CHAPTER II

THE LOCAL COMMUNITY AS A SETTING FOR HAZARDOUS MATERIALS EMERGENCY PREPAREDNESS

The Need for Locally-Based Preparedness

Nowadays, people tend to be opposed to the notion that local governmental units should be doing more for citizens than it already does. The passage of Proposition 13 in California in 1978, for example, is widely believed to have ushered in a new era of fiscal restraint, in which services once provided to local jurisdictions by means of community revenues will be furnished through other means. At the same time, it appears that people are beginning to look to the private sector or to volunteer organizations, rather than to government, for some needed services; ambulance services and fire protection are prominent examples of this trend. Thus, in an era emphasizing reduced governmental involvement, it may seem inconsistent to argue that local public organizations ought to be working more, both on their own and in concert with the private sector, to prevent and respond to emergencies involving hazardous materials. Operations of this type are widely regarded as requiring highly trained personnel and costly equipment. Why then should local organizations, which are not being provided additional funds to do so, become involved in performing emergency planning and response tasks?

Aside from the fact that community planning need not be costly as this volume will point out, local emergency organizations should be concerned with chemical emergency planning—for several good reasons. First, although specialized extralocal organizations and associations such as

chemical industry response teams, environmental clean-up companies and federal spill response teams exist specifically to handle chemical mishaps and also engage in a variety of planning activities in relation to different hazards, the initial consequences of a hazardous chemical episode are invariably borne first by some local community. Thus, organizations charged with the responsibility of protecting life and property in a given city or county have a mandate to act in these kinds of events. Government officials, as well as the general citizenry of the community, hold the expectation that local emergency personnel will plan for and respond to the entire spectrum of acute hazards the community faces. The fact that some groups from other places may make their services available to a local community in certain situations at particular times does not relieve community emergency planners and responders of their ongoing responsibilities. Moreover, although certain tasks relating to chemical agents themselves--tasks such as suppression, neutralization, and disposal--can perhaps best be handled in most communities by trained specialists, other tasks--evacuation, for example--almost always will have to be planned and carried out by knowledgeable local emergency personnel.

Second, local planning is important because the initial response in the first few minutes of a chemical incident can be critical to the way the incident later proceeds. Chemical hazards differ markedly from most natural hazards in this regard. Generally speaking, the manner in which citizens and emergency personnel in a community respond to a tornado, earthquake, or hurricane will do virtually nothing to change the course of these agents; such agents are stable in terms of the threat they pose to life and property. Many chemical agents, on the other hand, are relatively unstable: substances

treated improperly with water can burst into flame, producing a fire hazard; they can give off toxic or lethal fumes; two hazardous agents released at the same time can combine to create a third unless the proper steps are taken; and some agents present very different hazards to human beings, on the one hand, and the natural environment, on the other. Thus, local personnel who have not planned and received training about proper response to chemical agents--and who fail to respond appropriately in urgent situations--are capable of unknowingly increasing the threat to life and property such substances pose. Therefore, some type of chemical hazard planning and training for local personnel is an imperative, no matter how elementary this training may be. Pearson notes that, for financial and other reasons, local volunteer fire departments may lack sophisticated and specialized equipment for responding to emergencies involving exotic hazardous materials; yet, nevertheless, he argues that these departments could become "the ultimate in Response Capability" with a little forethought and training in on-the-spot hazard assessment and decision-making:

> It is impossible to equip every volunteer fire department with the specialized equipment to handle all types of hazardous materials incidents. It is possible to make the training available to allow the chief officers of fire companies to make decisions as to which incidents they can handle with the equipment available and for which incidents they must evacuate an area and establish a safe perimeter. (Pearson, 1978: 448).

Finally, the local community is the logical and appropriate setting for carrying out chemical disaster preparedness activities because the local community is precisely the place where planning can make a difference. Emergency preparedness measures, in addition to facilitating a good response,

can actually reduce the likelihood that a chemical incident will occur. A systematic assessment of traffic patterns and of the volumes and types of hazardous materials that are transported through a community, for example, can lead to the establishment of special hazardous materials routes and to a subsequent reduction of accident potential.

