

THE CHEMICAL STOCKPILE EMERGENCY PREPAREDNESS PROGRAM: PROGRESS TOWARD MAXIMUM PROTECTION

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ABSTRACT

The goal of CSEPP is to provide maximum protection for communities surrounding the 8 chemical weapons storage and disposal sites. The road map to maximum protection is laid out in the CSEPP Planning Guidance and its technical appendices. The purpose of this paper is to reflect on the progress made on implementing CSEPP as of September 1994. The paper does this by highlighting key and innovative aspects of the CSEPP planning guidance and appendices, discussing the CSEPP benchmarks, and reviewing the status of major emergency systems recommended by the CSEPP planning guidance and appendices. These include indoor and outdoor alert/notification systems, communications systems, and automation systems. Progress in training, exercise and public affairs is also discussed. Data for the paper comes from several surveys conducted in June and September of 1994. The paper concludes that CSEPP is making solid progress towards state-of-the-art emergency preparedness which will also serve to enhance planning for other hazards.

INTRODUCTION

In October of 1993 the Federal Emergency Management Agency (FEMA) reorganized along functional lines. With reorganization and restructuring completed, FEMA's overall redefined mission now reads:

"The mission of the Federal Emergency Management Agency is to:

reduce the loss of life and property and protect our institutions from all hazards by leading and supporting the Nation in a comprehensive, risk-based emergency management program of mitigation, preparedness, response and recovery."

In light of that mission, FEMA is in the process of defining goals and customer-oriented objectives based on an all hazard approach. These goals stress creating partnerships with various agencies and organizations involved with disasters, a national

comprehensive emergency management system, an emphasis on hazard mitigation, rapid response and recovery functions, stronger state and local management, and a revitalized FEMA. CSEPP or the Chemical Stockpile Emergency Preparedness Program is being implemented in a manner which is consistent with this new mission.

CSEPP was created to protect the public from an accidental release of nerve and blister agents. In December, 1985, Congress directed the Department of Defense to destroy the obsolete U.S. stockpile of unitary chemical agents and munitions in such a manner as to provide:

"maximum protection of the environment, the general public, and the personnel who are involved in [such] destruction" [Public Law 99-145 (50 USC 1521)]

Under Secretary of the Army, James R. Ambrose, reinforced the concept of "maximum protection" in the Army's 1988 programmatic record of decision (ROD). The ROD called for enhanced emergency preparedness as a means of mitigating the effects of an accident. Emergency planning as a mitigation strategy, subsequently was cited as a major factor in the decision to pursue on-site destruction of munitions as it would be far more difficult to mitigate an accident during off-site transport of the munitions.

This paper discusses the progress in the CSEPP through the fiscal year 1994 in three areas:

1. the planning guidance for emergency planning in CSEPP communities,
2. the CSEPP benchmarks, and
3. the status of major emergency systems recommended in the CSEPP guidance documents that define operational and functional preparedness.

A companion paper (See D. Fisher, "The Chemical Stockpile Preparedness Program: Management Challenges") discusses the organizational structure of the CSEPP.

One of the driving forces for examining the CSEPP accomplishments was the Government Accounting Office's (GAO) audit of the CSEPP in fiscal year 1993. That audit led to congressional hearings by the Environment, Energy and Natural Resources Subcommittee

of the House Government Operations Committee, chaired by Mike Synar of Oklahoma in September of 1993. Major issues raised at the hearings included:

- the status of siren installation;
- finalizing the requirements for Tone Alert Radio Systems (TARS);
- finalizing the emergency planning guidance documents;
- evaluating protective clothing for emergency responders and the training to use it; and
- dealing with reentry issues.

Next year the issues are likely to center on the liability aspects of restoration and other legal problems. There is also likely to be some resolution of the issue on evacuating and/or sheltering in place, with or without enhanced or expedient measures.

Emergency Planning Zones

In order to understand CSEPP it is necessary to discuss how it uses a risk based approach to planning. 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. Consequently, the appropriate response actions will differ depending on the time available to implement protective actions. This section describes a method of dealing with these area-based differences in the emergency planning phase. The section describes the concept of EPZs and provides guidance on how the zones should be defined and what types of emergency response actions are appropriate for each zone.

For CSEPP, the EPZ concept involves three concentric zones. This concept reflects 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).

