M40– series masks are acceptable for this purpose. Other protective masks determined as equivalent by HQDA, (TSG and DA Safety) may also be used.

(c) Exposure potential is limited to the extent practicable through engineering controls and work practices.

(d) If the conditions listed above cannot be met, workers conducting operations in nerve agent areas must wear the respiratory protective equipment described in paragraph 2–5j(2).

(2) The nerve agent concentration is between the AEL and the IDLH value (2000 times the AEL). Workers may wear a NIOSH/MSHA approved pressure demand, full facepiece, SCBA or supplied air respirator or the M9–, M17–, or M40– series mask. Continuous real-time monitoring with alarm at the applicable IDLH value must be used when the M9, M17 or M40 mask is worn.

(3) The nerve agent concentration exceeds the applicable IDLH value, is unknown, or there is no continuous real time monitoring with alarm. Workers must wear a NIOSH/MSHA approved pressure demand, full-facepiece, SCBA or supplied air respirator. These items will be used only with an HQDA-approved protective ensemble. Use of full-face, chemical-canister, air-purifying respirators is not permitted in these conditions.

k. During emergency operations involving nerve agents, installation/activity commanders/directors may authorize use of the best available respiratory and dermal protective equipment.

(1) NIOSH/MSHA supplied air or SCBA devices and approved protective ensembles are the equipment of choice. If a supplied-air or SCBA with protective ensemble is not immediately available, use of a full facepiece, chemical canister, air purifying protective mask (M9 or M40) with hood and toxicologic agent protective suit (M3 TAP) (Level A ensemble) is acceptable.

(2) Every effort should be made to ensure that nerve agent concentrations and projected stay times are such that emergency response personnel using this level of protection (Level A ensemble) will not exceed the AEL, and oxygen levels are not less than 19.5 percent.

l. Mustard agent workers conducting operations in H areas must meet the following conditions to work unmasked:

(1) Must have continuous real-time low level monitoring with the alarm set at or below 0.003 mg/m3.

(2) Full-facepiece, chemical-canister, air-purifying protective masks (M9–, M17–, or M40–) are immediately available for emergency escape.

(3) Exposure potential has been limited to the extent practicable through engineering controls or work practices.

(4) If the conditions listed above cannot be met, workers conducting operations in H areas must wear a NIOSH/MSHA approved pressure demand, full facepiece, SCBA or supplied air respirator. These items will only be used with an HQDA-approved protective ensemble.

m. Mustard agent workers conducting operations in H areas where concentrations exceed 0.003 mg/m3 as the AEL must wear a NIOSH/MSHA approved pressure demand, full-facepiece, SCBA or supplied air respirator.

(1) The appropriate dermal protective ensemble (for example, TAPES, DPE, STEPO-I, or Modified Level A) must be worn with the respiratory protective device. TAPES, STEPO-I and the 20 and 30 mil DPE are approved for mustard operations with time and temperature constraints as specified in Table 4–1 of DA Pam 385–61.

(2) The stay time for 30–mil DPE in mustard operations is up to two hours. The stay time for 20 mil DPE in mustard operations is up to 1 hour at temperatures of 80 degrees F or less and stay time of no more than 45 minutes in temperatures between 80 and 90 degrees F. The 20 mil DPE is not authorized for use in temperatures above 90 degrees F.

n. During emergency operations involving mustard agents, installation/activity commanders/directors may authorize use of the best available respiratory and dermal protective equipment utilizing the following instructions.

(1) NIOSH/MSHA supplied air or SCBA devices and approved protective ensembles are the equipment of choice. If a supplied-air or SCBA with protective ensemble is not immediately available, use of a full-facepiece, chemical-canister, air- purifying protective mask (M9 or M40) with hood and toxicologic agent protective suit (M3 TAP) (Level A ensemble) is acceptable in emergencies.

(2) Every effort should be made to ensure that mustard agent concentrations and projected stay times are such that emergency response personnel using this level of protection (Level A ensemble) will not exceed the AEL, and oxygen levels are not less than 19.5 percent.

o. Lewisite workers conducting operations in agent L areas must meet the following conditions to work unmasked:

(1) Must have continuous real-time low level monitoring with the alarm set at or below 0.003 mg/m3.

(2) Full facepiece, chemical canister, air purifying protective masks (M9–, M17–, or M40–) are immediately available for emergency escape.

(3) Exposure potential has been limited to the extent practicable through engineering controls or work practices.

(4) If the conditions listed above cannot be met, workers conducting operations in L areas must wear a NIOSH/MSHA approved pressure-demand, full-facepiece, SCBA or supplied-air respirator. Use these items only with an HQDA-approved protective ensemble.

p. Lewisite agent workers conducting operations in L areas where concentrations exceed 0.003 mg/m3 taken as an AEL must wear a NIOSH/MSHA approved pressure demand, full-facepiece, SCBA or supplied-air respirator. Use these items only with an HQDA-approved protective ensemble.

q. During emergency operations involving Lewisite agent, installation/activity commanders/directors may authorize use of the best available respiratory and dermal protective equipment utilizing the following instructions.

(1) NIOSH/MSHA supplied-air or SCBA devices and approved protective ensembles are the equipment of choice. If a supplied-air or SCBA with protective ensemble is not immediately available, use of a full-facepiece, chemical-canister, air- purifying protective mask (M9 or M40) with hood and toxicologic agent protective suit (M3 TAP) (Level A ensemble) is acceptable in an extreme emergency.

(2) However, every effort should be made to ensure that Lewisite agent concentrations and projected stay times are such that emergency response personnel using this level of protection (Level A ensemble) will not exceed the AEL, and oxygen levels are not less than 19.5 percent.