Local emergency personnel are in the best position to know about the hazards present in their own community. They have access to detailed and specific information on threats facing the community and on community emergency resources and are thus in a position to reduce both the probability and the potential severity of incidents involving hazardous chemicals. In sum, many of the most effective safety measures--including activities such as risk assessment, training, and public education--are most appropriately carried out in the local community.

Before moving on to discuss social factors which affect preparedness for sudden chemical emergencies in the local community, it should be pointed out that probably the most cost-effective way for local communities to plan for hazardous materials incidents is to integrate tasks relevant to chemical hazards within the activities of established and responsible organizations. While the threats posed by disaster agents frequently necessitate specialized emergency resources, this does not mean the community should adopt the unnecessarily duplicative strategy of setting up new organizational structures and plans for each agent. In the chapters which follow, then, the assumption will be made that traditional community emergency organizations--the police and fire departments, the civil defense office, and hospitals, for example--will be working along with chemical producers and

transporters and with others possessing special expertise in the chemical area to make chemical emergency planning an aspect of general community preparedness, rather than a specialized and separate planning area.

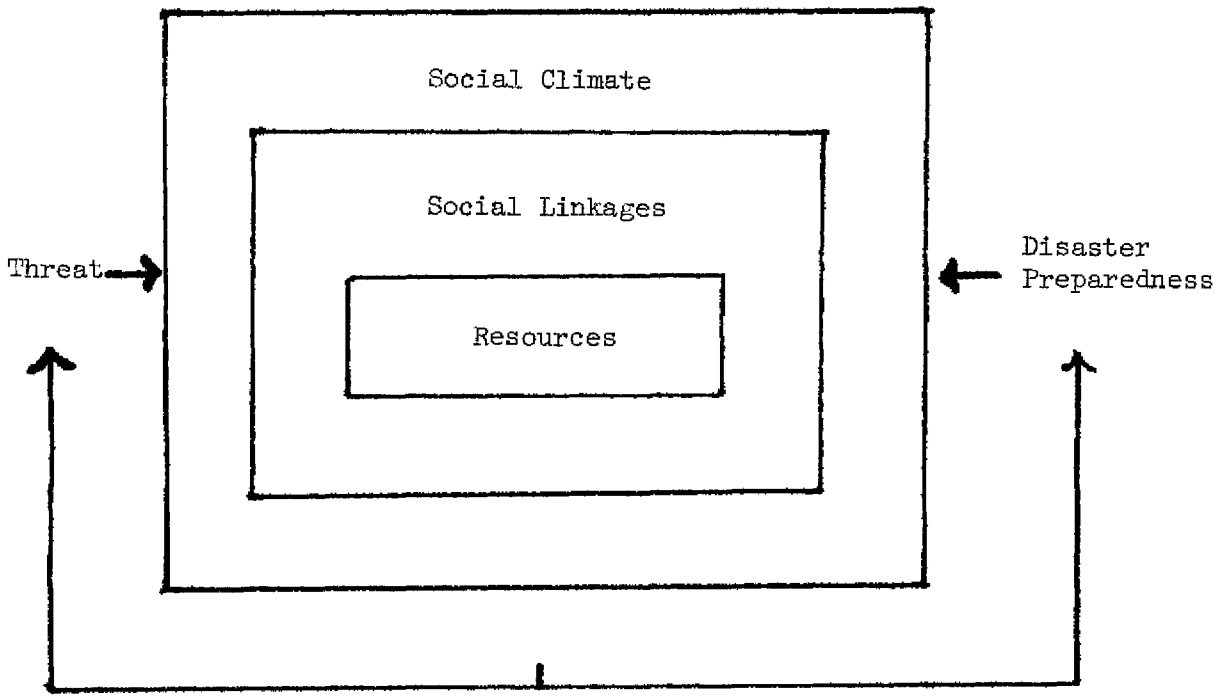
Factors Influencing Local Chemical Emergency Planning

