
Attachment E

Lethal Unitary Chemical Agents and Munitions

Public Law 99-145, Section 1412, directs DOD to dispose of the lethal unitary chemical agents and munitions stored at eight Army installations within the continental United States. After an exhaustive study comparing the alternative disposal strategies, the Army issued a Final Programmatic Environmental Impact Statement (FPEIS) for the Chemical Stockpile Disposal Program (January 1988) recommending on-post incineration at each site. In the February 1988 Record of Decision (ROD), the Army committed to establishing an emergency response program as a means of mitigating accidents during storage and for disposal operations.

In August 1988, the Army and FEMA signed a Memorandum of Understanding (MOU) identifying the specific responsibilities of the Army and FEMA, defining areas of each agency's expertise, and outlining where cooperation between the two agencies would result in a more efficient use of personnel and material resources. These obligations were integrated into a program called CSEPP. The Army has overall responsibility for developing on-post preparedness plans, upgrading on-post response capabilities, conducting on-post training and has the lead for technical research, post-incident cleanup standards and data automation activity. FEMA is responsible for working with State and local governments in developing off-post preparedness plans, upgrading off-post response capabilities, and conducting off-post training.

The chemicals weapons depots affect ten States and their emergency planners. However, chemical munitions, many still containing chemical agents, have been found in old dump sites, current and former military installations, old industrial sites, and at spurious unappreciated non-stockpile locations throughout the United States. It is possible that State and local planners could be contacted by the Army or FEMA to prepare short-term operations plans to address these situations. The information which follows should be helpful in responding to emergencies caused by these non-stockpile munitions.

The Hazard

Nature of the Hazard

The chemical agents of primary concern to CSEPP are the nerve agents GA, GB and VX, and the vesicant (blister) agents H, HT and HD. The chemical and physical properties of these agents have a direct bearing on emergency planning and response because they determine the agents' volatility, behavior in fires, and persistence in the environment. All of the agents are liquids at normal indoor temperatures, although most sulfur mustards (H and HD) freeze at ambient temperatures below 55 to 59° F. In the unlikely event of fires or explosions, on-post personnel and the off-post general public also could be exposed to agent combustion products as well as uncombusted agents.

The agents GA, GB, and VX are rapidly acting, lethal nerve agents and are toxic as liquids and vapors. The vesicant agents injure the eyes, damage the lungs and severely blister the skin upon exposure. The vesicants often react with tissue constituents, and there is significant evidence that exposure to sufficiently high doses may increase the risk of developing cancer. The vesicant agents are potent in minute quantities and can produce delayed effects as late as 24 hours after contact.

In pure form, the nerve agents are usually odorless, colorless (agent VX may be pale amber), and tasteless. GA and GB are nonpersistent nerve agents which primarily present a vapor hazard. The vapors from these agents would be the primary cause of casualties since they can be carried downwind quickly. Under most release and meteorological conditions GA and GB produce the greatest downwind hazard distance when compared to other agents in the stockpile. VX is not very volatile, so it presents much less vapor hazard than GA and GB; however, it is 100 times more toxic by the percutaneous route. In practical terms, a toxic dose of VX is more likely to result from skin rather than respiratory exposure; however, all nerve agents are sufficiently volatile to pose an inhalation hazard. At agent concentrations of 30 mg/m³ or greater, median lethal inhalation doses can be attained in a few minutes.

The chemical agents are stored in three basic configurations: (1) projectiles, cartridges, mines, and rockets containing propellant and/or explosive components; (2) aircraft-delivered munitions that do not contain explosive components; and (3) steel one-ton containers. Most of the stockpile (61%) is in this third form. All of the agents are at least 20 years old; some are more than 40 years old.