2–6. Agent exposure control and measurement

a. AELs are listed in table 2–3. Those AELs which are expressed as an 8–hour TWA are average exposure limitations for a normal 8-hour work day and a 40–hour work week to which nearly all unmasked agent workers can be exposed, day after day, without known adverse health effects. Non-agent worker and general population limits are concentrations of chemical agents which may reach unprotected people who are not occupationally exposed to the agents and which are not expected to cause adverse health or environmental effects. Ceiling values refers to the maximum allowable concentration at any time for any duration. In practical terms, a ceiling value is the average value measured over the minimum time required to determine a specified concentration.

b. Engineering controls will be used to provide protection from any exposure to chemical agents for which exposure limits are not established. These engineering controls must be verified as effective and acceptable by test. The engineering controls requirement may be modified when AELs are established by TSG or when relative

toxicities are determined, validated, and documented and/or when approved compensatory measures are implemented to show a reduced need for such engineering controls.

c. Before beginning any chemical agent operation, an MCE determination will be made to ensure that the hazard zone (as defined in paragraph 2–8), associated with the MCE for the operation is under positive control (operational, containment, meteorological, or other).

2–7. Inspections

Facilities and operations involving chemicals and chemical agents in support of the chemical agent mission are considered special hazard categories and require frequent, systematic inspection by safety and health officials.

a. Operations supervisors will inspect work areas, and supervisors will ensure that safety and health deficiencies are promptly abated.

b. Safety officials will document all inspections and deviations from safe practices and recommend corrective actions to supervisors and management officials.

c. New operations involving chemical agents will be inspected prior to start-up to assure that equipment, facilities, employee training, and procedures are prepared and adequate for the introduction of chemical agent materiel. At a minimum, safety, health, supervisory, and operating personnel will be part of the pre-operational inspection team.

2–8. Review of site and general construction plans and safety submissions

Site plans, general construction plans, safety submissions and hazard-zone calculations for all proposed chemical agent and munitions operations will be submitted according to AR 385–64.

a. Hazard zone calculations. Because of the diversity of agents that may be present at an installation, and the wide variety of associated hazards, an assessment should be made of all operations ongoing at each agent facility. This assessment will provide a determination of the MCE for the facility.

(1) When SOPs are submitted for the operations in that facility, they should be compared to the MCE in order to determine whether the new operation produces a greater hazard. If so, an amendment to the site plan, describing the new MCE, is required.

(2) MCEs for site plan approvals will be based on the operations conducted, not natural disasters or uncontrollable outside influences such as aircraft accidents.

b. Installation siting criteria. The hazard zone calculated from the MCE will include the agent source and represent that area (volume) containing a dosage greater than 10.0, 4.3, and 150 mg-min/m3 of GB, VX, or mustards respectively or 0.1 mg for inhalation deposition exposure of VX.

(1) Hazard distances will then be displayed as a circle drawn on a map of the installation and surrounding area.

(2) Positive procedures will be developed to control access and to ensure that personnel can be evacuated or protected.

(3) Details of such control procedures will be included in the site plan and general construction plan review required by AR 385–64.

c. Controlled agent release. When, by the nature of the operation, a release of agent is expected (such as in the case of emergency destruction, training, or maintenance operations), hazard zones will be calculated to protect all nonrelated personnel within the exposure limits of table 2–4.

2–9. Transportation of chemical agents and munitions

a. Chemical agents, munitions, and components will be packed, marked, and prepared for shipment according to DA Pam 385–61 and current drawings and specifications for the item involved.

(1) All applicable Department of Transportation (DOT) regulations governing the shipment of chemical agents and munitions will be observed.

(2) Any required DOT Approvals or Exemptions will be requested through Headquarters, Military Traffic Management Command, ATTN: MTOP-OPS, 5611 Columbia Pike, Falls Church, VA 22041–5050.

Table 2–1
Respiratory Protection Equipment for Regulated Areas[1]

OCCUPATIONAL SCENARIO	Employee Exposure Potential Agents (mg/m^3)				
	GD	GA/G	VX	H,HD,HT	L
Unmasked Agent Workers	≤.00003	≤.0001	≤.00001	≤.003	≤.003
Masked Personnel in Routine Operations[2]	>.00003 to ≤.06	>.0001 to ≤.2	>.00001 to ≤.02	(See para 2-5 for mustard and Lewisite operations.)	
Personnel Conducting Emergency Operations or Operations in Unknown Agent Concentrations or in Agent Concentrations which exceed the Concentrations Listed[3]	>.06	>.2	>.02	>.003	>.003

Notes:

[1] A full facepiece, chemical canister, air-purifying protective mask will be onhand for escape. (The M9-, M17, or M40-series masks are acceptable for this purpose. Other masks certified as equivalent may be used.)

[2] NIOSH/MSHA approved pressure demand, full facepiece, SCBA or air supplied respirator with escape air cylinders may be used. Alternatively, a full-facepiece, chemical-canister air- purifying protective mask is acceptable for this purpose (for example, M9-, M17-, or M40-series mask or other mask certified as equivalent) is acceptable.

[3] NIOSH/MSHA approved pressure demand, full facepiece, SCBA or air supplied respirator with HQDA approved protective ensemble. (See paragraph 2-5 for a detailed discussion of specific operational restrictions and monitoring requirements.

Table 2–2
IDLH Concentrations for Chemical Agents GA, GB, GD, and VX[1]

Agent	Concentration (mg/m3)[2]
GA/GB	0.2
GD	0.06
VX	0.02

Notes:

[1] Since IDLH values are used solely for the purpose of establishing the concentrations at which SCBA or supplied-air respirators are required, it is not necessary to formally establish IDLH values for H and L, since workers will already be required to wear these types of respiratory protection at concentrations much lower than what is considered IDLH for H and L, due to concerns over carcinogenicity.

[2] Oxygen levels must not be less than 19.5 percent.