Many communities have special laws or ordinances authorizing disaster preparedness and response groups to operate, and most localities have some official who is formally designated as responsible for overseeing community disaster readiness. However, although laws and the formal delegation of authority are important, community disaster planning is affected by many other historical, economic, political, and social factors. Indeed, if this were not the case, effective comprehensive community planning could be achieved merely by fiat. Noting the way in which the social setting influences planning in a community can lead to a greater understanding not only of why the planning scene has evolved as it has, but also of how to create a favorable climate for instituting or improving community preparedness measures. The sections which follow outline some of the more significant social factors which facilitate or impede community preparedness for chemical emergencies.

Community Preparedness: The Overall Model

Perhaps the best way of introducing the discussion of social factors affecting chemical disaster preparedness is to present the model of preparedness developed for this study. Put simply, the model represents the community as a system, impinged upon by an external input--the threat of some type of chemical emergency--and adjusting to this demand by producing an output--the set of attitudes, behaviors, and social relationships we term preparedness.

Seen at a glance, the overall image of community chemical emergency planning looks like this:



Each of the elements in the model will now be discussed in turn.

Preparedness

Although it is seen as an outcome of the other four factors and is listed last in the model, the concept of preparedness is best introduced and discussed before the others. Disaster preparedness is sometimes viewed as synonymous with the formulation of formal, written disaster plans. This is a very narrow view of preparedness since disaster encompasses a number of different activities in addition to the writing of plans. For purposes of this discussion, preparedness means: all those documents, activities, practices, formal and informal agreements, and associated social arrangements which, over the long or short term, are intended to reduce the

probability of disaster and/or the severity of the community disruption occasioned by its occurrence.

This definition is broad in scope and is meant to include a variety of behaviors expected to either reduce disaster-related demands or upgrade disaster response capabilities. Some examples of preparedness activities are:

--convening meetings for the purpose of sharing knowledge on disaster planning;

--holding disaster drills, rehearsals, and simulations;

--developing techniques for training, information transfer, and hazard assessment;

--formulating memoranda of understanding and mutual aid agreements;

--public education; and,

--drawing up community and organizational disaster plans.

Thus, while formal disaster plans are seen as an important element in disaster preparedness, they are viewed in this volume as only one of several sets of activities devised to improve the efficiency and effectiveness of a community disaster response. Attributes of effective preparedness programs will be outlined in Chapter III, and various steps which communities can take to initiate and/or improve preparedness for hazardous materials incidents will be discussed in Chapters IV and V.

Threat

Any community system is subject to a variety of threats to its continued functioning. In the past, for example, many U. S. communities were faced with health hazards to citizens, which, if not controlled, could have negatively affected community survival by impairing citizen health and

well-being. Public health measures such as sanitation, immunization, and nutrition education have lessened this threat in our society, but many communities around the world still face massive threats from disease and poor nutrition. Economic trends also affect community functioning; many local communities around the U. S. have had to adapt to unemployment, inflation, recession, and shortages--or have paid the consequences of not doing so. In short, in order to continue to function, communities develop ways of shielding their members from a range of potentially crippling threats, including that of physical harm, epidemics, loss of property, and severe poverty.

Disaster--the sudden and profound disruption of one or more community sectors as the result of natural or technological phenomena--can be classified along with threats to citizen health, safety, and economic well-being as a threat to or a demand on the community system. Communities vary in the nature and types of threat posed by different agents, as well as in the degree to which community decision-makers and the general citizenry are aware of threats from different agents. As the discussion below suggests, these differences can have important consequences for disaster planning.

The variety, types and combinations of disaster threats faced by a community affect both the form and the content of community disaster preparedness. A city or town may face threats from chemical hazards only; natural disaster agents only; or a combination of both. Many communities fall into the last mentioned category; that is, they are subject to one or more natural disaster agents as well as to threats associated with the production or transportation of hazardous chemicals. This

presents a challenge to those responsible for community preparedness; at the same time, it provides a high degree of potential justification for a concentration on preparedness.