Planning Guidance and Guidelines

In July, 1994, revised planning guidance was jointly issued by the Army and FEMA (U.S. Department of the Army and Federal Emergency Management Agency, 1994). The July version of the guidelines clarified some cloudy issues, provided revised guidance on alert and notification systems, and included new appendices on protective actions, decontamination, emergency worker operations, and automation systems. Only the appendices on medical services and recovery remain in draft form at this point.

The guidance document serves three principal purposes in the CSEPP:

- It promotes the development of an effective, complete, and 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;
- It ensures 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
- It provides a basis for assessing the adequacy of emergency preparedness planning as a part of the evaluation of proposals for federal assistance.

CSEPP Benchmarks

In May, 1993, the Army and FEMA established nine benchmarks to set priorities for the program. The benchmarks, which set the priorities for funding state and local budget requests, include:

- Functioning Alert and Notifications System for installations, IRZs and transition zones.
- Functioning Emergency Operations Centers (EOCs) for each installation and IRZ county.
- Functioning communications system between the IRZ counties and the installations, and between the EOCs, the installations, the Joint Information Centers (JICs) and the States.
- Functioning automated data processing (ADP) systems connecting critical installation facilities with on- and off-post EOCs, JICs, and State EOCs.
- Training programs consistent with the FEMA's State Training Plan (for off-post jurisdictions) and the Army's certification requirements (for on-post installations) and intended to maintain proficiency of emergency services providers, responders, and CSEPP staff, as defined and measured by the CSEPP standards.
- Exercise programs consistent with Joint Steering Committee-approved exercise policy.
- Community involvement programs for public information and education.
- Personnel (such as CSEPP coordinators, public information, public affairs officers, planners, and ADP specialists) to support CSEPP activities on the installations, in the States, and in the IRZ counties.
- Coordinated plans in conformance with established CSEPP Guidance for each installation, State, IRZ county, and PAZ county; plans are to be updated as CSEPP standards are revised or as circumstances within jurisdictions change.

The benchmarks provide a set of indicators (or a yardstick) for examining the progress of the CSEPP. Although some of the benchmarks are not easily quantifiable, most can be measured through quantifiable indicators of progress.

Progress in operational preparedness

Operational preparedness is defined as the emergency systems needed to implement the CSEPP Guidance. It consists of alert and notification systems, communication systems and Emergency Operations Centers.

Alert and Notification

The most important aspect of the CSEPP is notifying populations in time for them to take protective actions. The chief problem is not from a spill of chemical, but an event (such as an explosion) in which the agent would be vaporized and carried off post via a plume. In such cases, the time between the release of chemical agent and the time to take protective action is extremely short. For example, the time frame for a plume reaching people off-post (outside the fence) at Pine Bluff Arsenal is estimated at 8 - 9 minutes.

The approach used in determining the warning systems to be used in the CSEPP was based on the analysis of protective actions, including the maximum exposure reduction, and secondly, the amount of time required by affected populations to complete a protective action. Three alert and notification systems are permitted in the guidance documents to warn residents of an accidental release of chemical agent in the CSEPP. These include:

- stationary sirens with verbal broadcasting abilities,
- dedicated radio systems in certain institutions and facilities; and
- tone alert radios (TARS).

The warnings must be heard in time for all residents at risk to be protected. The combination of indoor and outdoor systems is also recommended to obtain reliable daytime and nighttime notifications.

There is no restraint on communities using the sirens to notify residents of other hazards. For example, one community effectively used CSEPP sirens to warn residents of a tornado. Table 1 shows the status of siren systems. As of September, 1994, all installations had completed the designs for siren placement and issued requests for proposals (RFPs) for installation. Moreover, five sites - Anniston, AL, Newport, IN, Madison County, KY, Pine Bluff, AR, and Toelle, UT, had siren systems in place and operational. Operational means the systems are functioning and meet all CSEPP standards.

Although a variety of Tone Alert Radio (TAR) technologies exist, 3 options were chosen for consideration in CSEPP. These include:

- a special tone alert (TA) unit identified in the CSEPP

guidelines;

- a commercial off-the-shelf unit which is activated by the NOAA weather system; and
- a low cost version of the special unit that does not have any of the special features except for a unique activation frequency.

