CHAPTER V

COMMUNITY-BASED PREPAREDNESS FOR CHEMICAL EMERGENCIES: DIRECTIVES

The discussion in the previous chapter attempted to point out the variety of different organizations which might be included in a comprehensive community plan for chemical emergencies. Now that the actors have been introduced, it is time to move on to a discussion of the script. This chapter will outline the planning process itself, indicating steps which can be taken to assure improved readiness for chemical emergencies. To insure coverage of all relevant points, the directives are presented as if preparedness had to start "on the ground floor," that is, as if there was no existing community-wide disaster plan. In actual fact, of course, most potential users of the information, will be primarily broadening or updating their existing plans to include chemical hazards.

Steps in the Planning Process

Preparedness can be viewed as a state in which response capabilities offset risks or potential demands on the response system. Thus, local disaster planning efforts can be visualized as those activities which either reduce the risk side of the equation, or increase the resource, or capability side. Using risks and resources as key concepts, the sections which follow will suggest a series of approaches which are designed to place the community on surer footing in the event of a chemical emergency. Community preparedness for chemical incidents will be viewed as consisting of three major phases: risk assessment; resource assessment; and the reduction of risk through hazard mitigation and resource mobilization.

Risk Assessment

In this discussion, the term "risk" means the objective hazard to life and property posed by the manufacture or transportation of dangerous chemicals. Risk can be distinguished from vulnerability, at least conceptually, and it is important not to confuse these two terms. Vulnerability is the "net hazard" that remains after preparedness efforts have reduced risks. Because emergency preparedness efforts can offset environmental hazards, the vulnerability of a community--the probability of a chemical incident--may not be as high as the actual risk the community faces. For the time being, the discussion will focus on ways of assessing risk that treat risk as a factor independent of efforts to reduce it.

Risk analysis attempts to rate or scale the danger posed by some agent or agents to some specific unit. There are several forms of risk analysis. Depending upon the scheme used, the unit of analysis may be the individual; a given population; a single site or building; or a larger geographic unit. Risk analyses also differ in their time reference. The most common forms of risk analysis, of which the U. S. Coast Guard marine spill system is a good example, attempt to predict risk by determining what is likely to occur in an ongoing incident, given details of the incident and background data on key variables. In addition to these "trans-emergency" risk analysis methods, "pre-emergency" and "post-emergency" modes can be distinguished. The latter include studies of how the response to a given emergency may affect future risks. Our interest here is in the former--that is, the pre-emergency risk assessment, particularly the type that focuses on the community as the unit of analysis.

Given a large personnel pool, sufficient backup resources, and a high degree of cooperation by all relevant organizations, it might be possible to complete an exhaustive and precise catalogue of chemical hazards faced by a community. However, most communities are not fortunate enough to possess resources of this magnitude. This fact, combined with the fact that the volume and variety of the chemicals in a given geographic location are subject to change and fluctuation, makes precise calculation of chemical hazards a practical impossibility for most communities. The real challenge in this area is to conduct risk analyses which are precise enough to suggest preparedness alternatives to policy-makers and at the same time simple and straightforward enough to be performed quickly and economically by relatively few people.

Despite the obvious need for risk assessment schema of this type, few approaches attempt to take estimates of pre-emergency risk for large geographic or political units. Guides and outlines do exist in the area, however. Zajic and Himmelman (1978) have developed a method for this type of assessment which includes indicators, measures, checklists and directives. Gabor and Griffith (forthcoming) advocate a slightly less elaborate and more community-oriented approach, which takes into consideration, 1) the density of chemical manufacturing and storage in the jurisdictional unit (city, county, region, etc.); 2) the proximity of chemical facilities to residential and commercial areas; 3) the hazard associated with the transportation of hazardous materials through the community; and, 4) the variety of hazards to which the geographic unit is exposed.

Local disaster preparedness personnel may wish to use either one or both of these approaches, or they may wish to adopt some other risk assessment formula. It may be the case, however, that planners will find it

necessary to devise their own risk assessment scales. The following are some suggestions on how to develop standards for measuring risk in the local community, using the four dimensions identified by Gabor and Griffith.

