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**Preliminary Observations on a State  
Civil Defense Hazardous Material Program**

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This is an interim report on the apparent themes central to the development of the X State Civil Defense. Initially, the study was to focus on the development of the hazardous material program. However, this perspective was modified when it became obvious that the program could not be understood apart from the organization itself.

Briefly, the civil defense (CD) agency became involved in the business of hazardous materials due to an effort to transform a bureaucratic organization composed of retired military personnel into an operationally oriented emergency response organization. However, the hazardous material program became a goal in itself--a fact that is responsible for much of the internal dissension in the organization at this time.

### The Hazardous Material Program

Initially, the state civil defense director's goal was to create an emergency response organization. The program had its historical origins in a badly handled chemical disaster. The CD learned from this incident that chemical disasters in X were serious, frequent and mishandled. The director was already looking for a serious type of disaster that the organization could use as a focus for emergency operations and realized that chemical disasters were a problem that CD would be forced to deal with.

The response to hazardous materials was chosen for the following reasons:

1. The state of X had experienced a number of chemical incidents and disasters due to winding mountain roads, a neglected railroad system, the number of interstate highways and other transportation routes, and a large chemical industry. In the first year of the hazardous material program, the state had over 400 chemical incidents that were a threat to either life or property.
2. A top CD official had a master's degree in chemistry and one of the area coordinators had considerable experience with handling petroleum incidents. This gave the organization a foundation for developing expertise in chemical hazard matters. More important, fear of chemicals that often stems from ignorance of their properties was not a problem.
3. No agency in the state wanted to deal with hazardous materials on a daily basis.
4. The problem of chemical disasters was becoming a national issue causing federal funds to be available for setting up relevant programs.

5. There was sufficient media coverage to generate state support for the growth of their program. The inherent drama and the growing national awareness of chemical incidents attracted this media attention.

In an attempt to turn CD into an operationally oriented organization, a number of other foci had been attempted. One major attempt was made to move in the direction of becoming a statewide search and rescue agency. This and other efforts failed because they either encroached upon the territories of other organizations, or because they did not generate enough interest to be funded. When the opportunity to set up an extensive hazardous material program presented itself, CD had enough experience with failed programs to know that this one was viable.

### Experiences in Setting Up a Hazardous Material Program

The most important point about the civil defense's experiences with a hazardous material program is that in almost every respect, effectiveness has been more difficult to establish than was anticipated. Their more salient problems are the following:

1. A little knowledge of chemical hazards is far more dangerous to everyone concerned than no knowledge at all. At one level, an awareness of chemical hazards solves the problem of notifying the relevant response and information groups. However, beyond that, there is a widespread problem, both inside and outside the organization, concerning what appears to be a very powerful, operative norm among the emergency respondents, i.e., if something is wrong, then do something. It is very difficult, if not impossible, for many respondents to realize that frequently the best option in many incidents is to do nothing (beyond evacuating everyone to a safe place). Most of the injuries, after the initiating event, occur not because of the properties of the material, but because somebody was "fixing" it.
2. As the lead agency in an interagency response, it is very difficult to learn to coordinate rather than control the response. It has taken the organization a long time to learn that it is better to delegate tasks that an organization can carry out than to tell an organization what to do. Even if a certain technique is required and an organization does not know how to do it, it is best to inform them of what their duties are, suggest the technique to be used, and advise them how to do it.

Several problems arise if the lead agency attempts to control behavior rather than coordinate organizations. It engenders resentment that can interfere with the conduct of the operation and also discourages others from taking the initiative. While still committed to chemical safety, two years of intensive experience has taught CD to be more cautious in their handling of both materials and personnel. There are a tremendous number of variables and unknowns in chemical disasters. One gains experience in dealing with them either through very cautious, deliberate and slow entry into the arena or through unnecessary injury and death. While this

may seem overdramatic, it is not. The work is inherently dangerous and even the most expert judgments are frequently in error.