Table 2–3
Airborne Exposure Limits[1]

Occupational Scenario	Chemical Agents (mg/m3)				
	GD	GA/GB	VX	H, HD, HT	L[2]
Unmasked Agent Worker 8-hour TWA in any work shift	.00003	.0001	.00001	.003[3]	.003
Non-Agent Worker and General Population 72-hour TWA	.000003	.000003	.000003	.0001[4]	.003
Ceiling value[5]	.00003	.0001	.00001	.003[3]	.003
Source Emission Limit[6]	.0001	.0003	.0003	.03	.03

Notes:

[1] Ceiling value normally refers to the maximum exposure concentration at any time, for any duration. Practically, it is the average value over the minimum time to determine a specified concentration.

[2] No individual will be intentionally exposed to direct skin or eye contact with any amount of solid or liquid chemical agent, or to solid materials contaminated with agent.

[3] All concentrations measured as Lewisite.

[4] HT is measured as HD.

[5] It is recommended that this level of detection (using a 12-hour sampling time) be demonstrated and used at all sites where mustard will be transported an destroyed.

[6] Source emissions limits are primarily an engineering guideline. These limits should be attainable by a well-designed and well-operated incineration facility; give an early indication of upset conditions; and be accurately measurable in a timely matter.

Table 2–4
No Effects Concentrations for Chemical Agents GA, GB, GD, and VX

Agent	Concentration (mg/m3)
GA/GB	0.000003
GD	0.000003
VX	0.000003

Chapter 3
Waivers and Exemptions

3–1. Policy

Army policy requires compliance with this regulation and DA Pam 385–61. When strategic or other compelling reasons make a deviation from these requirements necessary, installation/ activity commanders/directors may request a waiver (temporary authority to deviate) or an exemption (long term authority to deviate). The level of approval authority depends upon the risk identified and type of request (waiver or exemption).

3–2. Waiver authority

a. The Chief of Staff, Army (CSA) is the controlling authority for granting waivers of chemical agent and munitions safety standards. Waiver authority is redelegated as detailed in figure 3–1.

b. Commanders with waiver authority will—

(1) Ensure the existence of operational and compelling reasons before granting or renewing waivers.

(2) Grant waivers of standards only for installations and activities within their areas of authority.

(3) Ensure that compensatory measures identified in the waiver or exemption request are in effect, as applicable.

(4) Take all available steps to safeguard employees against the hazards covered by the standard.

c. Waiver process is as follows:

(1) A risk assessment forms the basis of a request for waiver or exemption by identifying the level of risk involved, any control measures or mitigating factors that reduce the level of risk, and the remaining level of risk to be accepted by the approval authority. The risk assessment will be forwarded, with the request for waiver or exemption, to the appropriate decision authority level (Figure 3–1) for approval. The risk assessment will contain, as a minimum, the following information:

(a) Mission requirements and compelling reasons which make the waiver essential, and the impact if the waiver isnot approved. Include maps showing actual measured distances to internal and external exposures, location of personnel with exposure potential, description of all exposed sites/facilities, quantity, type, or class of ammunition or explosives, if applicable.

(b) Safety regulations, including specific safety requirements or conditions (cited by paragraph) that will be violated, and reasons for the violations.

(c) A hazard analysis which identifies actual and potential hazards which may result from the waived requirements or conditions. This analysis will include both the 1–percent lethality, as defined in DA Pam 385–61, and no effects distances, if applicable.

(d) Any operational restrictions or limitations (for example, wind direction, temperature).

(2) Based on the results of the risk assessment, requests for waivers for extremely high risk assessment codes (RACs) will be forwarded through command channels to the MACOM commander

for approval. Commanders will forward a copy of approved waivers to the Director, U.S. Army Technical Center for Explosives Safety, ATTN: SMCAC-ES, Savanna, IL 61074–9639. Copies of all approved waivers will be maintained at both installation and MACOM Safety Offices.

(3) For high, medium, and low RACs, MACOM commanders may further delegate waiver approval authority through command channels (for example, to the major subordinate command (MSC) Commander, Installation/Activity Commander, Program Manager or Medical Research and Materiel Command Director).

(4) When commanders with waiver authority (figure 3–1) approve waivers that impact on other commands, the initiating activity will coordinate requests with the other commands. When waivers impact directly or could impact on demilitarization operations sponsored by PMCD, the initiating organization will coordinate the request for waiver with PMCD.

(5) Time limitations for waivers are as follows:

(a) Waivers will be limited to 1 year or less, and will be considered rescinded after 1 year unless renewed.

(b) In the discretion of the approving authority, upon annual review, a waiver may be renewed. However, no waiver may extend longer than five years from the date on which approval of the waiver was originally granted. Prior to annual renewal of a waiver, the installation or activity commander will review the need for the waiver to ensure that circumstances requiring the waiver have not changed. Results of this review will be kept on file with the waiver.

(c) A request for amendment will be initiated when factors or circumstances requiring a change to the original waiver are identified.

(d) If the condition which was the subject of an approved waiver can not be corrected within five years from the date of approval of the original waiver, an exemption must be requested. If an exemption is not requested, the condition must be corrected. No additional waiver period is authorized.

3–3. Exemptions

a. An exemption is written authority that permits long term noncompliance with regulatory requirements for strategic or other compelling reasons.

b. Exemptions will be approved according to figure 3–2. If the exemption request requires HQDA approval, it will be sent through command channels to Director, U.S. Army Technical Center for Explosives Safety, ATTN: SMCAC-ES, Savanna, IL 61074–9639.

c. When exemptions impact on chemical demilitarization operations sponsored by PMCD, the initiating organization will coordinate the request for exemption with PMCD.

d. Exemption requests will include the information required in paragraph 3–2c(1).

e. Requests for waivers or exemptions that cannot be resolved between MACOM commanders will be referred to the Chief of Staff, ATTN: DACS-SF, 200 Army Pentagon, Washington DC 20310–0200, for resolution.

