

car structural integrity assessment, tank car righting and rerailing, product transfer, and evacuation;

3. Water treatment plant, chlorine gas leak from one ton cylinder: protective clothing and respirators, evacuation, handling of leaking cylinder, and chlorine gas personnel casualties;

4. Large land storage tank, uncontrollable leak of oleum: personnel protection, diking and runoff control, and neutralization and cleanup;

5. Fire in pesticide and fertilizer warehouse: toxic vapors, toxic runoff, use of water, personnel protection and decontamination, and follow-up personnel monitoring;

6. Undamaged LFG pressurized storage tank, direct fire involvement: "BLEVE" potential, evacuation, uncontrollable situation, and commitment of initial response forces;

7. Abandoned chemical waste dump site, gas venting, liquid leaching problems: population hazard evaluation, federal involvement, cleanup potential and site control, and handling of unknown chemicals;

8. Ammonia gas release, many gas inhalation injuries: handling of casualties and evacuation;

9. Freight marshalling yard, freight container leaking unknown liquid product: product identification and hazard evaluation, shipper-carrier involvement, waste generation, and liquid containment and diking; and

10. Spill of persistent pesticide onto an environmentally sensitive area: groundwater survey and hydrology, cleanup and level of cleanliness, detection equipment, and long-term effect.

WHO SHOULD BE RESPONSIBLE FOR TRAINING?

As outlined previously, the segment of the hazardous materials response forces most in need of training is the initial response force. This force will not be trained by the states in most cases because money, time, and, in many instances, interest are lacking. If initial response forces are to be trained, a federal effort is indicated. Private industry has leaped into the training arena in the prevention category, mainly to take advantage of the training aspect of the Transportation Safety Act of 1974 training requirements and, more recently, all the training and education aspects created by the 311(k) fund of the Federal Water Pollution Control Act. Most recently, the new "superfund" legislation has created a tremendous training interest in the areas of toxicology, hazardous wastes, and long-term cleanup.

The lead role in hazardous materials training should logically rest with FEMA or DOT. As stated, DOT has set up an emergency response center at the NRC manned by the U.S. Coast Guard and does have some initial response forces in the U.S. Coast Guard but their role is somewhat limited geographically. DOT also has established a new emergency response coordinator in MTB, but this is just one person and seems more politically oriented than safety oriented. DOT also has seeded private regional training centers with modest funds. FEMA seems to be the most logical training agency, and it has established courses at its National Fire Academy. The consensus is, however, that this training is management oriented and difficult to obtain. Something new is needed.

SOME SUGGESTIONS FOR THE FUTURE

As a basis for discussion, the following suggestions are proposed:

1. That a single training center for hazardous materials training be established by the federal

government, preferably outside of the Washington, D.C., area; potential locations are DOT's Transportation Safety Institute or FEMA's National Fire Academy (the initial thrust of this training would be toward training of initial response forces);

2. That the training center offer both resident and road-show type training;

3. That standard texts and lesson plans be prepared at the center for use in satellite courses;

4. That funding for the program be provided through a combined federal government-industry funding program such as that in the superfund legislation for spill cleanup; and

5. That the curriculum be established by representatives of interested federal agencies, interested state agencies, representatives of chemical manufacturers, shippers, and carriers, and most importantly, representatives of fire service personnel.

Emergency Response

Jeremiah J. O'Driscoll, Bob L. Hansen, and Robert J. Mesler, Jr.

The response to an emergency incident involving hazardous materials brings together the public- and private-sector emergency response teams under stress conditions. Each emergency response team has a differing purpose and motivation for being on the scene. The public emergency response teams are there to protect the public safety, health, and property. The transportation system emergency response teams are there to clean up and restore the system back to normal as quickly and safely as possible. The hazardous material manufacturer is there to provide advice and/or assistance in his or her areas of chemical expertise, public health, environmental concerns, and safety. With such diverse purposes, the need for preplanning and operational strategies and the recognition of decisionmakers are very important. The reaction of the initial responders, the public emergency agencies, is of utmost importance; but these are the people least likely to be knowledgeable in the handling of hazardous material incidents. Training programs designed to meet the needs of the local public emergency people are necessary. There is a need for communication channels to be opened so that the barriers between the responding groups can be eliminated. Traditional methods of operations need to be reviewed because many are not appropriate in today's social or transportation environments. But, most important is the need for the change by all parties from one of mistrust to one of trust and respect.

AS VIEWED BY THE PUBLIC FIRE SERVICE

The purpose of this conference is to help develop a national strategy that will address several concerns related to hazardous materials. This paper discusses some of the issues that relate to emergency response and to a hazardous materials accident. The points raised and views expressed are ones in which I not only believe but also have heard expressed by several of my colleagues in the fire service.

