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REENTRY, RECOVERY, AND RESTORATION FOLLOWING A CHEMICAL WEAPONS STOCKPILE DISPOSAL PROGRAM ACCIDENT: OFFPOST PLANNING AND PREPAREDNESS ASPECTS

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In 1972, Rapid City, South Dakota, was the scene of major flooding which left 3,000 families homeless. This left the city with a serious housing shortage and a lack of shelter facilities for survivors. Mobile homes were supplied by the U.S. Department of Housing and Urban Development to provide temporary housing. Land for the mobile homes was provided by the city, but there were no utilities, initially, and the city hastily added them. The locations selected were also lacking in access to public transportation and nearby shopping facilities. This was particularly hard on elderly evacuees and the poor.

Because the assignment of mobile homes to families on a first-come/first served basis did not take into consideration pre-disaster social structures and living patterns, many people found themselves living next to strangers with very different social and ethnic

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backgrounds. This resulted in frustration, conflicts, and violence. City officials were frustrated in their attempts to get reimbursement from HUD for installation of utilities for the mobile home parks. The city was also unpleasantly surprised when HUD decided to allow occupants of the mobile homes to purchase them after one year. As a result of that decision, the temporary housing became permanent, unplanned housing.

The Rapid City experience illustrates the need for pre-disaster recovery planning. The Department of Defense has recognized that need by strongly emphasizing recovery planning and coordination in its CSEP program. CSEPP is (**visual 1a**) the Chemical Stockpile Emergency Preparedness Program. It was developed to improve emergency preparedness associated with the disposal of US stockpiles of unitary chemical weapons. This disposal was mandated by Congress in 1985 and is scheduled for completion in april 1997.

(**Visual 1b**) Eight installations, in eight states, currently store one or more of these agents. Of the seven chemicals involved, three are nerve agents--ga, gb and vx, and three are sulfur mustard formulations--h, hd and ht. The seventh is the organic arsenical, lewisite. On-site, high temperature incineration has been selected as the method of disposal.

Argonne National Laboratory was tasked by the Army to conduct research for offpost procedural guidance for the recovery phase of emergency planning for the csep program. Very little pre-existing literature on recovery procedures was uncovered, and it soon

became clear that the CSEPP recovery concept paper would be one of only a few comprehensive studies on the subject. Rarer still are studies of overall recovery planning for technological or chemical disasters. Recovery planning is still in the early stages and additional long-term studies are badly needed.

What is meant by the term recovery? (**visual 1C**) As used in this paper, recovery is

> **the period following a disaster when immediate threat to human life has passed and general evacuation has ceased.**

The recovery phase is frequently thought of as merely an extension of the preceding emergency response phase. However, there are substantially different needs and requirements in recovery which may not be addressed by the typical plan written from the standpoint of emergency response. It is also commonly thought that advance planning is not important in recovery because there is more time for decision making than in the response phase. However, the demands upon decision-making and other personnel during the recovery period are heavy and resources may be stretched thin. In recovery, preparedness and planning can make more effective use of both resources and personnel. In fact, it has been estimated that exceptional planning may reduce recovery time and cost by as much as 50%.

Clearly, planning for recovery is important. A piecemeal, reactive approach, typified by the Rapid City example, can have unpleasant and expensive consequences. On the other

hand, taking a comprehensive, proactive approach may provide several significant benefits **(Visual 2a)**, including **(Visual 2b)**:

increased speed of recovery

increased acceptance of decisions

increased ability to respond to social needs

(visual 2c)

better coordination of services

better designed facilities

better uses of resources and personnel

(visual 2d)

reduction of stress and conflict

reduction of costs and unreimbursed expenses

It is important that recovery planning is flexible as well as comprehensive. This is especially important for the CSEPP program since uncertainty still exists regarding the persistence of the various agents in the environment. Much depends upon the particular agent involved, the meteorological conditions, and the local topography. It is currently impossible to determine in advance whether the recovery period will last for days or months. Therefore, plans must provide for both short-term and long-term relocation.