Decision Authority Matrix

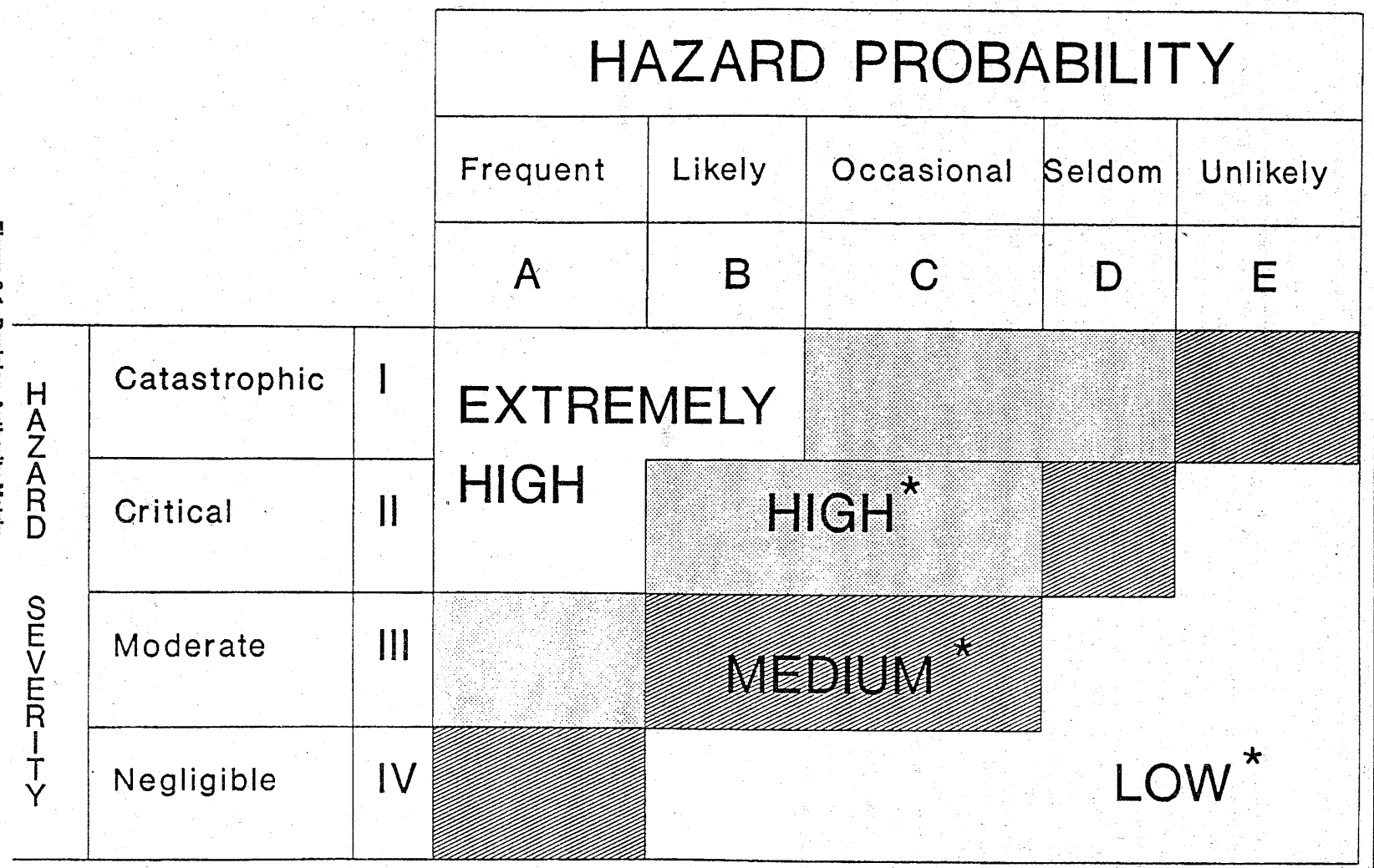


Figure 3-1. Decision Authority Matrix

HAZARD SEVERITY. Hazard severity categories are defined to provide a qualitative measure of the worst credible mishap resulting from personnel error, environmental conditions, design inadequacies, procedural deficiencies, and so forth. Examples of hazard severity categories are:

Catastrophic	Fatalities or serious injuries, loss of the facility, environmental release.
Critical	Single fatality or serious injury, major facility damage, agent release within the facility.
Moderate	Minor injury, minor equipment damage, agent release within engineering controls.
Negligible	No injuries, no equipment damage, no agent release.

HAZARD PROBABILITY. The probability that a hazard will be created can be described in potential occurrences per unit time, events, items, population, or activity. Example of a qualitative hazard probability rankings are:

Frequent	Occurs often in facility or equipment service life.
Likely	Occurs several times in facility or equipment service life.
Occasional	Occurs infrequently/sporadically or some time in facility or equipment service life.
Seldom	Possible but unlikely or remote chance of occurrence in facility or equipment service life.
Unlikely	Not expected to occur in career/equipment service life.

DECISION AUTHORITY.[1]

Extremely High Risk	Major Army Command (MACOM)
High Risk	MACOM[2] (may be delegated to Major Subordinate Command Commander)
Medium Risk	MACOM[2](may be delegated to Installation/Activity Commander)
Low Risk	MACOM[2] (may be delegated to PM/Medical/R&D Command Director)

Note.
[1]Exemption approval will be obtained by the next higher decision authority (for example, an exemption that has a LOW RISK, will be approved by the MEDIUM RISK decision authority). Exemption approval authority is affected by the delegation of waiver approval authority.
[2]MACOM Commander may further delegate waiver approval authority through command channels to the levels indicated above. Level of approval authority should be in accordance with the risk involved.