The special TA unit identified in the CSEPP Alert and Notification (A&N) Guidance is designed to have high reliability with low maintenance costs. Among its features are a long life lithium battery, spring clip wall socket attachment device, LED battery condition indicator, 110 volt output, strobe output jack, external antenna jack, LED test status indicator, adjustable message volume, and a visual activation indicator. The special unit's reliability ensures that prompt notification is more likely to be achieved and provides a higher degree of indoor nighttime notification than commercial units. When maintenance costs are factored in, the enhanced technology of the special TA units is clearly more cost effective than commercial units. If the commercial units are not maintained at regular intervals, the effectiveness of the units becomes very questionable. Effectiveness is likely to decrease by 10 to 20 % per year (or greater). The low cost radio has maintenance problems similar to the commercial units but with none of the benefits of the special units. It is therefore not an attractive option. CSEPP issued revised TAR guidance in July that modified the original specification for the TARS. The battery options were made more flexible and the spring clip requirement was eliminated.

Significant progress has been made towards securing TARS for IRZ residences and institutions, special facilities, and other eligible buildings. Seven states have completed demographic surveys estimating the number of units needed to meet CSEPP guidelines. One contract awarded by Madison County, KY called for 10,500 units. Furthermore, bids have been issued for TARS at the Umatilla, Oregon, site by both Oregon and Washington and at Newport, Indiana, site by Indiana. An RFP is expected soon for the Pueblo, Colorado site. The other three CSEPP states are expected to begin work on their TARS in Fiscal Year 95.

Communications

Coordinating emergency response to a chemical event calls for three critical communication capabilities:

- direct, reliable, and redundant communication between the installation's EOC and the off-post EOCs (both primary and alternate) of the affected IRZ counties and states;
- reliable inter jurisdictional EOC communications for all affected off-post areas as well as links with the state emergency services or related agencies; and
- reliable communications between all off-post

EOCs and their field units.

Because emergency information must be transmitted quickly and accurately, the emergency communication system must have both a high reliability factor and redundancy. Dedicated, non-public telephone lines provide an effective means of on-post to off-post communication efforts. However, dedicated lines are often limited by the distances involved and local telephone facilities. In addition, dedicated lines may become inoperative due to weather, line damage, or system overload.

Radio links using dedicated frequencies offer another effective means of communication. A communications network, consisting of redundant telephone and radio systems, provide a critical link between the army installation's EOC and notification point with the EOCs and notification points of all IRZ counties and states. 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. Both primary and alternate systems must have high reliability.

On-post to off-post initial notification should be handled in a way that gains the attention of the off-post personnel and provides needed information. This initial notification must go to a facility staffed 24-hours a day and capable of further disseminating the messages and activating resources within the time frames ensuring protection of all the populations at risk. Systems must also provide for timely interagency and inter jurisdictional communications.

Once the off-post coordinating agencies have received the initial information, they must be able to communicate with, activate, and mobilize their respective response units. These include law enforcement agencies, fire departments, emergency medical and rescue units, and other public safety resources as well as governmental, health, school, and other special facility authorities. Communicators must be able to handle information related to chemical emergencies accurately and in a timely manner because of the potential precipitous nature of the hazards. As local emergency plans are updated, internal communication protocols are to be reviewed and modified as needed to assure rapid and accurate information transfer.

As of October 1994 seven out of ten states have operational (full or partial CSEPP compliant) dedicated radio systems in place, and six out of ten states have dedicated telephone systems installed. Half of the states involved have both the dedicated radio and telephone systems in place. Three states have at least one system in place. Two states, delayed by contracting problems, have yet to install either system, but are now progressing towards installation in FY95.
EOCs

Emergency Operations Centers

Emergency Operations Centers are the command and control center for managing an emergency. Last year EOCs met CSEPP guidelines at 4 of the 8 sites. This year an additional 3 sites fully conform to CSEPP guidelines. The remaining site has an excellent EOC which almost conforms to CSEPP guidelines and is in the process of being upgraded. Altogether, CSEPP has

provided resources for 14 primary and back up EOCs at the 8 sites. We anticipate upgrading several additional EOCs over the next year. Although most of the work on EOCs has been accomplished at this time, we anticipate further improvements as automation systems are upgraded.

Progress in functional preparedness

Functional Preparedness is defined by those activities necessary to develop and support an effective emergency response. It includes planning training exercises, and public affairs activities.

Training

Because of the unique threat (which is without precedent in the U.S.) and the critical response time frame, training is considered essential to the CSEPP. Some training for the CSEPP was developed for general audiences to address concepts, such as how a plume disperses vapor; while others explain the concepts in the planning guidance documents. Other training is more specific and intended for special audiences, such as emergency responders or members of the medical community. Most of the training includes videos as well as printed material for trainers to use in their jurisdictions. This provides some degree of consistency in the dissemination of the training information across CSEPP sites.