Role of Public and Private Sectors

In many discussions about hazardous materials, a popular topic is the appropriate roles of the public and private sectors. There are usually several points of view put forth, depending on which sector

the speaker represents. However, there is one point on which everyone can agree: a lack of understanding of what are the appropriate roles. This provides the opportunity for errors of omission, confusion, and perhaps even confrontation.

There is a tendency on the part of many people to only consider these roles in terms of an emergency situation and then to think in terms of whose authority is final. I suggest that each group has a role to play long before the emergency occurs, and, if that role is properly played, the question of authority in an emergency will become much less important.

The preemergency role is primarily one of communication. All too often public and private officials become so involved in the day-to-day administration of their jobs that good lines of communication fail to be developed. When this occurs, it should come as no surprise that communication breaks down during an emergency incident.

How can good communications be achieved? There are many ways to improve lines of communication that will not only produce useful products but also will help to build the level of mutual trust needed to work together at an emergency.

Industry must encourage, and public safety officials must aggressively pursue, joint preemergency communications with the handlers of hazardous materials in their community. Joint planning and training sessions are probably the logical places to begin.

There is no mystery about these methods; they simply involve commitment and hard work. They include joint emergency planning for incidents, joint training exercises to assure that the plans will work, and making sure that each sector understands the problems, fears, and responsibilities of the other.

Industry must recognize its responsibility to public safety. The fact is that many materials are hazardous, they are needed, and they are being transported through communities that are poorly trained and ill-equipped to deal with an accident. Although the local public safety official may not be well equipped, he or she is still responsible to the community. Private industry must take a strong leadership role in improving this situation. One way is to support in every way possible the education and training of public safety personnel in the communities in which they do business, or through which their products may pass.

I believe private industry has some very definite roles during a hazardous material emergency. It represents an immense resource that in the past has been underused for many reasons, not the least of which is the attitude of fire departments toward their contribution. Private industry's day-to-day involvement with hazardous materials has resulted in their becoming intimately familiar with specific hazards, precautions, procedures, equipment, and materials associated with each chemical. It also necessitates that they have an inventory of special materials and equipment that they are required to develop, process, store, or transport the chemical. They must also maintain a cadre of personnel knowledgeable of the hazards and precautions and trained in the use of special equipment and materials. This comprises a resource of tremendous knowledge, expertise, and physical materials that can be called on for assistance.

Because industry can be of vital assistance to emergency response organizations, it is important that an atmosphere be created in which industry is willing to assist. Therefore, I strongly support the passage of a good samaritan bill to protect qualified industry personnel from liability. How-

ever, I suggest that it should not be a blanket under which unqualified persons can hide. I suggest that such legislation authorize protection only for those persons who have demonstrated competence.

It must be remembered that private industry's day-to-day involvement with hazardous materials is under the ideal, controlled conditions of the normal work environment, not that of an emergency scene. While larger companies may have an emergency response team, many do not. Those who do not should not be expected to perform tasks that differ from their normal job under the pressures experienced at an emergency scene. During the emergency their role should be one of advice and support. When conditions have been stabilized and the stresses relieved, they should be expected to perform tasks similar to their normal jobs that may be associated with product control, transfer or clean up, and do so in cooperation with the public safety agency in charge at the scene.

The role of the public sector is one of providing for the public safety. That translates into intelligent regulation and response to emergencies. In the area of emergency response, some agencies play a supportive and advisory role. One public safety agency must be given the responsibility and authority to assume command of the incident. Which agency that is will vary from jurisdiction to jurisdiction. The most important thing is that one agency be clearly designated before the incident occurs and that decision be clearly communicated to all parties involved. In those states or cities that have adopted the Uniform Fire Code (unless locally amended) that agency is the fire department. Among other things, the Uniform Fire Code specifies that the fire chief is responsible for the prevention of fires, the extinguishment of dangerous or hazardous fires, and the storage, use, and handling of hazardous materials. It also states that the fire chief shall have the power and authority to direct such operations as may be necessary to extinguish or control any fire, perform any rescue operation, investigate the existence of suspected or reported fires, gas leaks, or other hazardous conditions.

Planning

Planning has but one goal: to increase effectiveness during an emergency. To increase that effectiveness, we must anticipate potential problems, their possible effect, and develop solutions prior to their occurrence. When done well, planning is hard work. It takes time. It requires commitment.

The vast majority of hazardous materials incidents is of a minor nature, perhaps even routine. They can usually be handled by the people and equipment at hand. But even minor incidents may become the major incident we all fear, and that major incident can tax resources to the limit, or beyond, especially if proper planning has not been done ahead of time. There are all too numerous examples of bad decisions based on inaccurate or inadequate information--information that planning may have provided.