Density

The relative proportion of chemical manufacturing and processing personnel in the labor force is one possible indicator of chemical industry strength in a city or county. The proportion of county retail sales accounted for by the chemical industry is another. These kinds of measures can be devised from easily available data--primarily census information--and are a crude index of the volume of chemicals present in a community.

Proximity

Proximity refers to the distance between chemical facilities and populated areas. It is possible for a community to be high in chemical manufacturing density and at the same time relatively low in proximity. This pattern is seen in communities where zoning and other factors have caused chemical facilities to be located far from heavily populated areas, in industrial parks or complexes. One way of approaching the measurement of proximity is to follow the safety conventions for explosions designed by the National Fire Protection Association (NFPA) and develop an index for the proportion of households in the community located within a 2,000-foot radius of a facility handling large volumes of explosives, flammables, or highly volatile materials.

Toxic clouds or plumes pose another hazard to community residents. Some measure of the degree of risk should be calculated when facilities

which manufacture, use or store large quantities of chlorine are located near populated areas. Froebe (1977) employs a measure of "population strength," a 0-3000 scale based on population density and several other factors, to reach an estimate of the size of the population at risk from a toxic emission. A simpler variant of this approach would be to calculate the population density per square mile for the community and to determine the rank of the community, compared to others in the state or to other communities of similar size. Densely populated communities containing large facilities from which toxic clouds could be released would be rated high on the "proximity" dimension. This measure would give some indication of problems which might be anticipated with warning, evacuation or care of the injured in the event of an emergency.

Transportation threats

Besides determining the volume of hazardous materials produced and/or processed in the community, it is also important to take into consideration the volume of chemicals passing through the area when assessing risk. This may be done in a variety of ways, depending upon the resources at hand. A first step in assessing transportation hazards is to determine the number of transportation modes that are involved in handling chemicals in the community. Is the community a rail center? Do a number of trucking concerns route loads through the area? Is the community the site of a major port? In general, cities and towns which are at the hub of rail and truck routes, and which have active ports--in other words, places which are centers for many transportation modes--can be viewed as having a higher potential for chemical mishaps than those which are not transportation centers.

The measurement of transportation hazards can be further refined. Sampling and the use of trained observers can help planners estimate the volume of hazardous materials traffic through the community. With some cooperation by shippers, it would also be possible to arrive at estimates or roughly exact figures of the amount of materials (e.g., chlorine, anhydrous ammonia) which pass through or near the community and, thus, pose a hazard to large numbers of people.

Types of hazards

Risk assessment should attempt to address not only the different sources of threats (manufacturing and transportation) but also the variety of threats. Different types of hazards entail different containment and neutralization strategies and, therefore, present a more complex challenge to planners and potential responders. Gabor and Griffith (forthcoming) suggest a simple five-point scale, in which communities are given one point for the presence of each of the following:

--chemicals which are hazardous due to their flammability;

--explosives;

--chemicals which can form toxic clouds;

--water pollutants;

--chemicals which produce acute corrosion.

The extent to which these threats are present in a community can be determined once something is learned of the nature of the hazardous materials produced in and shipped through the community. Reports available from the National Transportation Safety Board can also yield information about the kinds of chemicals involved in reported accidents in a given locality--another indicator of the variety of hazards to which an area is subject. Furthermore, it seems reasonable to conclude that the

greater the manufacturing density and the more transportation modes are present, the greater the variety of chemical hazards. Thus, communities which have multiple manufacturers and several different means of transportation face a greater challenge when it comes to mobilizing resources for preventing and reducing the severity of chemical incidents.

A thorough, careful risk assessment should provide planners with information on questions such as these:

1. What potentially hazardous chemicals exist in the community?
2. Where are the highest concentrations of chemicals found?
3. What types of carriers handle the most hazardous materials? What routes or locations present the greatest threat?
4. Are there specific localities where hazards are markedly higher than in other areas?
5. What are the types of threats posed by hazardous materials in the community (explosion, fire, toxic clouds, etc.)?
6. How many people (or what proportion of the population) are at risk from a failure to adequately contain dangerous chemicals?
7. Are there particular groups within the community (e.g., the elderly) which may require special attention in the event of a serious chemical incident?

Gathering Data and Interpreting Risk Ratings for Policy Purposes: How Sophisticated Must Measurement Be?