The number of persons trained in CSEPP procedures continues to rise. Has it risen to our expectations? The data are unclear because of the extreme variance among jurisdictions in terms of commitment to the program and in the perception of risk to the community. We have found that the traditional interaction between the installation and the communities (or agencies and the communities) often affects community initiatives for protective actions. In one jurisdiction, the Army installation has been an inherent part of the community for so long and the relations between the community and the installation so cordial that the community is willing to proceed with whatever the installation recommends as protective action for an accident. Consequently, the community has little motivation to engage in any training for an accident. In another instance, a state agency has taken the initiative to organize the CSEPP and the community has taken no role in training or other protective actions.

Since the start of the training sessions, an estimated 12,962 persons have been trained - approximately 4,966 alone between June 1993 and July 1994. Table 2 presents the status of trained personnel in CSEPP. The table does not reflect training that the CSEPP community may have taken for other tasks; the training is only for CSEPP approved programs. The largest trained group is located where the first disposal of munitions is to occur - Tooele, Utah.

Exercise

Initial exercise cycles were completed last year at all 8 sites. A full initial cycle consists of 3 events: a table top exercise, a direction and control exercise, and a full scale exercise. In the past year 6 exercises were conducted with another 5 scheduled before the end of the calendar year. In February 1993, the exercise document was revised, implementing a major "mid-course" correction to expedite development of exercise reports. In July, exercise objectives were revised to clarify the goals of conducting exercises.

Planning

CSEPP specific plans and operating procedures are in place for all States and IRZ counties and for most PAZ counties. Eight states have updated their plans and/or operating procedures since last year. All IRZ counties and most PAZ counties have also updated their plans and/or operating procedures since last year. Further plan and procedure revisions are expected as new guidelines are published.

CONCLUSIONS

The date for final disposal of the munitions has been pushed back several times as that complex program evolves, creating the need to redefine the CSEPP. There have been significant accomplishments as well as setbacks. Activities such as the installation of sirens is well along the way, whereas less success has been achieved in installing an indoor system. Some initiatives have taken time to develop and implement. For example, gaining consensus on guidelines, previously called standards, to ensure all communities potentially exposed to a chemical release are able to protect themselves, has been a slow process.

Communities at risk have not reached the goal of "maximum protection," however, they are much better prepared than at the start of the CSEPP - or even two years ago. The progress in the last year has been greatly accelerated over previous years. Integration into an all-hazard management is the critical next step. At some sites it is being initiated, but it is far from complete. The greatest problem to date in reaching maximum protection is in the slow dissemination of the technology-based systems. The least problematic areas have been in the traditional aspects of emergency management, i.e., in EOC design, communications, exercises, and plan development. Meeting the goal of "maximum protection" at the eight storage sites is not an easy task, but the commitment to maintaining safer communities is one that promises to benefit everyone, even if a chemical agent accident never occurs.

The CSEPP is right on target in regard to the mission statement because the activities of the CSEPP include all phases of hazard mitigation. Furthermore, CSEPP is committed to the Agency goals. CSEPP has many all hazard benefits which already are being realized. Few would disagree that CSEPP has extensively improved and strengthened state and local management capabilities. CSEPP will set a lead for providing

rapid response to and recovery from potential disasters. It represents a comprehensive and risk based program which will become one of FEMA's models for revitalizing emergency management in this country.

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Table 1. Siren system status

Site	Design Completed	RFP Initiated	Installation Initiated	Installation Completed	System Operational
APG/MD	7/93	8/93	10/94	12/94	3/95
ANAD/AL	DateUnknown	Date Unknown	7/93	Date Unknown	9/93
BGAD/KY	DateUnknown	Date Unknown	2/94	8/94	10/94
NAAP/IND	7/91	8/92	3/94	9/94	10/94
PBA/AR	10/92	10/93	1/94	Date Unknown	5/94
PUDA/CO	3/94	3/94	?	?	?
TEAD/UT	10/92	10/92	10/93	6/94	6/94
UMDA/OR	5/92	12/93	10/94	11/94	5/95
UMDA/WA	8/94	9/94	12/94	7/95	7/95

• Bold dates indicate estimated dates for completion of siren installation.

Table 2. Estimated number of people enrolled in CSEPP related training.

	CSEPP Courses	EMI Courses	Automation Courses	Other Courses	Total Trained
Trained Since 6/93	3086	293	281	1306	4,966
Total Trained	7693	931	487	3851	12,962

Source: FEMA and ORNL, 1994.