Different disaster agents influence the kinds of preparedness activities that can be undertaken. Dynes (1974) notes several aspects of disaster agents which have consequences for preparedness measures. These include speed of onset (sudden/gradual); length of possible warning (short/long); scope of area of impact (small/ large); duration of emergency (short/long); and predictability (high/low). These agent characteristics affect community preplanning measures and have an influence on the kinds of resources that are needed. For example, communities subject to hurricane threat (gradual onset, long warning time, large scope of impact, long duration, high predictability) are aware that they typically have time to evacuate residents from coastal areas for their safety, so these communities devise evacuation plans and amass the resources needed to assist in the movement of large numbers of people. Those cities and towns which are subject to threats from river floods can also incorporate evacuation into their plans. Communities subject primarily to tornado threats (relatively sudden onset, short warning, small scope, short duration, low predictability) usually cannot count on being able to move people <u>out</u> of the zone of impact and must concentrate on the development of local tornado shelters and on public education to insure adaptive behavior on the part of citizens, e.g., taking shelter in basements.

Chemical threats show great variability, and this too has implications for planning. Some types of chemical mishaps offer a degree of warning time; others do not. Some spills can be fairly brief and localized, and others, particularly releases into the air, can have a very diffuse impact and a relatively long period of threat. Thus, threats associated with hazardous materials are not only difficult to predict precisely, but also present a challenge for planners because of their complexity.

As one interviewee in the DRC study of chemical disaster planning stated:

> You know when you've got a fire, you know when you've got a flood, you know when you've got an earthquake, but you don't know with this...it's a very frustrating kind of planning.

Chemical threats also show variability in the kinds of resources required to respond adequately. Communities which must respond periodically to flood hazard are aware of the types of resources needed--sand bags, for instance. Because they are complex and often volatile, chemical hazards can require specialized resources, e.g., special foams or neutralizing materials. Information and technical expertise are also resources which are greatly needed in chemical incidents. These resource requirements do not present insoluble problems, but they do indicate a need for a thorough and coordinated planning effort in the chemical hazards area.

Aspects of chemical threats which can be addressed in different planning phases will be discussed in Chapter V. This section was included to highlight the idea that communities differ with regard to the

threats posed by the environment and that disaster preparedness, or the enhancement of a community's capability to respond to environmental demands, is affected by the degree and types of external threat. However, threat of disaster is not the only factor which influences disaster planning, as the following sections indicate.

Social Climate

If threat were the sole determinant of levels of disaster preparedness, each city, town, and rural area would have exactly the degree and type of preparedness it required. However, the relationship between threat and preparedness is not a direct or straightforward one. As the model indicates, at least three other factors contribute to preparedness for disasters, including chemical incidents. One very influential factor is the social climate, or the set of political, economic, social, legal, historical, and psychological factors which form the context for disaster preparedness. Among the more important elements of the social climate are community disaster experience; local beliefs about threats; norms, or recognized and approved patterns of social conduct; and community and institutional values.

Social climate factors are important because they can either enhance or block attempts at local disaster planning. Factors such as community awareness and beliefs about threats can result in the minimization or distortion of the degree of objective disaster threat which exists. The social climate can also render certain resources, such as information, unavailable. DRC research indicates that various elements of community social climate can present barriers to disaster preparedness which must be overcome before effective preparedness efforts can be

launched. In an obvious example, the existence of an objective threat, e.g., of an earthquake or an emission from a chemical disposal site, does not necessarily mean that the appropriate community officials are aware of the threat; or that they are in agreement about what preparedness measures, if any, should be instituted to cope with the threat; or that there are incentives to plan. A few other examples of the ways in which social climate can affect disaster planning are discussed below.