Figure 3-2. Matrix criteria

Chapter 4
Chemical Agent Studies and Reviews

4–1. Safety studies and reviews

a. Safety studies and reviews are conducted to assure the incorporation of maximum safety (consistent with operational requirements) and to prevent inadvertent release of chemical agent in any amount or under any conditions that may cause the incapacitation, illness or death of any person, or adversely effect the public or the environment.

b. The DASAF will designate the chairman of all such safety studies and reviews.

4–2. Special studies

Any HQDA agency may recommend a special study or review of an agent or chemical weapon system when it becomes necessary to investigate the situations listed in subparagraphs a through f below. The responsible ARSTAF agency will conduct the review or study and determine its scope.

a. Unsafe conditions or practices that may affect chemical weapon safety.

b. Proposed changes to approved safety controls.

c. Major system modifications including both design and physical configuration changes, or changes in system employment.

d. Significant changes to safety, health, and environmental protection standards and requirements that affect chemical agent operations.

e. Peacetime stockpile movements.

f. Site cleanup operations.

Chapter 5
Chemical Agent Demilitarization Safety Policy and Procedures

5–1. Introduction

Due to the national importance of the Chemical Demilitarization Program, and the diversity of hazards associated with Chemical Demilitarization operations, supplemental safety policies and procedures are required.

5–2. Policy

a. USAPMCD through the USAPMCSD directs all activities associated with the treatment of munitions or agents, including handling of the munitions or agents and all activities at the demilitarization facility to include transportation of the munitions to the demilitarization facility and chemical demilitarization plant operations. Host installation responsibilities include storage, maintenance, inventory, and logistics activities of chemical stocks including those being demilitarized.

b. Approved emergency response plans consistent with this regulation and DA Pam 385–61 will be applied when the immediate treatment of chemical munitions or chemical agents is necessitated by an emergency or when delay will clearly cause a greater danger to human life or health.

5–3. Emergency preparedness

USAPMCD, in coordination with the host installation, will establish a central control point to coordinate all chemical agent emergency activities and conduct periodic exercises of the emergency response plans.

5–4. Protective clothing and equipment

The minimum levels of protective clothing and equipment required for various operations and conditions will be established based on the criteria in DA Pam 385–61 and the needs established by the job hazards analysis for individual operations or for emergencies. Modified Level A consisting of TAP Level A with an approved self-contained breathing apparatus and modified butyl hood may be used by emergency standby personnel supporting DPE entries.

5–5. Inspections

USAPMCD, in conjunction with the host installation, the host installation MACOM, and the DASAF, will conduct pre-operational surveys prior to the start of chemical agent demilitarization operations or testing. The pre-operational survey will consist of a review of all pertinent documentation, inspection of all equipment and facilities prior to start-up, verification of employee training and procedures, and witness of selected systems testing and operations.

5–6. Review site plan, general construction, and safety submission

a. USAPMCD will submit site plans and safety submissions and supporting documents (monitoring plans, hazard analysis, and so forth) to the installation commander where the demilitarization facility is sited. The installation commander will forward site plans and safety submissions with conditions of approval and clarifying statement if necessary through command channels to the MACOM. To expedite coordination and review, MACOM subordinate endorsements will be furnished to U.S. Army Program Manager for Chemical Demilitarization, ATTN: SFAE-CD-SS, Aberdeen Proving Ground, MD 21010–5401. After MACOM review, comments and recommendations will be forwarded to USAPMCD for resolution prior to forwarding to Army Safety Office, ATTN: DACS-SF, Chief of Staff, 200 Army Pentagon, Washington DC 20310–0200.

(1) Site plans and safety submissions will contain the information required by this regulation and AR 385–64, as appropriate.

(2) Operational restrictions for chemical demilitarization operations will be based on public safety risk considerations, rather than on traditional MCE calculations. Operational restrictions will be identified in the site plan and safety submission for the facility.

b. Because of the diversity of hazards present in chemical demilitarization operations, a quantitative risk assessment will be performed to enable calculation of the risk of the operation and to ensure risk is reduced to a level acceptable to USAPMCD. The risk assessment procedure will be based on both the probability and the consequences of the accident scenario.

(1) The accident scenario probability and consequences will consider the number of items likely to be involved, the quantity of agent released, and the number of people potentially affected by the release.

(2) The propagation characteristics of the ammunition must be considered in the development of the consequences of the scenario.

(3) The amount of agent released and the nature of the release (evaporation, detonation, and so forth) are used to make hazard zone calculations for each scenario.

(4) The risk of the proposed operation is used to determine if the operation can be safely performed.

c. Lightning protection is required for all chemical demilitarization facilities that process or store chemical munitions, including bulk chemical agents. At a minimum, chemical demilitarization facilities will conform to National Fire Protection Association (NFPA) lightning protection requirements. Lightning Protection System (LPS) designs and specifications for chemical demilitarization facilities are submitted for approval as part of the facility safety submission. The following must be included in the LPS design submittal:

(1) Details of air terminal design and placement.

(2) Interconnecting conductor specifications and placement.

(3) Bonding details.

(4) Ground loop, counterpoise, or ground grid design and location.

(5) Design and location of test wells. Approval of the safety submission will constitute approval of the lightning protection system design.

(6) A quality assurance (QA) plan detailing the LPS maintenance and testing program.

5–7. On-post transportation of chemical agents and munitions

Details associated with transportation of chemical agents and munitions from the storage yard to the demilitarization facility must be described in the facility safety submission. Additional details are provided in chapter 10, DA Pam 385–61.

Appendix A
References

Section I
Required Publications

AR 40–5
Preventive Medicine. (Cited in paras 1–4c(3) and 1–4j(2).)

AR 40–10
Health Hazard Assessment Program in Support of the Army Material Acquisition Decision Process. (Cited in para 1–4m(4).)

AR 50–6
Nuclear and Chemical Weapons and Material - Chemical Surety. (Cited in paras 2–1b, 2–3, and 2–4h(3).)