Judging the severity of risk from chemical agents and making policy decisions about risk reduction are difficult processes. Some may claim that ranking or rating methods, including those discussed here, can only

be meaningfully used when measures for a given unit are compared against those of some other unit or some well established standard. The unemployment rate or the per capita income for a city, for example, are most meaningful when compared to those of other cities that are similar along certain dimensions, such as size. It might be argued, then, that unless and until chemical hazards in most communities have been assessed, and overall standards set, it is not possible to judge accurately which ones are "highest" or "lowest" in density, proximity, or the other dimensions.

This is not entirely true where disaster planning policy is concerned. In the case of some jurisdictional entities, such as states and regions, intercommunity hazard comparisons are essential because they help determine which of several communities or areas need resources most. However, for purposes of planning on the local city or county level, it is really not necessary to gather data on other communities in order to judge the severity of local hazards. Absolute scales can be devised prior to data-gathering, points can be allocated among the four risk measures (density, proximity, transportation modes, and hazard variety), and it can be determined after the data has been obtained how close the community comes to scoring the maximum number of points, and in which categories. Positions which favor extensive comparison also ignore the fact that policy is often, of necessity, made in the absence of complete and detailed supporting information. Important decisions are frequently made, not on the basis of detailed, sophisticated data, but, instead, on a set of evidence where global indicators point in a particular direction.

Applying this idea to the chemical area, the position taken here is that communities can establish their own rating criteria, assess risks and make policy decisions about disaster planning using relatively simple methods. If a community survey of chemical risks indicates that 1) the chemical industry is one of the largest employers in the community; 2) residential density is high, and much of the population is clustered near chemical manufacturing, transportation, or processing facilities; 3) several different modes of transportation make heavy use of the community; and, 4) there is considerable variety in the types of chemicals made in and moved through the community, then officials will surely conclude they have potential problems. They will reach this conclusion without engaging in elaborate mathematical calculations and without comparing their community to others.

Finally, even when the only feasible risk assessment methods available to a community are relatively "soft" measures, the results can be informative and useful. Even impressionistic data or partial findings can have important policy implications. Indeed, the hazard assessment process (and its counterpart, the resource assessment process) can have benefits in and of itself, apart from the goal it seeks to eventually bring about, because it can make chemical hazards more salient to the community. As noted earlier, disaster preparedness succeeds best where the social climate is supportive of planning efforts, and the data-gathering process itself can help create a more positive social climate. In sum, communities should devise the best hazard analysis plans they can, but, at the same time, they should not abandon the task simply because their methods do not achieve the rigor of a scientific experiment.

Assessment of Resources

Once planners have determined the nature, types, and magnitude of risks to which the community is exposed, they can then determine the nature, type and quantity of resources that can be used in the event of a chemical emergency.

It is not the intent of this primer to offer precise technical information on exactly which specialized resources are needed for containing and neutralizing particular chemicals. This kind of information is available elsewhere (see Bahme, 1972; International Association of Chiefs of Police, 1973; Missouri Pacific Railroad Company, 1977; National Fire Protection Association, 1975; and U. S. Department of Transportation, 1978). Similarly, this section will not attempt to discuss exactly what types of radio equipment is best for use in disasters or exactly how many pieces of fire apparatus are needed in different communities (see Froebe, 1976 for a list of equipment and reference literature which are recommended for starting a local hazardous materials response team). It will, however, note several crucial resource dimensions and suggest relatively economical ways in which an assessment of the resources can be made.

The extensiveness and sophistication of hazard assessment activities conducted in a community depend upon the amount of time and money available to do the job; the same is true for the measurement of resources.

One way to gain a rough estimate of the quantity and distribution of community resources and of the extensiveness of existing disaster preparedness networks is to use a checklist like the one appended to this chapter.

The checklist takes into consideration both human and material resources. It attempts to provide a picture of overall response capability by focusing on five areas:

--various aspects of the current community disaster plan;

--the extent to which different organizations have developed emergency procedures specifically for chemical incidents;

--disaster drills and training exercises;

--disaster-relevant equipment, information, and facilities; and,

--the number and types of disaster planning networks present in the community.