In regard to beliefs about chemical threats, DRC research in nineteen U. S. Communities found that, by and large, acute incidents resulting from chemical agents are seen as quite probable. Three kinds of chemical hazards--chemical spills, a major explosion in a chemical plant, and a sudden toxic substance release--were among the top five of thirty-six disaster agents rated for their likelihood of occurrence by community officials and chemical industry personnel. Thus, it appears that objective threats are at least perceived in this sample of communities which are moderate-to-high i threat potential. However, community size made a difference in threat perception, with emergency personnel in large cities more likely to be concerned with hazardous materials than those in small towns and semi-rural areas. This finding implies that despite the fact that preparedness is needed in smaller towns, which often have relatively few specialized resources for dealing with hazardous chemicals, it may be more difficult to "sell" in these areas. In a slightly different vein, threats were not perceived equally by all organizations. Personnel in key emergency organizations such as fire and police departments generally rated chemical threats as more probable than did chemical industry personnel. This lack of consensus about the magnitude of chemical threats,

combined with a marked attitude of confidence about the community's ability to respond to threats of this kind, may be seen as social climate factors which would not support further planning efforts. In reference to this last finding--community confidence about the ability to respond to chemical incidents--DRC surveys indicate that, while some communities may be able to hold their own in a chemical mishap, many probably lack the resources to handle by themselves a Youngstown, Florida or Waverly, Tennessee type of incident or even one less severe. Disaster preparedness measures are easier to implement if all sectors agree on the nature of disaster threats and if attitudes about threats are based on systematic assessments of hazards, rather than on impressions or local folklore.

Besides attitudes and beliefs about the necessity for disaster preparedness, the values and norms adhered to by different population segments in an area have consequences for community disaster preparedness. Although frequently breached in present day society, the right of the private sector to conduct business with minimal interference from the public sector is a recognized value in American culture. On the local level, this value can translate into a reluctance on the part of safety officials to intervene in the activities of chemical manufacturers and transporters unless there are repeated, flagrant violations of the law. This laissez faire attitude is also related to a concern for the benefits companies provide local communities. Officials may feel that, by voicing a strong concern for safety matters and disaster preparedness, they could be accused of "biting the hand that feeds" the community via jobs, taxes, and other benefits. The evidence of a "hands-off"

approach towards the activities of local industry suggests that, if preparation for chemical disasters is to proceed on the local level, much of the initiative will have to be assumed by the private sector. (An example of industry-initiated community chemical disaster preparedness is presented later in this chapter).

Not all values provide disincentives for cooperative public/private sector preparedness in the chemical area, however. The value placed on the wise and efficient use of money--a value shared by public and private institutions alike--is well served by preparedness measures such as mutual aid pacts, which arrange for the pooling of resources for reducing and neutralizing chemical threats. Similarly, cooperation between the chemical industry and the local fire service can result in lower insurance rates for industry. In many communities, the emerging picture is that chemical companies, which have in the past been concerned primarily with the safety of their own workers and the preservation of valuable equipment and facilities, are beginning to find it in their interest to take a broader view. Companies are coming to realize that resource-sharing and an outward orientation--focusing on the well-being of the community at large--far from being merely altruistic, are also very good business. To the extent that values encouraging disaster preparedness become more widespread and prominent at the community level, overall disaster planning efforts will progress more rapidly.

Norms, or standards of conduct, may be formal or informal. Formal norms, official policies or laws can act as barriers to disaster preparedness involving local chemical facilities and community public response agencies. For example, in one community DRC studied, elaborate

plans for a large-scale community-wide disaster simulation exercise at a local chemical plant were halted only hours before the drill was to take place by order of corporate counsel who advised the company not to participate since the company could be held liable if accidental injuries were to occur on its property. These kinds of situations impede community preparedness efforts; however, the same kinds of official and legal sanctions can encourage preparedness. Ordinances creating interoganizational emergency preparedness bodies and ordinances designating special hazardous materials routes through a community are two examples of legal norms which, if upheld, would enhance community readiness and mitigate the effects of hazardous chemical episodes.

Informal norms, or customary, accepted standards for doing things, are aspects of the social climate which frequently work to discourage disaster preparedness. For example, unless a community has recently experienced a serious crisis, citizens do not actively demand better local disaster planning; disasters--either natural or chemical--are simply not something citizens think about on a daily basis. Local government officials are aware of this, and norms exist in local government which inhibit them from attempting to initiate new programs towards which the general public seems indifferent. These norms, shared by public officials, work against efforts to upgrade chemical disaster planning.