AR 70–1
Army Acquisition Policy. (Cited in para 1– 4l(4).)

AR 75–15
Responsibilities and Procedures for Explosive Ordnance Disposal. (Cited in para 2 2D1d(1).)

AR 385–10
Army Safety Program. (Cited in paras 1–4k(2), 1–4e, 1–4n(1), 12D4r(1), 1 2D4s(2), and 2 2D1f.)

AR 385–16
System Safety Engineering and Management. (Cited in paras 1–4k(3), and 1–4m(4).)

AR 385–40
Accident Reporting and Records. (Cited in paras 1–4d(10) and 22D3.)

AR 385–64
U.S. Army Explosive Safety Program. (Cited in paras 2 2D1e, 22D1g, 2 2D8, 2 2D8b(3) and 5 2D6a(1).)

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 paras 1–4i(2), 2–1d, 2–4g, and 2–4h(2).)

DA Pam 40–173
Occupational Health Guidelines for the Evaluation and Control of Occupational Exposure to Mustard H, HD, and HT. (Cited in paras 1–4i(2), 2–1d, 2–4g and 2–4h(2).)

DA Pam 50–6
Chemical Accident or Incident Response and Assistance (CAIRA) Operations. (Cited in para 2–4h(3).)

DA Pam 385–61
Chemical Agent Safety Standards for H, HD, HT, L, GA, GB, and VX. (Cited in paras 1–1b, 1–4k(1), 1–4ko(4), 1–4s(1), 1–4s(12), 1–4t(3), 2–1b, 2–1d, 2–1h(3), 2–4i(2), 2–4j, 2–5b, 2–5c, 2–5h(1), 3–2c(1)(c), 5–2(b), 5–4, and 5–7.)

29 CFR 1910
Title 29, Code of Federal Regulations, Part 1910, Labor. (Cited in para 2–1d, 2–4f.)

TB MED 503
Industrial Hygiene. (Cited in para 1–4i(2).)

Section II
Related Publications

AR 25–400–2
The Modern Army Recordkeeping System (MARKS).

AR 70–18
The Use of Animals in DOD Programs.

AR 70–25
Use of Volunteers as Subjects of Research.

AR 70–65
Management of Controlled Substances, Ethyl Alcohol, and Hazardous Biological Substances in Army Research, Development, and Test Evaluation Facilities.

AR 75–1
Malfunctions Involving Ammunition and Explosives.

AR 200–1
Environmental Protection and Enhancement.

AR 200–2
Environmental Effects of Army Actions.

AR 380–86
Classification of Chemical Warfare and Chemical and Biological Defense Information.

AR 405–90
Disposal of Real Estate.

AR 415–15
Army Military Construction Program Development and Execution.

29 CFR 1904
Recording and Reporting Occupational Injuries and Illness

29 CFR 1910
Labor

29 CFR 1926
Construction

29 CFR 1960
Occupational Safety and Health Construction Industry

40 CFR 260–269
Environmental Protection Agency

49 CFR 100–179
Department of Transportation

Section III
Prescribed Forms
This section contains no entries.

Section IV
Referenced Forms
This section contains no entries.

Glossary

Section I
Abbreviations

AMC
U.S. Army Materiel Command

AEL
airborne exposure limits

APE
army peculiar equipment

ARSTAF
Army Staff

ASA (IL&E)
Assistant Secretary of the Army (Installations, Logistics & Environment)

ASA(RD&A)
Assistant Secretary of the Army (Research, Development, and Acquisition)

CAIRA
chemical accident/incident response and assistance

CASARM
chemical agent standard analytical reference materials

CASME
Chemical Agent Safety Management Evaluations

CDTF
chemical demilitarization training facility

CG
commanding general

CHP
chemical hygiene plan

COCO
contractor-owned, contractor-operated

CSA
Chief of Staff, U.S. Army

DA
Department of the Army

DASAF
Director of Army Safety

DCSLOG
Deputy Chief of Staff for Logistics

DCSOPS
Deputy Chief of Staff for Operations and Plans

DDESB
Department of Defense Explosive Safety Board

DERP
Defense Environmental Restoration Program

DHHS
Department of Health and Human Services

DOD
Department of Defense

DOT
Department of Transportation

DPE
demilitarization protective ensemble

EDCAS
Executive Director for Chemical Agent Safety

EOD
explosives ordnance disposal

EPA
Environmental Protection Agency

FORSCOM
Forces Command

FUDS
formerly used defense sites

GOCO
Government-owned, contractor-operated

HAZWOPER
hazardous waste operators

HQDA
Headquarters, Department of Army

HCSDS
hazardous component safety data sheet

IDLH
immediately dangerous to life or health

ISO
International Standards Organization

LPS
lightening protection system

MACOM
major Army command

MARKS
Modern Army Record-keeping System

MCE
maximum credible event

MEDCOM
U.S. Army Medical Command

MSC
major subordinate command

MSDS
material safety data sheet

MSHA
Mine Safety and Health Agency

NAS
National Academy of Sciences

NFPA
National Fire Protection Agency

NIOSH
National Institute for Occupational Safety and Health

OCSA
Office of the Chief of Staff, U.S. Army

PMCD
Program Manager for chemical demilitarization

PPE
personal protective equipment

QA
quality assurance

QD
quantity distance

RAC
risk assessment code

RDA
Research, Development and Acquisition

RDTE
research, development, test, and evaluation

SCBA
self-contained breathing apparatus

SOP
standing operating procedure

SPP
safety program plan

STEPO-I
Self-Contained, Toxic Environment, Protective Outfit-Interim

TAP
Toxicologic Agent Protective

TAPES
Toxicologic Agent Protective Ensemble, Self-contained

TIG
The Inspector General

TRADOC
U.S. Army Training and Doctrine Command

TSG
The Surgeon General

TWA
time-weighted average

USACBDCOM
U.S. Army Chemical Biological Defense Command

USACE
U.S. Army Corps of Engineers

USAMRMC
U.S. Army Medical Research and Materiel Command

USANCA
U.S. Army Nuclear and Chemical Agency

USAPMCD
U.S. Army Program Manager for Chemical Demilitarization

USAPMCSD
U.S. Army Project Manager for Chemical Stockpile Disposal

Section II
Terms

Accessible form
Undiluted agent that has not been decontaminated or neutralized, and that could possibly be removed for unauthorized purposes. Includes agent in munitions, bulk, and in laboratory containers.