Risk Area

The stockpiled agents are stored in chemical exclusion at eight U. S. Department of Army installations within the continental United States (all percentage figures are based on weight): Tooele Army Depot (TEAD), Utah (42.3% of the total stockpile); Pine Bluff Arsenal (PBA), Arkansas (12.0%); Umatilla Depot Activity (UMDA), Oregon (11.6%); Pueblo Depot Activity (PUDA), Colorado (9.9%); Anniston Army Depot (ANAD), Alabama (7.1%); Aberdeen Proving Ground (APG), Maryland (5.0%); Newport Army Ammunition Plant (NAAP), Indiana (3.9%); and Blue Grass Army Depot (BGAD), Kentucky (1.6%). The remaining 6.6% of the stockpile is located on Johnston Island in the Pacific Ocean.

For CSEPP, the EPZ concept involves three concentric zones, reflecting the differing response requirements associated with a fast-breaking chemical event with limited time for warning and response. The innermost planning zone is the immediate response zone (IRZ), the middle zone is the protective action zone (PAZ), and the outermost zone is the precautionary zone (PZ).

Emergency response plans must reflect the fact that a release of chemical agent will affect different areas in different ways and at different times. Areas near the point of release are likely to experience relatively high concentrations of agent very quickly, while areas farther away are likely to experience lower agent concentrations after a longer period of time.

Prompt and effective response is most critical in the IRZ because it would be the first affected by an accidental release of chemical agent and would likely receive the heaviest agent concentrations. This zone encompasses an area requiring less than one-hour response time when affected by an agent release under "typical" weather conditions. The IRZ boundary ranges from 10 to 15 km (6 to 9 miles) from the potential chemical event source, depending on the stockpile location on-post. For these reasons, emergency response plans developed for the IRZ must provide for the most rapid and effective protective actions possible.

The PAZ is an area that extends beyond the IRZ to approximately 16 to 50 km (10 to 30 miles) from the stockpile location. The PAZ is that area where public protective actions may still be necessary in case of an accidental release of chemical agent, but where the available warning and response time is such that most people could evacuate. The primary emergency response is evacuation because it is anticipated that there will be sufficient time to permit an orderly and complete evacuation. However, other responses (e.g., sheltering) may be appropriate for institutions and special populations that could not evacuate within the available time.

The PZ is the outermost portion of the EPZ and extends from the PAZ outer boundary to a distance where the risk of adverse impacts to humans is negligible. Because of the increased warning and response time available for implementation of response actions in the PZ, detailed local emergency planning is not required, although consequence management planning may be appropriate.

CSEPP Planning Considerations

The *CSEPP Planning Guidance Document* provides information to be used in preparing emergency plans that cover the most important aspects of CSEPP. Developed jointly by FEMA and the Army, the CSEPP Planning Guidance serves three principal purposes in the CSEPP:

- To promote the development of a comprehensive emergency response capability at each chemical agent stockpile location by providing guidance and direction to assist State, local, and Army installation planners in formulating, coordinating, and maintaining effective emergency response plans;
- To ensure that critical planning decisions are made consistently at all eight chemical agent stockpile locations by establishing a single adequate and systematic framework for emergency response planning related to the CSEPP; and
- To provide a basis for assessing the adequacy of emergency preparedness planning as a part of the evaluation of proposals for Federal assistance.

The CSEPP Planning Guidance does not contain all of the information and detailed technical criteria that will eventually be required for comprehensive emergency plans and resource programs at the eight stockpile locations. Additional location-specific and programmatic technical guidance is available in a number of technical studies, either completed or ongoing.

The CSEPP planning process involves a number of important tasks: identify the planning team; identify sources of technical and administrative support for the planning team; review existing plans to determine their status, to prevent overlap, and to eliminate inconsistency; analyze local hazards, determine risk, and assess vulnerability; evaluate response capabilities and resources; upgrade existing plans or develop new plans and procedures; and develop an ongoing program for plan implementation, maintenance, training, and exercises.

Direction and Control

The following are direction and control concerns associated with this particular hazard and the CSEPP.