Attention is paid not only to whether particular resources exist in the community, but also to which organizations control those resources. This is important because, as will be discussed later, certain resources may be present in the community, but are not formally linked via plans and agreements to those community organizations that are charged with major responsibilities in chemical disasters.

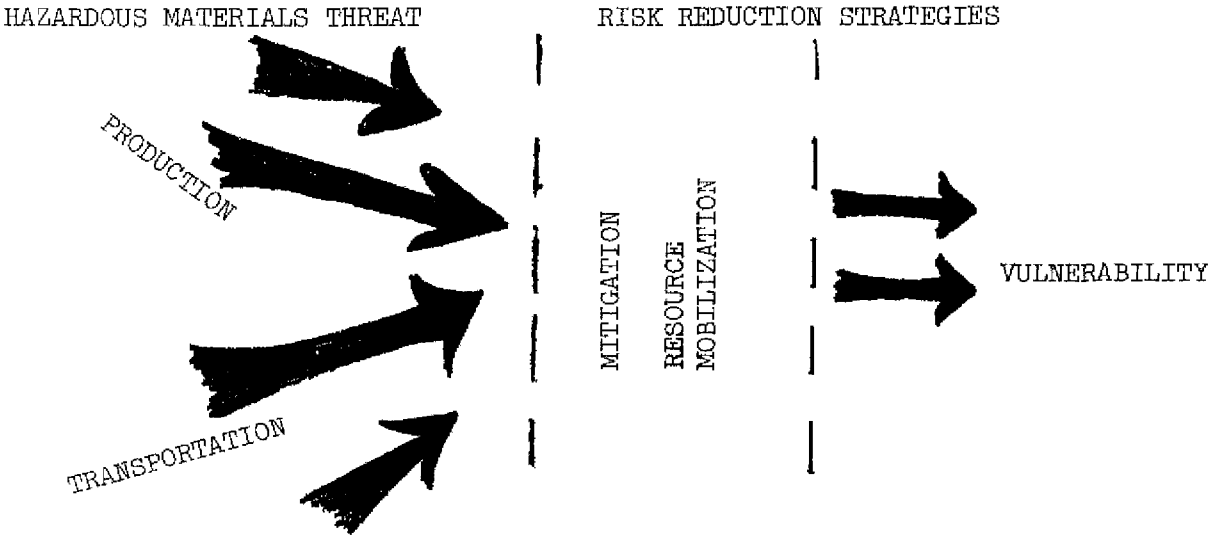
Basically, the same methods can be used to assess resources as are used to assess risks; along certain lines, in fact, locating and counting resources may be somewhat easier than assessing risks since the latter will almost invariably involve sampling, estimation, and individual judgment. Responsibility for completing the checklist could be given to an official or task force in a particular organization such as the civil defense office or the fire department. Information on resources could be obtained through an analysis of documents (disaster and emergency plans), combined with either a mail questionnaire or a telephone survey to responsible individuals in key organizations. Calling a meeting of emergency agency and industrial personnel for the purpose of assessing resources is another way of approaching the resource assessment question. A meeting of this type has several advantages. It is quick and economical. Because there is a chance for

feedback and clarification and because talking is easier in some ways than writing things down, more and better information might be obtained than could be gathered in a questionnaire. In addition, it could form the basis for further disaster preparedness meetings.

When data on the resources present in the community have been gathered, knowledgeable people in the community will be in a position to begin making judgments about whether local response capabilities are appropriate, adequate, and properly distributed. They can then decide upon appropriate strategies for risk reduction.

The Reduction of Risk

As the following figure indicates, vulnerability, or the likelihood that the hazards a community faces will produce casualties or loss of property, is a result of both the threats which the environment poses and preparedness measures, or the efforts made to reduce those threats.



When the two-fold strategy of risk reduction is employed, vulnerability is considerably lower than the objective risk posed by hazardous chemicals.

This section will focus on two major forms of risk reduction community officials may wish to employ: mitigation and resource mobilization. The former category includes measures enacted to prevent or greatly reduce the occurrence of a hazardous materials incident, and the latter term refers to measures taken to insure that injuries, damage, and disruption will be minimized in the event an incident does in fact occur.