3. Training people to respond to hazardous material incidents involves a paradox. By the time a person has enough expertise to be considered somewhat competent, he has been exposed to so many dangerous situations that he most likely wants to leave the job. One of the problems in the state is that people who have the most on-site expertise do not want to be on-site anymore. Few who started as field operatives are still in the field. Second, the organization as a whole has decreased the number of incidents with which they become involved.

4. The way in which the **CD** conducts its hazardous material program has changed. Currently, they are moving in the direction of more community involvement. When possible, they are encouraging the communities to run as much of an operation as their expertise will permit. This is basically due to the growing awareness that the community officials know more of the community's needs and capabilities than outsiders and that conflict is decreased when local officials are in charge.

Tactically, a more important reason for shifting operational control to the community is that the handling of hazardous materials is highly complex. In this respect, there is a growing awareness that the principal operational problem is to get the right equipment and information to the scene quickly. The on-site **CD** responders are shifting from operational control per se to three more discrete functions. First, they give advice to the person in charge. Second, they serve as sources of information and equipment. They are the ones who know where to get at two o'clock in the morning, two thousand bales of hay in a half-hour, etc. Third, the on-site coordinators from **CD** generally are the ones who do the physical manipulations on the material. They are the ones who go up to a tank car and try to stop the leak because they are generally the most experienced on the scene.

This shift has been gradual and is based on the competence of the particular localities. At this time, for example, the **CD** assumes an advisory role in incidents that occur in any of the large cities in the state. On the other hand, if an incident occurs in a small community that has not sent its emergency personnel through the hazardous material courses, the **CD** will basically run the whole operation. Overall, the **CD** has set up tacit standards for conducting an operation. The local community does as much as it can and the **CD** contributes what efforts are necessary to make sure that the standards are set.

5. The standards, which are referred to above, are not written. An image has emerged of what a well-run operation is, but those images have not been formalized. The written plans are based on notification--on making sure that the right equipment and information arrive on site rapidly. It is felt that the on-site **CD** coordinator needs as much assistance as he can get. The manner in which he uses it is left to his discretion.

In the long run, this causes a major organizational problem. When an experienced on-site coordinator leaves the organization, his experience leaves with him. The people in the organization are very aware of this problem, but generally feel that the operations are so varied that detailed plans of how operations are to be conducted would be dysfunctional. However, concerted effort has been directed toward getting people to put down on paper what it was they did in their job, and how they did it, before leaving the organization. In the early days, one factor that discouraged written plans was that the personnel were rarely in the office long enough to write them. With the current decreased level of activity, people have begun to undertake formalized planning. This increase in planning is due not to any directives or guidelines but to reactions of individuals to the instability and unpredictability that has characterized so much of the organization's activities.

### Training Programs

Training programs were needed for different levels of response. First, **CD** had to train its own members. Second, it needed to train those with whom it would be coordinating, and third, local emergency responders needed training in dealing with any type of spill for the first critical hour or so. Because of budgetary limitations and constraints, the training has to have practical results. The legislature was not going to fund a massive training effort without evidence that it would accomplish something.

In the first phase of the training program, an inexpensive set of seminars was presented to local officials around the state. On a basic level, this solved all three training problems simultaneously. By using the **CD** personnel to teach the course, it encouraged these people to study the formal material on responding to hazardous material incidents. As these courses were taught throughout the state, other agencies began to get more involved by teaching segments on their agency's involvement.

One major reason that coordination in later incidents is so highly organized is that the same people who gave the lectures were also their agencies' representatives at the scene of an incident. The collection of individuals became a group, and was known as the state government personnel who handle hazardous materials. In many ways, these individuals' primary work ties were with this group and not with the organization or department that employed them.