<i>Chemical Event Assessment</i>	Chemical event assessment involves determining the type and nature of an incident or accident and its potential or actual impact. Assessment is both initial and extended. Initial assessment (conducted by installation personnel) primarily involves activities such as analysis and monitoring; agent identification and classification; dispersion modeling and dose projection; and conversion of assessment information to emergency response considerations. Extended monitoring activities will be determined by the nature of the accident and release.
<i>Emergency Notification and Event Levels</i>	<p>Army and local officials must identify the type and detail of information that the installation must communicate to the off-post authorities to assist the latter in deciding upon protective actions. Such information includes, but is not limited to, name of communicator; verification number (if commercial telephone is used) or authenticator; time of notification; emergency level; time of event; brief description of event; projected areas of impact; meteorological data; and a recommendation for the implementation of protective actions. Transmission of a hard copy of this information should follow as soon as possible. There are significant benefits in a standard emergency assessment and notification system at each Army installation. Four event levels have been established in CSEPP, with increasing degrees of impact: Non-Surety Emergency; Limited Area Emergency; Post Only Emergency; and Community Emergency.</p> <p>The Army installation will notify the designated off-post point(s) of contact of the actual or likely occurrence, its chemical event emergency notification level, and the recommended protective action within 5 minutes from initial detection of an actual or likely chemical agent release at APG, ANAD, BGAD, NAAP, and PBA, and within 10 minutes from initial detection of an actual or likely release at PUDA, TEAD, and UMDA.</p>
<i>Emergency Operations Plan</i>	Because the chemical agent stockpile is under Federal jurisdiction, the National Contingency Plan delegates the responsibility for on-scene coordination to the DOD. Therefore, the Federal OSC will be an Army representative. If the release of a chemical agent results in the declaration of Federal emergency or disaster, FEMA also will be involved through its Federal Coordinating Officer (FCO). Each jurisdiction's command and control procedures should include consideration of the relationship between the OSC and the civilian emergency management structure.

In this context, each jurisdiction must identify the organizational structure it will use to respond to a chemical agent release. Key components of the structure include:

- The individual (and alternates) with authority to provide central management of the community's emergency response.
- Other parties that will support the management function by providing advice and information.
- The response forces and other resources available to respond to the emergency (including those under direct control of the jurisdiction as well as those to be obtained from other governments or from private sources).
- The organizational framework that will be used to coordinate the input of all parties to ensure an effective and comprehensive response to the emergency.

*Emergency
Operations
Center*

An EOC developed under the CSEPP should provide a command and control center for potential emergencies related to the storage and disposal of the chemical agent stockpile as well as for other potential emergencies identified in the community's hazard assessment. An effective EOC consists of the combination of physical facilities, equipment, personnel, and procedures that enables the jurisdiction to apply its resources efficiently and effectively to respond to an emergency situation. Detailed guidelines for staffing, organization, and operation of the EOC are presented in the CSEPP Planning Guidance.

*Emergency
Worker
Operations*

CSEPP takes a two-pronged approach to advancing the safety of civilian emergency response personnel. First, no civilian workers will be intentionally placed in positions where they will encounter chemical agent during the performance of their duties. Second, workers who may incidentally encounter chemical agent while performing their duties will be provided with appropriate protective clothing, equipment, and training.

Under these guidelines, civilian responders will not enter any area where chemical agent is known or suspected to be present while the release of agent is ongoing. While the release is in progress, civilian emergency workers may perform duties (such as traffic and access control and emergency medical services) outside the known/suspected hazard area.

After the release has stopped and chemical agent monitoring has confirmed that agent concentrations are within the range for which the protective clothing and equipment provide protection, civilian responders may enter the hazard area to perform necessary duties such as search and rescue and accompanying off-site Army monitoring personnel. All personnel whose duties during or after the release may bring them into contact with chemical agent will be required to use protective clothing and equipment specified in these guidelines.

Automation

Automated systems can provide important assistance in performing many of the planning and response functions in CSEPP. The quickness with which a chemical agent release could affect on-post and off-post populations argues strongly in favor of using automated tools to help perform complex analyses during planning and to manage the deployment of personnel and resources during response. State and local jurisdictions are strongly encouraged to make maximum use of automation tools being developed for CSEPP.