Mitigation

It is obvious that one very good way to reduce losses from hazardous materials emergencies is to make sure they do not occur at all. Several mechanisms exist at the community level for reducing chemical threats. Discussed below are some mitigation strategies local officials may wish to pursue.

Land use management. In recent times, industry has become more sensitive to safety and environmental quality issues. Nowadays, potential hazards to residents are likely to be a factor in the decision to build a facility on a given site. Where feasible, officials at the city and county level should take the opportunity to work with corporate personnel to insure that new development is consistent with emergency preparedness needs: away from population concentrations; away from fire hazards; in an area where prevailing winds would not carry a toxic release directly over densely populated areas. Safety should also be a concern in highway planning. Bypasses and outerbelts make it possible for drivers carrying dangerous loads to avoid congested areas. Local officials may wish to advocate the construction of transportation routes which divert hazardous materials loads as well as the development of sound, usable evacuation routes.

Enforcement of existing codes and regulations. "Cracking down" on the enforcement of federal, state, and local laws and ordinances is another way local personnel can detect and reduce hazards. The range of interventions available to local agencies is quite broad and includes:

--enforcing highway speed limits;

--enforcing placarding regulations for hazardous materials carriers;

--citing carriers for use of inappropriate transportation routes;

--inspecting for violations of shipping regulations;

--notifying proper agencies (Department of Transportation; Environmental Protection Agency) of illegal toxic releases;

--inspecting facilities for building code violations on a stepped-up basis and taking swift action with violations.

Establishment of new laws, codes or policies, or the strengthening of existing laws. Some communities have instituted innovative measures in the hazardous materials area--policies restricting the movement of hazardous chemicals to certain hours of the day and requiring carriers to notify authorities before moving certain types of materials, for example. Again, there is a variety of ways legislative means can be employed to make communities safer.

Some forms of mitigation are long-range; others are not. Some are very expensive; others are not. No easy prescription exists for telling communities which mitigation approaches to use. This is something each community must determine based on a consideration of community needs, available resources, and political realities.

Resource Mobilization

A second dimension of risk reduction consists of efforts to enhance disaster response resources. This process occurs in three basic ways:

--the new resources a community needs are obtained;

--existing resources are upgraded;

--resources are linked to one another to increase efficiency.

A resource checklist like the one appended to this chapter can be the point of departure for efforts to enhance response capability. The checklist indicates organizations, tasks, specialized resources and facilities which ought to be taken into account in planning for chemical emergencies. The focus in this resource assessment checklist is on those organizations on the local level which are highly likely to be involved in an emergency response to a serious chemical incident--the fire department, the police, the hospitals, and so on. Different items in the checklist aim at determining the quantity and type of resources and the degree of expertise possessed by personnel in these local organizations; an attempt is also made to find out the extent to which these organizations are part of a comprehensive community disaster plan. The tasks listed encompass the range of demands the emergency response system will have to meet in a serious chemical emergency, beginning with warning and carrying through to the recovery period. Ideally, the local disaster plan should address these task areas and assign clear responsibility for each task to some organization or group. Like the tasks, the facilities and supplies listed--particularly the emergency operations center--are resources which every community should be capable of mobilizing.

In addressing more specialized resources, the checklist becomes more open-ended and less explicit about which resources should be present in the community. This is because the local need for specialized materials and equipment depends in large measure on the types and the severity of

the chemical hazards that are present. The level of protection needed will vary, depending upon the level of the risk faced. Once the risks faced by the community have been documented and local chemical-specific resources have been assessed, the adequacy of the latter can be judged by health and safety professionals. If, on the basis of their knowledge, authorities in the field (fire service personnel, authors of technical manuals, chemical plant safety personnel) judge the specialized resources identified by the assessment as inadequate for dealing with existing threats, efforts to obtain materials providing an acceptable level of protection should begin. Outright purchase, leasing, contracting, or joint purchase with other communities are ways which might be employed to obtain equipment which is not present anywhere in the community.