At present, the various social climate factors do not seem to exert a particularly positive influence on preparedness for chemical disasters. However, practices can be introduced which can partially

offset negative factors and create a climate conducive to preparedness on the local level. Some chemical manufacturing facilities, such as the Louisiana Division of Dow Chemical Company, near Baton Rouge, have taken a major, leading role in disaster preparedness at the local level. Early in 1977, a chlorine release at one of the Dow plants spread to adjacent areas in the community, resulting in widespread community concern and legal difficulties. This was followed by a corporate decision to make some needed changes in preparedness. Some manufacturing concerns would prefer not to publicize the fact that they need to engage in planning for these kinds of events, as they would rather not admit that such incidents <u>can</u> occur. However, Dow officials did not take this position, and instead began to work with local public safety personnel in an extensive campaign to upgrade community preparedness in the communities surrounding the facility in the belief that industry-community cooperation would raise the prestige of the plant locally; help profits, in part by avoiding costly lawsuits; and insure a better response should another release occur. A climate of cooperation between the chemical industry and the host community has thus resulted in a significantly higher level of preparedness for chemical mishaps for the entire community. Members of the chemical industry, in short, are beginning to see that developing superior health, safety, and disaster preparedness programs is <u>not</u> overly costly and can both produce local goodwill and reduce company costs in the long run.

Social Linkages

Even though there may be agreement among responsible persons or different community sectors on threats faced by a local area and even if there are few social climate barriers to planning, adequate disaster preparedness cannot be achieved in the absence of social linkages, or networks of relationships among disaster relevant community sectors, set up to further the goal of preparedness. Since both natural and chemical disaster agents have a potential for creating demands which go beyond the response capabiliity of any one community organization, adequate community preparedness must include mechanisms by which a number of relevant emergency organizations can share resources, allocate tasks, and delegate authority in crisis situations. Planning for disasters is made easier by the existence of informal or, preferably, formalized and regularized contacts between personnel in disaster relevant organizations during nondisaster times. Regular contacts, meetings, seminars, training sessions, and similar linking activities are invaluable for carrying out activities such as:

--sharing information on local hazards;

--discussing the availability of equipment and other resources;

--assessing the need for additional resources;

--identifying and eliminating conflicting or duplicative organizational preparedness efforts;

--passing on information regarding the ways in which other communities are handling preparedness problems.

Chemical industry mutual aid organizations, such as those found in a number of U. S. communities, are an example of social linkages which contribute to disaster preparedness. Local interagency disaster

preparedness councils, made up of representatives from a variety of emergency relevant organizations, are another example of networks which facilitate planning.

Community social linkages in the disaster preparedness area can come about in a number of ways. Sometimes, particularly in communities which have seen many disasters, they exist as a matter of tradition; community agencies with a history of cooperation in actual disasters are likely to develop ways of working together to avoid future problems in coordination. Sometimes, preparedness networks form as a result of the way local public services are administratively organized: the police department, the fire department, and the local civil defense office are often strongly linked because they are housed in the same department of city government. Networks can also be formed around shared or complementary functions. In communities which have ambulance services operated by the fire department, close informal ties develop among the paramedics and EMTs and the local hospitals. Consequently, these groups are likely to engage in joint preparedness activities.

In the area of chemical hazards, the most frequent and strongest industry-community links appear to exist between safety officials in chemical manufacturing firms and local fire department personnel. This linkage is due both to in-plant safety concerns and to the mandate given to fire departments to protect life and property. Industry-fire service linkages frequently result in considerable mutual understanding and coordination between these two organizations, as well as in the swift control of many chemical mishaps.