Communications

Reliable communication systems ensure the notification and subsequent information sharing can occur without delay. In CSEPP, at least two independent methods of simultaneous communications must be available to protect against the possibility of equipment failure. A communications network, consisting of redundant telephone and radio systems, should be designed and installed to link the Army installation EOC and notification point with the EOCs and notification points of all IRZ counties and the State(s). Regardless of whether the telephone or radio system is designated the primary method of communication, the other system must be provided to serve as a backup.

Warning

The objectives of the public alert and notification system (ANS) are:

- To alert essentially every person within the IRZ of an emergency that has the potential of causing harm to those persons.
- To notify essentially every affected person within the IRZ of appropriate protective actions.

The IRZ warning system must provide both an alerting signal and instructional message within 8 minutes from the time a decision has been made that the public is in danger. To achieve rapid notification, CSEPP endorses the concept of a dual indoor-outdoor warning system.

*Outdoor
Systems*

Only omnidirectional electronic sirens with voice message capability are acceptable as the primary outdoor alerting and notification devices for CSEPP. The network of siren/voice units is configured so that the alert signals and notification messages received in each area of the IRZ are of sufficient volume to be heard distinctly above ambient noise levels in the area. Community characteristic descriptions, with their associated sound pressure level requirements, are identified in the CSEPP Planning Guidance.

*Indoor
Systems*

An acceptable indoor alert and notification device must be reliable and not be easily disabled. CSEPP supports several options: tone alert receivers, NOAA Specific Area Message Encoder (SAME) receivers, and EAS-capable receivers. Two supporting technologies to augment the receivers include simultaneous telephone activations and interruption of cable television programming for special announcements.

PAZ

Alert and notification for the population in the PAZ is provided by a system designed for specific applications such as population centers and institutions, coupled with electronic media, EAS broadcasts, and route alerting. Public alert and notification system requirements within the PAZ should be viewed as transitioning between the exacting requirements for the IRZ to basically no requirements for the PZ.

**Emergency
Public
Information**

CSEPP encourages an aggressive public education and information campaign as an essential ingredient of an effective emergency preparedness program. The pre-emergency public education program raises public awareness of the hazards associated with the chemical agent stockpile and advises citizens of actions they can take, both before and during an emergency, to reduce risks to themselves and their property. Public education also informs individuals of the progress of Chemical Stockpile and Chemical Demilitarization activities as they relate to emergency preparedness. The emergency public information program identifies the information that will need to be communicated to the public in the event of a chemical agent release and a strategy for disseminating this information rapidly.

CSEPP endorses the use of a single JIC as the most efficient method for gathering, coordinating and disseminating emergency information. Each jurisdiction will develop agreements and procedures, in cooperation with all affected local jurisdictions, State emergency management officials, and the Army installation, that will be followed to ensure the coordinated release of information during an emergency. A related task for JIC personnel is the control of rumors.

**Evacuation
and In-Place
Sheltering**

The basic protective action choices are evacuation and four types of shelter-in-place including normal shelter-in-place, and sheltering improved by expedient measures, permanent enhancements, or pressurization.

*Protective
Action
Decision-
Making*

The protective action decision process consists of these steps:

- Identifying the situations under which evacuation would not be appropriate.
- Determining what action provides the best protection when evacuation is inappropriate.
- Evaluating the situation at the time of an emergency to determine whether evacuation or the alternative action should be implemented.

To ensure quick and appropriate emergency response, the first two steps are determined during emergency planning along with a process designed for accomplishing the third step.

*Protective
Action
Decision
Table*

Emergency planners analyze the interaction of accident categories, as defined by the EPG (Emergency Planning Guide), and population characteristics to identify the protective actions that would be appropriate for different segments of the population under different accident categories. The results of this analysis are classified into a set of protective action strategies. Each strategy lists the protective action recommended for the population of each area and for each special population and institution under a given set of release and meteorological conditions. Each protective action strategy is concisely summarized in table form.