Weak disaster planning is often not so much a matter of poor resources as a matter of poor organization. For this reason, besides having a purely quantitative aspect--recording specific items and amounts of equipment--the checklist is written so as to yield information on the quality of the local preparedness network--that is, on the degree of resource integration that is present. Noting which organizations possess vital information on chemical hazards and crucial material resources and then noting whether these organizations are part of a comprehensive plan gives an idea of how easily available such resources would be in the event of a community-wide emergency. Lack of clear pre-emergency guidelines for the delivery of resources could result in lost time when an emergency occurs; thus, to be most effective, resources must be identified and linked in an overall response system.

Generally, this need for linkage is best addressed by the development of a general community disaster plan. The disaster plan is a document which links a range of community organizations for the purpose of accomplishing disaster-related tasks through the application of appropriate human and material resources. This definition contains virtually all the elements which need to be addressed in upgrading community preparedness: organizations, linkages, tasks, and resources. An adequate plan contains references to linkages: authority for overall operations as well as for specific sub-areas of responsibility is clearly spelled out. (This is why disaster plans often contain charts and diagrams) Communication (e.g., from disaster site to the EOC or the Command Post) and notification (of potential victims, outside responders, and the like) have been specified. The necessity for performing the full range of disaster tasks--from warning to long-term recovery--has been addressed, and the specific organizations responsible for each task are aware of their roles. Clear, written understandings exist regarding the quantity, quality, types, and location of resources various organizations will contribute to the response, and the steps for utilizing them have been detailed.

What other properties characterize an adequate disaster plan? As indicated in Chapter III, rather than requiring individuals to perform in unaccustomed ways, a good plan is based on realistic expectations. Similarly, a good plan is brief and concise: personnel in participating organizations are unlikely to adhere to disaster plans that are too voluminous to read even once. (Detailed directives and emergency procedures for individual organizations can be attached to the plan as appendices.) A good disaster plan is one which details a response that can be expanded

by stages, calling up resources as needed and avoiding the potentially disruptive effects of overresponse and convergence at the site. Finally, a good plan is one which possesses an official stamp of authority. Government and private industry officials must endorse the plan and show a willingness to implement it.

How is a disaster plan developed? How do community officials encourage the participation of other organizations in formal planning efforts? Throughout this manual, social linkages--regular contacts among personnel of organizations having an interest in emergency preparedness--have been discussed as a necessary condition for meaningful planning. It is through these contacts that coherent, consistent, workable community disaster plans are formulated. Regular meetings of key officials are a means by which contacts are maintained and plans developed. Interagency disaster committees or task forces are another vehicle for formulating comprehensive plans.

A resource assessment--carried out using the checklist in this chapter, or one like it--can be a vehicle for improved planning. If the assessment reveals that key community sectors, such as the hospital/medical sector or the law enforcement sector, are not incorporated into any interorganizational plan, this indicates an area where new linkages should be established. If it is revealed that several different planning bodies are working on disaster-related problems but are not linked to one another, this shows a need for more contact which could eventually lead to formal linkages under a single plan. Some regular contact among emergency organizations is essential if duplication, contradictory policies, and critical gaps in response capability are to be avoided.

Human resources are as important as equipment and facilities insofar as disaster preparedness is concerned; and here, too, it is frequently quality, rather than sheer quantity of personnel that is a key issue. A principle long known in the field of drama and often pointed out by students of human behavior is that people do better at carrying out their roles when they have had an opportunity to rehearse. Community disaster plans and organizational emergency procedures are only of value to the extent they are understood and complied with by emergency personnel. Since prior rehearsal improves both the understanding of emergency operations and the probability of compliance, risk reduction also involves continuous training and periodic drills of disaster operations. Moreover, to be most effective, training and drills must closely resemble actual disaster operations. From an operational standpoint, adequate performance in disaster involves learning not only how to anticipate and resolve problems with the tasks of one's own organization, but also how to anticipate and resolve problems that arise when working with other individuals, groups, and organizations. The very best disaster drills are those which are 1) realistic; i.e., performed in the field, and lasting as long as they would in an actual situation; 2) interorganizational. This is why the resource assessment checklist attempts to determine which organizations hold their own drills in contrast to which organizations conduct joint drills, and why it seeks information on the frequency of field exercises.