Agent GA
The chemical dimethylphosphoramidocyanidate, chemical abstracts service registry No. 77–81–6, in pure form and in the various impure forms which may be found in storage as well as in industrial, depot, or laboratory operations.

Agent GB
The chemical isopropyl methylphosphonofluoridate, chemical abstracts service registry No. 107–44–8, in pure form and in the various impure forms which may be found in storage as well as in industrial, depot, or laboratory operations.

Agent GD
The chemical phosphonofluoridic acid, methyl–1,2,2– trimethylpropyl ester, chemical abstracts service registry No. 96–64–0, in pure form and in the various impure forms which may be found in storage as well as in industrial, depot, or laboratory operations.

Agent H
Levinstein mustard of bis(2–chloroethyl) sulfide. Mustard produced by Levinstein process contains about 30 percent sulfur impurities.

Agent HD
Distilled mustard or bis(2–chloroethyl) sulfide, chemical abstracts service registry No. 505–60–2. HD is H that has been purified by washing and vacuum distillation to reduce sulfur impurities.

Agent HT
Mixture of 60 percent HD and 40 percent T. T is bis(2– chloroethylthioethyl) ether, chemical abstracts service registry No. 63918–89–8.

Agent VX
The chemical phosphonothioic acid, methyl-, S-(2–(bis(1– methylethyl)amino)ethyl) 0–ethyl ester, chemical abstracts service registry No. 50782–69–9, in pure form and in various impure forms which may be found in storage as well as in industrial, depot, or laboratory operations.

Airborne exposure limits
Allowable concentrations in the air for occupational, general population exposures and source emission limit. Unless otherwise noted, AEL in this document refers to the 8–hour TWA for unmasked agent workers.

Binary chemical munitions
Munitions designed to use two nonlethal chemicals which combine only during weapon functions to produce a chemical agent.

Binary precursors
The component chemicals that combine to produce chemical agents.

Buddy-aid
The administration of a chemical agent antidote to personnel exhibiting symptoms of severe chemical agent poisoning when unable to administer self-aid.

Carcinogenicity
The potential for development of cancer in a living individual. A cancer is a malignant tumor resulting from a change in the normal growth and development of cells. Cancerous tumors have the tendency to invade surrounding tissue and to spread to other sites in the body.

Ceiling value
Normally, refers to the maximum exposure concentration of chemical agent at any time, for any duration. Practically, it may be an average value over the minimum time required to detect the specified concentration.

Chemical agent
A chemical substance which is intended for use in military operations to kill, seriously injure, or incapacitate persons through its physiological effects. Excluded from consideration are riot control agents, herbicides, smoke, and flame.

Chemical agent operation
Any operation which involves chemical agents, including storage, shipping, handling, manufacturing, maintenance, test chamber activities, laboratory activities, surveillance, demilitarization, decontamination, disposal, and training.

Chemical event (Also see AR 50–6)
The term chemical event encompasses all chemical accidents, incidents and politically/public sensitive occurrences. Specifically, this applies to—

a. Confirmed releases of agent from munitions. A confirmed chemical agent release from stockpile or non-stockpile chemical weapons is any detection of agent outside the munition body or bulk storage container into the atmosphere outside of a closed containment system that is confirmed by corroborating positive detections. Closed containment systems include filtered bunkers, igloos, or overpack containers which are capable of preventing the escape of chemical agent in concentrations exceeding the AEL. Reporting will begin based on the time of release confirmation and must not wait until location and isolation of the leaking munition/container is accomplished.

b. Discovery of an actual or suspected chemical agent munition or container that may require emergency transportation and/or disposal. Discovery as part of planned real property remediation will not be reported as a chemical event unless emergency transportation or disposal is required, but will be reported in accordance with remediation plans.

c. Confirmed detection of agent above threshold concentration occurring for any period outside the primary engineering control. This includes agent operations conducted in a closed system that is contained in a facility equipped with secondary engineering controls to protect unprotected workers or the ambient environment (e.g., cascade ventilation/air filtrations).

d. Actual exposure of personnel to agent above the allowable limits contained in this regulation that is confirmed by clinical evaluation, initial laboratory evaluation or documented by sampling techniques. This includes any case where there is a reasonable belief that an exposure has occurred to any individual above these limits. Special attention needs to be given to workers reporting that they believe that they were exposed to agent or the failure of personnel protective equipment.

e. Any terrorist or criminal act directed toward chemical agent storage, laboratory or demilitarization facility or any deliberate release of chemical agent. This includes employment of an improvised chemical device intended to disperse chemical agent regardless of whether the device has functioned.

f. Loss of chemical agent (other than deliberate destruction by approved, authorized laboratory and demilitarization processes).

g. Any malfunction or other significant activity at a chemical demilitarization plant which could reasonably be expected to cause concern within the local community or the press, or which in the judgement of the facility or installation management or leadership, could cause embarrassment to the U.S. Army.

h. Above categories involving items configured as weapons containing the industrial chemical chlorine, hydrogen and potassium cyanide, carbonyl chloride, cyanogen chloride or chloropicrin. This pertains to items that were designed as a delivery/dispersal system for use in war, irrespective of fusing or explosive configuration.

Contracting agency
The organization that has primary responsibility for monitoring administering and ensuring compliance with the contract, especially pertaining to the chemical agent program.