However, these linkages are also comparatively "narrow"; they do not include the range of organizations whose resources would be needed in the event of a major chemical episode. Neutralization of the chemical threat is but one task which must be performed in a chemical incident. Many other tasks, including evacuation and the sheltering of evacuees; warning; control of curiosity seekers; restriction of access to the site; provision of public information; and care of the injured must also be undertaken as part of the response to a hazardous materials incident. Good planning goes beyond a concern for suppression of the agent and incorporates organizations which are capable of performing these other functions as well.

Before comprehensive community planning can occur, however, organizations must become aware of one another's roles, resources and responsibilities--in short, they must have contact and communication via social networks. The existence of broad community networks makes it easier to assess local risks; identify and collect the resources for performing a range of tasks associated with combating chemical disasters; devise and rehearse comprehensive plans for use in disasters; and perform the entire range of preparedness activities.

One important attribute of social linkages in the chemical disaster planning and response area is that links tend to be "horizontal" as well as "vertical." For example, while local organizations may have links to one another at the local level, they can also be vertically linked to other groups operating at state, regional, national or even international levels. Thus, emergency-relevant contacts often exist not only among

organizations in the local community, but also between these organizations and organizations from outside the local area such as industry and railroad response teams, government hazardous materials spill teams, and private environmental clean-up groups. These contacts constitute an important means for bringing needed resources such as experienced personnel and specialized equipment into the community should the need arise. Well-prepared communities do not leave the provision of this type of assistance to chance. Instead, officials on the local level see to it that the capabilities and functions of these kinds of organizations are well-known and widely understood before the occurrence of any chemical threat. If information about extracommunity organizations which can offer assistance is incorporated into local disaster plans, much needed time can be bought for local responders, and the period it takes to restore the community to full functioning in the event of a major chemical incident can be shortened.

Resources

Human and material resources are also an element in the model of community planning. Resources affect the nature, types and extensiveness of chemically-relevant local planning efforts. The following are among the major kinds of resources which are of obvious importance for developing an adequate response capability for hazardous materials incidents:

--trained and knowledgeable personnel from both the public and the private sector;

--substances for suppressing or neutralizing hazardous chemical agents (foams, sand, water, etc.);

--information on the nature and properties of chemical hazards existing in the community, whether chronic or acute, and on ways of responding to specific hazardous agents;

--equipment to neutralize substances and communications hardware providing the capability to mobilize personnel as well as transmit information efficiently and effectively in the event of a threat to the community arising from a chemical agent;

--facilities (e.g., buildings), equipment and personnel which can be used to support response-related activities such as evacuation and site security.

Besides these kinds of resources, there are other, less obvious elements which, if present in a community, may also be seen as resources affecting local disaster planning. Leadership is an important resource which can definitely affect community preparedness for chemical mishaps. The designation of authority to initiate and direct planning and response activities is not commonly thought of as a resource but it can affect the state of local disaster preparedness. Finally, the number and variety of civic-oriented organizations in the community, and the degree of support given to disaster planning activities--whether from tax revenues, volunteer activities, or other means--are also resources which can help determine the level of disaster preparedness a community can achieve.

Some communities are richer in resources than others. Communities which contain vast chemical manufacturing complexes naturally have a greater potential supply of trained personnel familiar with the handling of hazardous chemicals than do communities which are primarily on transportation routes or which have only a handful of smaller manufacturing facilities. Along other lines, communities endowed with a generous tax base and abundant funds for public safety services are at an advantage when it comes to devising preparedness measures for chemical hazards.

Yet, most, if not all, communities possess some sorts of resources which, if organized well and if handled by competent leaders, could be used to ameliorate the effects of a chemical threat.

Communities around the U. S. show variation along all the resource dimensions noted above, i.e., skilled personnel, substances for suppression of chemical agents, specialized information, special equipment, support or ancillary facilities, leadership, authority, and organizational richness and civic support. Any given community may rate high in some of these resources and moderate or low in others. Moreover, while communities in the U. S. can be grouped together by type--e.g., those rich in all resources versus those high in some and low in others and those low in most resources--each community is unique in some sense. For this reason, this primer emphasizes the idea that resources can be most appropriately assessed on the local level by each city or town. Later sections will discuss the identification and rating of resources in more detail.