*Evacuation
Planning
Requirements*

CSEPP requires planners to identify the optimum evacuation strategy for each area of the EPZ and all special populations (including any on-post personnel) for which evacuation has been identified as a possible protective action by using a quantitative evacuation time study. This includes an analysis of:

- The number of people and vehicles to be evacuated compared with capacities of the roadways that can be used for the evacuation.

- The number and location of people without access to automobiles compared with the supply of mass transportation vehicles that can be made available.
- The number and location of persons with special evacuation needs (e.g., the disabled) compared with the availability of personnel and vehicles with the capability to meet those needs.

*In-Place
Sheltering
Planning
Requirements*

Communities are required to develop a detailed sheltering-in-place plan for each of the four sheltering strategies. The plan will identify all structures to be used as shelters and will describe the program the jurisdiction will pursue to implement the given strategy in these structures. The plan will determine the resources necessary to implement the protection strategy in all affected structures and present a checklist of actions that inspectors will consider for reducing infiltration in each structure.

The community will develop the capabilities to, assign responsibilities for, and ensure the availability of resources to:

- Notify people in appropriate areas to implement expedient shelter-in-place.
- Determine (in consultation with the Army installation) when the shelters should be abandoned.
- Advise people in selected areas to abandon their shelters without risking the inappropriate abandonment of shelters in other areas.
- Ensure prompt evacuation of all people who have been advised to leave their shelters.

*Access
Control*

Access control points (ACP) will be pre-designated to allow the immediate dispatch of personnel and commitment of resources. Access control for a chemical event affecting off-post areas also will be necessary if the Army creates a National Defense Area (NDA) off the installation. Off-post law enforcement officials may be needed to assist on-post security personnel in this event. The creation of an NDA permits the Army to use military forces to effectively control non-Federal lands or areas when necessary for reasons of national security.

Evacuee Support The two primary components of an evacuee support system in CSEPP are reception and mass care. Reception is the process of receiving and registering evacuees, determining their needs (i.e., medical, housing, family reunification, etc.) and assigning them to appropriate resources. Mass care includes providing shelter, food, family reunification, limited medical care, and social services for evacuees. Reception and mass care facilities may be collocated when a small number of evacuees are involved. Separate reception and mass-care facilities are appropriate in a larger-scale evacuation.

Health and Medical Health and medical concerns associated with the hazard and CSEPP include the following:

Decontamination Decontamination is an integral part of the treatment of people contaminated with chemical agent. This must be done quickly following exposure. Regardless of the type of chemical agent involved, personal decontamination can be performed by flushing undiluted household bleach on all contaminated areas (except the face) and rinsing off with lukewarm, soapy water. This can be done by the individual who is contaminated, another person or by a decontamination team. CSEPP stresses the importance of self- and buddy-decontamination because of the critical time factors in performing this task.

CDC Medical Guidelines The CDC of the U.S. Department of Health and Human Services have prepared recommendations for medical preparedness for CSEPP civilian communities and have published these recommendations in the Federal Register (60 FR 33308, June 27, 1995).

Resource Management A chemical agent event is an unusual emergency requiring certain special response and resource allocations not normally associated with more common emergencies such as floods, windstorms, or some hazardous materials accidents. For this reason, planning for resource coordination and allocation becomes especially critical and should be coordinated with respect to planning zones and their related protective actions.

Critical to implementing the resource management components of the EOP in CSEPP are the automation systems. The objectives of the CSEPP automation system are to:

- Store, manage, and access databases to support planning efforts.

- Interface databases with analytical planning tools and models.
- Provide automation support for daily, weekly, monthly, and yearly planning tasks (e.g., reporting, scenario development, training, exercise planning).
- Organize emergency plan concepts and standard operating procedures.
- Provide rapid access to information and pre-authorized implementation procedures to support command and control and protective action decisions.
- Facilitate effective communication and alert/notification.
- Track and log events.
- Provide a means of effectively managing emergency response resources.