In order to prepare sound emergency plans for a hazardous materials incident, public safety officials must know what materials are passing through their jurisdiction. Anyone who has made a serious attempt to find out what materials are transported through their area knows it is a very difficult task. One of the reasons it is so difficult is a frequent unwillingness on the part of industry to make such information available to public safety officials.

Several reasons are offered for this reluctance. Some consider the data confidential business infor-

mation and fear that their competitors will discover what they are transporting or with whom they are doing business. Others claim a fear that the information may fall into the hands of radicals who may commit sabotage.

The reaction on the part of some public safety officials is to become suspicious of the reasons offered. Whether that suspicion is justified is not the point. It exists. And just as importantly, the lack of such information prevents public safety officials from making good decisions about emergency planning. You just do not make good decisions without good information.

The reluctance to make this type of data available to emergency planners must be overcome, it is hoped, by building trust and confidence between industry and public safety officials. But it must be overcome.

Knowing what hazardous materials are being transported through a particular jurisdiction does not solve all problems. Another area where much effort is needed is in the development of sound risk analysis procedures that can be used at the local level. Public officials and the public in general must recognize the need for accepting a certain level of risk. I believe, for the most part, they do. The question that is the most difficult to answer is what is an acceptable level of risk, considering such things as population distribution, transportation route alternatives, public safety resources, and similar items. I believe that if risk analysis procedures are developed that public safety officials can trust, they will be used to make far more intelligent decisions on a broad range of hazardous materials issues.

An additional area in which much better information is needed to anticipate problems relates to the behavior of hazardous materials under emergency conditions. In many cases, these data are available, and the technology is available to deliver the data; what is lacking is commitment.

Recently, the Seattle Fire Department tried to find out what the result would be if a container of fireworks was exposed to a large fire. We contacted manufacturers, shippers, chemists, and others. The guesses we heard ranged from a fairly spectacular fireworks display to a major explosion. It occurred to me that it was rather curious that I could go home, turn on my television set, and see pictures of Saturn transmitted more than a billion miles through space, but I could not find out if a container of fireworks could burn or explode.

Fortunately, our question about fireworks did not result during an emergency. The emergency responder must have information immediately available that will provide guidance on how the involved materials may react--not under normal or laboratory conditions--but under emergency conditions. That emergency response data should give advice on what actions can be taken to protect large numbers of people when evacuation is not possible. I strongly believe that a major national effort should be made to develop a data base that can provide that information and that we strive for improved methods to deliver such data to emergency planners and emergency responders.

Response

In response to any hazardous materials emergency, there are a few basic principles that must be kept clearly in mind. First, the primary objective is to solve the problem with the least amount of damage and injury to anyone. While time may be an important factor, it usually should not be the paramount one. In the rush to get something done quickly,

terrible mistakes can be made. A second point to remember is that a serious hazardous materials incident will probably be so complex that no single individual or organization will have all the information and answers. To resolve these incidents, it truly takes "emergency management". And that means a management-team approach has the best chance of success.

Unfortunately, there are several factors that may make such an approach at least difficult, perhaps impossible. One is a lack of trust between the various groups involved in the competence of each other. Another is fear of legal liability for what has occurred or what may occur during the emergency. Another is the "turf" problem.

That leads to a third point to keep in mind, the principle of unity of command--i.e., the idea that one person must be in charge and must accept responsibility for what occurs. There is no question in my mind that unity of command is an essential ingredient in successful emergency management. I also believe that command must be given to that person who has the legal responsibility for the public safety of the citizens in that area. In any state that has adopted the Uniform Fire Code, the person who has that responsibility is the fire chief.

Aside from any legal responsibility, there are several practical reasons that the fire chief is the logical choice. It will probably be the fire department that is the first emergency response force to arrive on the scene. The fire department will likely have to deal with the emergency for some time before any industry representatives or government agencies arrive on the scene, and there is an excellent chance that many critical decisions will be made prior to the arrival of other assistance.

A point that is often raised is that the fire chief may not be the most knowledgeable person present on the nature of the material involved or the technical procedures needed to solve the problem. That is a good point, and it is often true. But you do not solve that problem by saying that someone from another agency or industry is going to come into a jurisdiction and assume command. You solve the problem by training commanding officers to properly manage an emergency incident. Unity of command does not mean the adoption of a dictatorial position. Commanding officers must be trained to seek the advice and counsel of whatever expertise is available to them. They must be trained to establish a command post, to gather advisors about them, to weigh and consider that advice, and to act on it. At the same time, advisors must realize that the commanding officer has the responsibility for public safety and, therefore, the actions to be taken.

Communication

There are, of course, two types of communication that are important. Those lines of communication that should exist between industry and public safety officials have been addressed elsewhere in this paper.