It is obvious that a good drill, developed to strengthen response potential in the chemical emergency area specifically, will be rather

elaborate, involving a number of agencies representing different levels of government as well as private industry and perhaps several additional response organizations. However, any difficulties encountered in setting up an exercise of this size and complexity would more than be offset by the lessons learned as participants refine their own skills, get a sense of how the overall division of labor is intended to function in disaster, and iron out difficulties in coordination.

The sections above have discussed community preparedness in the chemical hazards area as a three-step process consisting of: 1) the assessment of risk; 2) the assessment of resources; and, 3) the reduction of risk through mitigation and resource mobilization. The final section, which follows, will recapitulate the discussion and offer some closing thoughts on disaster preparedness.

Summary and Conclusion

After discussing the public and private organizations which frequently play a role in planning for and responding to emergencies involving dangerour chemicals, methods for rendering these kinds of emergencies less likely were discussed. The vulnerability of a community--the probability of an emergency involving hazardous materials--has been described as a function of hazardous materials threat and preparedness, or risk-reduction efforts. Once local emergency personnel know the types and magnitude of chemical threats, they can reduce these threats through whatever combination of mitigation and resource mobilization strategies seems most likely to succeed. Several steps in the disaster preparedness process were discussed; it might be useful to reiterate the major points here.

1. Assess risks. Using agreed upon methods and the most thorough means of data collection feasible, obtain information on the density, proximity, transportation threat and variety of hazards present. Methods need not be elaborate and mathematically sophisticated, but they should be capable of yielding information on the types of chemical threats the community faces, the size of the population at risk, and possible trouble spots.

2. Assess human and material resources. Determine the extent to which formal disaster preparedness and response networks exist in the community and specific organizations have been assigned essential disaster tasks. Note whether general disaster-relevant resources are present. Determine the extensiveness of knowledge of disaster operations (both general and specific to chemical incidents) in key emergency organizations. Note existence or absence of realistic interorganizational drills in the community. Use experts to gauge adequacy of specialized materials and equipment.

3. Acquire, link, and upgrade resources to minimize threat. Obtain essential resources which are not present in the community; link needed resources by means of a comprehensive disaster plan; institute training procedures to close knowledge gaps.

In concluding this primer, it might be useful to reemphasize two points made in earlier chapters which the foregoing discussion may have tended to obscure. The first point concerns the necessity for continuous preparedness efforts. In Chapter III, it was argued that the belief that disaster plans, once completed, are finished products is a myth, particularly in the hazardous materials area. Various factors can influence the number, nature, and magnitude of chemical threats facing a community: new chemical inventions; the building of a manufacturing or processing facility; the institution or relaxation of state or federal regulations. Thus, rather than viewing preparedness as a linear process, beginning at one point in time and ending at another, it is more appropriate to conceptualize it as a circle: preparedness may reduce some threats, but changes in the environment mean inevitably that new hazards will appear that must be reduced or controlled.

The second point concerns the importance of social climate as a factor affecting disaster preparedness. The beliefs of key decision-makers about the probability of chemical disasters and also their perception of the amount of support present in the community influence their willingness to engage in preparedness activities. Community leaders can expect to make more progress in programs of risk assessment and reduction if the public in general, as well as important community sectors such as industry, lend support to these measures. The more often the need for chemical disaster preparedness is ignored or resisted, the more difficult it will be to "sell" chemical preparedness as a community issue. This points out the importance of public/private sector dialogue and vigorous public education efforts for producing a climate of consensus in which activities aimed at the assessment and reduction of hazards can flourish.

COMMUNITY CHECKLIST OF RESOURCES AND DISASTER PREPAREDNESS ACTIVITIES

I. COMMUNITY DISASTER PLAN

a. Is the community disaster plan _____Written? _____Unwritten?

If plan is written, which organizations are included in the plan?

_____Fire Department
_____Police Department
_____Local Civil Defense or Emergency Preparedness Office
_____Local Executive Office
_____Local Industry
_____Hospitals and Emergency Medical Service Sector
_____Social Service Organization
_____County Public Safety
_____State Emergency Preparedness
_____Outside Chemical Emergency Response Organizations
_____Other (List)_____

b. What disaster-related tasks are addressed in the plan? What organizations are given responsibility for their performance?