The CSEPP recovery concept paper provides in-depth discussion of recovery needs. These needs can be divided into three categories: **(Visual 3a)**

technological

administrative

social

Technical needs are typically addressed by scientists, engineers and medical professionals. They include: **(visual 3b)**

monitoring

personnel protection

decontamination

medical

ingestion pathway

Monitoring aims to identify and measure contamination with the goal of reducing the dose to emergency workers and the public. Personnel protection is concerned with providing protective equipment and clothing, drugs and procedures aimed at reducing or preventing exposure to contaminants. Decontamination of buildings, equipment, and personnel may ultimately be required. Medical needs, in the recovery phase, should consist mostly of monitoring and testing of individuals for long-term tracking of health effects. Ingestion pathway needs include procedures to detect contamination in food and water and to prevent distribution to the public.

The second major category, administrative needs, **(visual 3c)** includes:

information management

access control

legal

public affairs

Information management requirement include databases and computer systems capable of providing the vast amount of data necessary for recovery activities. Access control to restricted areas willrequire law enforcement personnel, legal authorities and procedural guidelines for keeping the public out of contaminated areas. Legal issues typically include the development of memoranda of understanding among responding agencies, and identification of statutory requirements for cleanup. In recovery, remedial actions would be of primary importance.

Administrative needs generally require the services of public administrators, accountants, legal and management professionals, among others.

The third category of recovery needs, social needs, typically **(visual 4a)** includes:

relocation assistance

counseling

information services

These are areas of special concern to social workers, mental health professionals, and volunteer organizations. Of the three areas of need, social needs are most likely to be overlooked. Yet, they are an important factor in the speed and effectiveness of overall recovery.

Relocation assistance is a broad category of need which includes temporary and permanent housing, food, clothing and other material assistance. Special assistance, such as child care, may also be included. Counseling for emergency workers is a social need which is frequently overlooked; however, research has found that untreated post-traumatic stress syndrome, resulting the disaster experience, can cause emergency workers to leave their jobs--or the profession, entirely. In some cases, the attrition rate among emergency personnel is as high as 50%. This represents a considerable loss to the community. The cost of training one replacement paramedic, for example, has been estimated at $6,000 to $16,000. On the other hand, preventive measures, such as counseling, can be provided at a fraction of the cost of a training program.

Important in maintaining public trust and support is the provision of information services, particularly for evacuees. This may take the form of newsletters, meetings, or information centers. Topic covered should include financial assistance availability and procedures, short and long-term recovery plans for the community, and description and explanation of protective measures, to name a few.

To summarize, recovery planning (**visual 5a**) should be

1. **Comprehensive**
2. **Flexible**

It should address the three areas (**visual 6a**) of need

1. **Technical**
2. **Administrative**
3. **Social**

Having looked at what recovery planning should be, let's go back now to the Rapid City example. How might today's planners avoid the problems experienced in the 1972 post-disaster recovery period?

First, they would prepare and update on a regular basis an inventory of possible relocation sites, for both short and long term housing. Data base information would include land-use information, zoning restrictions, and plans for post-disaster zoning changes. Land acquisition procedures would be identified in advance. Consideration would be given to the proximity of shopping and services to relocation sites. Transportation would have been pre-arranged with public, private or volunteer organizations. Relocated individuals would be given a choice of housing locations, thereby enabling families and friends to stay together and provide support during the difficultperiod of recovery. Accounting and damage assessment procedures would have been pre-determined, along with the documentation of expenses necessary for maximum reimbursements and loans.

We have touched upon only the most basic elements of recovery planning in general and the CSEPP program in particular. More detailed information is contained in the csepp recovery concept paper, Reentry, Restoration and Recovery from a Chemical Weapons Stockpile Disposal Program Accident: Offpost Procedural Planning and Preparedness, by Caroline Herzenberg, et al. Important to the writing of the concept paper was the support of Mr. Tom Hess and Mr. Denzel Fisher of the Army's Office of Installations, Logistics and the Environment.

As in the case emergency response, comprehensive, pre-disaster planning is extremely important to the recovery process. Good coordination of services and activities is impossible without a thorough understanding of the "big picture."

Recovery planners and workers face an awesome challenge: to help restore life to a community; to make it better than before, and to do so with vision, determination and sensitivity. There is a great need for people willingto take up that challenge--to lend their knowledge and experience to a field which is still young and offers many opportunities for meaningful contribution. Few comprehensive studies of recovery needs and planning currently exist in the literature of the field, particularly with regard to extremely hazardous materials. The CSEPP recovery concept paper is one of those studies, and hopefully, it willserve as a guideline for planning for other types of potential emergencies.