The training seminars were a success in terms of reputation and behavior. The people who attended them felt that they were worthwhile, and this word spread. The number of the general severity of incidents decreased as training progressed. Many good recommendations and statistics indicated that these seminars had a positive effect on the handling of hazardous materials and federal grant was promised. Using this progress for justification, the **CD** went to the governor and the legislature to gain permission to set up a hazardous material institute. The institute would be more formalized with a fixed site for training. More courses would be offered, ranging from fundamental courses on response for the non-initiated to advanced courses on specific types of hazards for on-scene experts in an emergency. A chemistry professor was hired halftime to design the classes and to teach the

upper level courses. With the exception of a later budgetary crisis, the formalization of the state-wide hazardous material training program was complete.

Ironically, while the training programs are undoubtedly more professional, much of the tight coordination among governmental agencies has diminished since it resulted from part-time instructors traveling around the state as a team. Currently, there are indications that on-scene coordination of chemical disasters is more effectively and formally conducted than before, but somewhat weakened because of a decrease in the personal ties among the participants. While in practice, this decrease has not yet affected the conduct of operations, it is a negative trend that will be problematic in the future due to normal organizational turnover of personnel.

### The Communication System

Prior to the present director's tenure, the CD had one state car and one emergency broadcast radio. One of his first acts was to get radio-equipped state cars for all senior personnel and area representatives. Similarly, when the present director took over his position, the only statewide radio network in operation that was available for CD use was within the fish and wildlife division. Plans had been made to use amateur radio operators for long-range radio communication in emergencies and volunteers were practicing regularly. However, the lack of communication ability greatly hampered the flexibility and speed of any coordinated response effort. Prior plans for major disasters had tacitly counted upon the presence of phone lines, but experience showed that, even in minor events when the phone lines were not affected, any emergency jammed the local telephone switchboards. Much of the early activity was devoted to upgrading the communications capability. These improvements included a microwave radio that can transmit signals to any location in the state without relay and integration of all the organization's radio components so that the hand-held units are compatible with the car units and the base station equipment. This allowed anyone in CD to talk to any other CD employee at any time without going through relay stations.

The second feature of the new communications system that has a large impact on the conduct of operations is the modular radio system at the CD headquarters. It can monitor all of the major radio networks in the state together or individually. In addition, it has almost complete patching capabilities, so that any official with a radio or a telephone can talk to any other person with a radio or a telephone in virtually any area of the state. For example, a call coming in on the highway patrol frequency can be transferred to the wildlife network. While other organizations have sophisticated radio systems, the civil defense's system is the most comprehensive with respect to geographic coverage and radio channels. This fact has very important implications for CD as the coordinating agency in major emergencies.

Because of its radio capabilities, CD is the only state agency physically capable of coordinating the activities of several agencies. Since CD is the only organization that can contact everyone, a person in one agency wanting to talk over the radio with someone in another agency must go through CD. Because the CD simultaneously monitors all radio frequencies of the major agencies, it is generally the only organization aware of what everybody else is doing. Since CD is the only agency that has

a good grasp of what everyone else is doing, individuals from other agencies tend to converge on **CD** headquarters to find out what is going on.

When the present director took over **CD**, he knew that changing the organization from a sleepy bureaucracy to an operationally oriented agency could be facilitated by the communications capability to converse with everyone. This would allow **CD** to be the lead or coordinating agency in any disaster. More abstractly, the director realized that if effective disaster planning for interorganizational cooperation required an operations center and a communications network, the organization with the physical equipment to perform these roles would be the lead agency in a disaster. In the early days of his tenure, the director did not ask the legislature for expanded duties for **CD** since this would have caused many political fights among the state agencies. Rather, he lobbied hard for the funds for more radio equipment. Even his political enemies of which there are many, did not see what was happening. The prevailing view was that radios were relatively inexpensive and giving them to him would stop this lobbying. It is doubtful that many people realized what a powerful tool they were handing over to him. Because of the radios, **CD** more or less had to become the lead agency in any operation requiring interorganizational cooperation.