TASKS	ORGANIZATION RESPONSIBLE
1. Pre-disaster overall community emergency planning	_____
2. Warning	_____
3. Stockpiling emergency supplies and equipment	_____
4. Search and rescue	_____
5. Evacuation	_____
6. Compiling lists of missing persons	_____
7. Care of the dead	_____
8. Maintenance of community order	_____
9. Housing victims	_____
10. Providing food and clothing to victims	_____
11. Establishing a pass system	_____
12. Overall coordination of disaster response	_____

13. Handling of radioactive material _____

14. Identifying substances as toxic or chemically dangerous _____

15. Handling or neutralizing toxic or chemically dangerous substances _____

II. INTERNAL EMERGENCY PROCEDURES FOR HAZARDOUS MATERIALS INCIDENTS

Which of the organizations listed below have developed written emergency plans for use in hazardous materials emergencies?

_____Fire Department
_____Police Department
_____Local Civil Defense or Emergency Preparedness Office
_____Local Executive Office
_____Local Industry
_____Hospitals and EMS Sector
_____Social Service Organization
_____County Public Safety

III. DRILLS AND TRAINING

Which organizations have participated in a disaster drill with some other organization during the past year? Which organizations have held their own internal rehearsals of disaster operations? Which organizations have at least one person who was given training in some aspect of hazardous materials response during the last year?

	Drills				Training	
	Joint		Individual			
	No	Yes *	No	Yes *	No	Yes
1. Fire Department	_____	_____	_____	_____	_____	_____
2. Police Department	_____	_____	_____	_____	_____	_____
3. Local Civil Defense	_____	_____	_____	_____	_____	_____
4. Local Executive	_____	_____	_____	_____	_____	_____
5. Local Industry	_____	_____	_____	_____	_____	_____
6. Hospitals and EMS Sector	_____	_____	_____	_____	_____	_____
7. Social Service Organizations	_____	_____	_____	_____	_____	_____

	No	Yes *	No	Yes *	No	Yes
8. County Public Safety	_____	_____	_____	_____	_____	_____

*If yes, for joint drills: 1) list, by number (1-8), other organizations participating; 2) indicate whether field exercise (F), or telephone or paper drill (T) was carried out. For individual drills, indicate F or T.

IV. INVENTORY OF MATERIAL, HUMAN AND INFORMATIONAL RESOURCES

a. What special materials or equipment are present in the community (use county as area for assessment) for containing or neutralizing chemical threats? What organization(s) control these materials? (Materials may include special foams, heavy equipment, etc.)

Materials	Controlling Organization
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

b. What special materials or equipment are present in the community for protecting primary responders (masks, acid suits, etc.)? What organization(s) control them?

Materials	Controlling Organization
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

C. What sources or expert advice and specialized information exist in the community? In what organization(s) can they be found? (Include materials such as handbooks, Chemcards, and also individuals if giving advice is part of their job responsibilities).

Informational Resources	Organization

d. Which of the following facilities and equipment exist in the community for use in a disaster? Which organizations possess or control these resources?

_____ Community-wide Emergency Operations Center (EOC)	_____
_____ Mobile Radio Communications Equipment	_____
_____ Alternative Sources for Power	_____
_____ Evacuation Center Site and Supplies	_____
_____ First Aid Equipment	_____

e. Of the organizations listed below, which ones: 1) have recorded the telephone number and notification process for exchanging information with CHEMTREC, the State Environmental Protection Agency, and the most relevant response teams; and, 2) have informed personnel of proper notification procedures?

	CHEMTREC	State EPA	Response Teams
Local Fire Department	_____	_____	_____
Local Police Department	_____	_____	_____
Local Civil Defense	_____	_____	_____
Local Executive or Other City Government Branch	_____	_____	_____
Local Industry	_____	_____	_____
Hospitals and EMS Sector	_____	_____	_____
County Public Safety	_____	_____	_____

V. DISASTER PREPAREDNESS AND RESPONSE NETWORKS

Which of the following networks, groups, or systems exist in the community (county as unit of analysis)?

_____Industrial Mutual Aid or Mutual Assistance Pacts
_____Fire Department Mutual Aid
_____Volunteer Organizations (REACT, Red Cross)
_____Disaster Planning Councils (either governmental or governmental/private)
_____Hospital/Ambulance/Emergency Medical Service System