There is another very important point that must be emphasized regarding resources for chemical disaster preparedness. A resource that is not identified and widely understood by responsible community officials and incorporated formally into local preparedness activities is, for all practical purposes, not a resource at all. Examples can be cited to illustrate this point. The Chemical Manufacturers Association (formerly the Manufacturing Chemists Association) maintains a 24-hour toll-free telephone information service called the Chemical Transportation Emergency Center (CHEMTREC). This service provides information on the properties of various hazardous chemical substances and is an important potential informational resource. However, CHEMTREC cannot be used by local communities

unless local public safety personnel are first aware of its existence, how to use it, and what to expect from it. In the communities DRC studied in 1978, most (but not all) fire departments were aware of CHEMTREC, but the majority of other disaster-related organizations were not. Very, very few local community disaster plans noted the existence of the service or listed its number. Community public safety organizations which do not know of the service or which know but do not have such information readily available would, thus, be unable to utilize an existing information resource should the need arise. Similarly, local chemical companies might possess large supplies of foam or other material for neutralizing, say, chemical fires. However, unless prior arrangements are made among local organizations, and unless prior authorization is given for obtaining the foam in an emergency situation, slip-ups can be anticipated in the event there is ever an urgent need for the substance.

The utilization of local resources is very much influenced by two other elements in the model--social climate and social linkages. Social climate can affect planning negatively when those norms, values and beliefs discourage cooperation or resource sharing. To plan effectively for chemical mishaps, communities must be able to rely upon as many local resources as possible. Factors such as public/private sector conflict or the insistence on autonomy and noninterference by either public emergency preparedness organizations or private corporations can render resources unavailable for purposes of either planning or response. Thus, considerable effort should be applied to creating a social climate which places a priority on disaster preparedness, encourages interorganizational cooperation, and publicly recognizes those organizations which work together for a safer community.

The presence or absence of disaster-relevant social linkages can also be expected to influence the utilization of community emergency resources. Regular contact and communication among those who must plan for chemical incidents--including manufacturers and transporters; local police, fire, and civil defense organizations; city and county officials; hospitals and ambulance services; health department and EPA personnel; the state police; and others--help insure that needed resources are identified and incorporated into interorganizational agreements. When this occurs, resources can be available when and where they are needed without relying on either inspiration or improvisation at the time of a hazardous chemical incident.

Dupont produced a safety film recently and entitled the film, "Those Vital First Minutes" as a way of emphasizing the importance of proper action during the period immediately following a chemical accident. It is during the very first moments--just after the actual or threatened release or just following the spill--that prior social linkages can make the real difference. When planning groups know one another and have been interacting on a regular basis and when organizations cooperate and understand one another's roles, resources to combat the hazardous chemical agent can be mobilized with minimal loss of time.

Summary and Related Comments

This chapter has focused on the local community as the logical starting place for chemical disaster planning and has defined preparedness as all those activities, formal and informal agreements, practices, and associated social arrangements which, over the long or short term,

are intended to reduce the probability of disaster and/or the severity of community disruption occasioned by its occurrence.

A model was presented which views the state of local preparedness as the result of a combination of factors: threat; the prevailing community social climate; social linkages or networks of relationships; and resources. Of course, the ultimate test of community preparedness is the system's ability to insure that the response to a hazardous materials incident is swift and positive. Yet, this discussion has also suggested that, even in the absence of an actual test of local preparedness, enough is known about good overall disaster planning that it is possible to provide general pointers about arrangements and practices which seem likely to result in better preparedness, either on the basis of past successes or in terms of known improvements in organizational efficiency and effectiveness.

The material in this chapter showed the degree to which such intervening factors as social climate and social linkages can affect planning, even among communities experiencing similar threats and possessing similar resources. The chapters which follow will discuss the planning process in greater depth. Chapter III contains a discussion of those principles which should guide good disaster preparedness and which are applicable to both the natural and the chemical disaster planning area.