Decontamination
The process of decreasing the amount of chemical agent on any person, object, or area by absorbing, neutralizing, destroying, ventilating, or removing chemical agents to the extent necessary to preclude the occurrence of forseeable adverse health effects.

Demilitarization
The mutilation, destruction, or neutralization of chemical agent materiel, rendering it harmless and ineffectual for military purposes.

Exemption
Exemptions are relatively long-term exceptions to otherwise mandatory standards. Exemptions will be granted only under the following conditions:

a. When corrective measures are impractical.

b. Where impairment of the overall defense posture would result.

c. When positive programs for eventual elimination of the need for the exemption are being pursued.

Experimental chemical agents
Chemical substances being tested, developed, or altered for chemical defense purposes which:

a. Are used solely by the military.

b. Are contained in items configured as a weapon.

c. Have toxicities equal to or greater than current nerve or mustard agents.

Exposure/Exposed worker
An exposed worker is an individual who—

a. Exhibits clinical signs or symptoms of nerve agent intoxication.

b. Has cholinesterase depression, consistent with nerve agent effect.

c. Exhibits clinical signs or symptoms of mustard or lewisite effects.

d. Is an individual who works in an agent operating area where levels of nerve agent, Lewisite or mustard.

e. Exceeds the protective capability of the personal protective equipment (PPE).

f. Are detectible and there is a breech in PPE or engineering controls.

First aid
Any one-time treatment, and any follow-up visit for the purpose of observation of minor scratches, cuts, burns, splinters, and so forth, which do not ordinarily require medical care. Such one- time treatment, and follow-up visit for observation, is considered first aid, even though provided by a physician or registered medical professional personnel.

IDLH
A condition posing an immediate threat to life or health regardless of PPE use, including situations where concentrations of contaminates (including military chemical agents) require self-contained, full facepiece, positive pressure supplied air respirators. This condition represents the maximum concentration from which, in the event of respirator failure, the wearer could not escape without the respirator and without experiencing any escape impairing or irreversible health effects. For the purpose of the Army Toxic Chemical Agent Safety Program, IDLH includes atmospheres where oxygen content by volume is less than 19.5 percent.

Industrial chemical
Chemicals developed or manufactured for use in industrial operations or research, by industry, Government, or academia. These chemicals are not primarily manufactured for the specific purpose of producing human casualties or rendering equipment, facilities, or areas, dangerous for use by man.

Lewisite
The chemical Dichloro (2–chlorovinyl) arsine, chemical abstracts service registry No. 541–25–3, in pure form and in the various impure forms which may be found in storage as well as in industrial, depot, or laboratory operations.

Medical surveillance
A program comprised 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.

Mustard
The chemical bis(2–chloroethyl)sulfide, chemical abstracts service 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 Levinstein mustard (H), distilled mustard (HD), and closely related preparations.

Mutagenicity
The cause of changes in cellular genetic material which may be passed on to subsequent generations of cells. When these changes occur in germ cells (for example, sperm or ova), the mutations may be passed on to subsequent generations of offspring.

Neutralent
Those materials remaining from the chemical neutralization of agents.

Neutralization
The act of altering the chemical, physical, and toxicological properties to render the chemical agent ineffective for use as intended.

No significant effects dosage
Represents a level of exposure which should produce no permanent effects in the affected population.

Oxygen deficient atmosphere/Oxygen deficiency
An atmosphere containing less than 19.5 percent oxygen by volume at sea level.

Positive measures
All measures needed to fulfill safety objectives such as weapon design, procedures, command and control, human reliability, operational techniques, and safety controls.

RDTE solution
Solutions of chemical agents in concentrations and quantities reduced by admixture (dilution) to levels that can be handled with the same precautions associated with industrial chemicals (acids, bases, and solvents). The following levels are considered RDTE solutions:

a. Concentrations of H, HD, HQ, Q, T, or HT not greater than 10 mg/ml (chemical agent/solvent) and containing not greater than 100 mg of chemical agent.

b. Concentrations of GA, GB, GD, or GF not greater than 2 mg/ml (chemical agent/solvent) and containing a maximum quantity of 20 mg of chemical agent.

c. Concentrations of VX not greater than 1 mg/ml (chemical agent/solvent) and containing a maximum quantity of 10 mg of chemical agent.

d. Concentrations of L and HL not greater than 5 mg/ml (chemical agent/solvent) and containing a maximum quantity of 50 mg of chemical agent.

Risk assessment code
An expression of the risk associated with a hazard that combines the hazard severity and accident probability into a single Arabic numeral as described in AR 385–16 and this regulation.

Safety controls
Mandatory, procedural safeguards approved by the Secretary of the Army 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 objectives
Criteria for comparing and judging measures for adequacy. Safety objectives incorporate the safest measures consistent with operational requirements.

Self-aid
Administration of a chemical agent antidote to oneself upon experiencing early symptoms of chemical agent poisoning.

Source emissions
All intentional, uncontrolled releases of chemical agents to include stack emissions.

Treatment
When used in connection with hazardous waste, the Resource Conservation and Recovery Act of 1976, 42 USC 6901 et seq., defines the term treatment as any method, technique or process, designed to change the physical, chemical, or biological character or composition of any hazardous waste so as to neutralize such waste or so as to render such waste non- hazardous, safer for transport, amenable for recovery, amenable for storage, or reduced in volume.

Waiver
A temporary (1 year or less) written relief from a requirement, granted according to this regulation for operational and/or compelling reasons, pending accomplishment of actions or programs which will result in conformance to the required standards. Waivers must be renewed every year, but in no event will a waiver be extended for more than a total period of 5 years.

Section III
Special Abbreviations and Terms
This publication uses the following abbreviations, brevity codes, and acronyms not contained in AR 310-50.
This sections contains no entries.

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