The second type of communication I would like to comment on relates to on-scene emergency communication, both face-to-face verbal communication and the transmission of communication over distance. It is essential that a central command post be established at the emergency scene and that the commanding officer and the management team operate from that command post. Representatives of industry and other public agencies should report to the command post, identify themselves, and explain their function, responsibility, resources, and technical support capability. Whenever possible, they should remain

in and work from the command post. If they have to leave, they should remain in contact with the command post.

This brings us to an old problem. Today emergency management relies heavily on radio communication. The problem arises when all of the emergency responses transmit and receive on different frequencies. This is a problem that does not need to exist. Advances in electronic technology have resulted in synthesized transmitters and receivers capable of operating on up to 9500 frequencies, all in one radio. Less expensive synthesized radios, capable of operating on 30 or more channels, are also available. In light of these advances, command posts equipped with properly selected radios would have the capability to communicate with all the response agencies in their area. What is obviously needed are planning and money.

There is another area of communication that is more difficult to deal with--that is, communication with the public, including both releasing information to the media and public warning communication. It seems to me that press and media relations are very important parts of the emergency scene management, both from a philosophic and practical point of view. I believe that the public has a right to know what is happening in their community and that accurate and responsible reporting of an incident can meet that need. In addition, a lack of accurate information can lead to needless public distrust and perhaps even worse.

It has been my experience that, if the media are provided with accurate and up-to-date information, they will usually act in a responsible manner. If you try to avoid providing information, they will report on the incident anyway, with whatever "facts" they have or imagine to be true. So the choice is not whether the incident will be reported, but will it be reported in an accurate and responsible way.

I suggest that during the emergency, industry and public officials work together to provide accurate information to the press by means of joint statements and press releases. It is extremely important that conflicting information is not released to the media. Those people responsible for press statements should be at the scene and not try to do the job from an office telephone 50 miles away.

A major hazardous materials incident in a metropolitan area may require the warning of thousands of people. Evacuation will certainly be difficult, perhaps impractical, or even impossible. In spite of these facts, in order for a major life loss to be avoided, people must be warned to take some action to avoid injury (i.e., moving upward or downward in buildings, closing openings into buildings, securing air handling systems, etc.). At present there is no practical way of giving such public warning.

Broadcast media will reach those who happen to be listening or watching. Police may be able to warn those on the streets. But, despite our best effort, many will not hear the warning.

Perhaps the answer lies in the installation of warning devices in major occupancies that could be activated by authorities on need, either on an all-call or selective basis. Whatever the answer, the whole issue of public warning and avoidance measures is one that needs serious consideration and planning.

Training

It should be obvious that many of the problems involving hazardous materials safety are the result of poor and inadequate training. Most of the people involved with response to a hazardous materials incident will have little or no training and prob-

ably less experience. What people do not understand they will likely be afraid of, and frightened people make mistakes.

Today, there are quite a number of experts who offer training programs in managing hazardous materials emergencies. Most of them are of little value; some may be imparting useless or inaccurate information. In my view, the last thing we need is a government study of whether or not these programs are adequate.

What is needed is a carefully selected group to determine what the needs are to deal with a hazardous materials incident. Then we need to set specific objectives for that training and to get about the business of designing training courses that meet the objectives.

I suggest that we do just that, by using the fire service and the U.S. Fire Administration, with assistance from DOT and industry. Until we have clearly stated what the student needs to know, you can not expect the instructor to teach it or the student to learn it.

A major factor to consider in any emergency response training program is skills degradation (skill loss that results when specific tasks are performed infrequently) and the constant need for retraining.

Training is expensive in terms of time, money, and staff. In any given city, hazardous materials incidents do not occur every day. Therefore, it seems to me that the best choice is to train specialized units and make them available on a regional basis. It just does not make sense for emergency response forces to duplicate each other's efforts when it is not necessary. Fire chiefs must overcome their reluctance to accept assistance outside their own department and must begin to develop a regional approach to solving their problems. To do otherwise is an inexcusable waste of public funds.

Like the field of medicine, the fire service has need of the general practitioner, but we also have need of the specialist. It is hoped that the fire service is not so bound in tradition and backward thinking that it will fail to recognize the fact.

Public Involvement

There is room for improvement in a number of areas that relate to public involvement in the hazardous materials issue. They include a better understanding of the term "hazardous materials" and what role hazardous materials play in our daily lives. They need a better understanding that a certain level of risk must be accepted, and the process used to determine what that level should be must be open to public examination. However, those are topics for another paper--our concern here is the public's involvement as it relates to emergency response.

From that standpoint it seems that one of the central issues is how to educate the public to respond correctly during an emergency. Given the prevailing attitude that many people have--"It probably won't happen anyway, so why should I worry about it"--I have some doubts that a massive public education effort would be very productive. One possible effort that might produce some results would be to include some hazardous materials education as part of high school driver training programs (how to recognize a placarded vehicle, what to do in a hazardous materials accident, etc.). However, for the most part, whether or not the public responds correctly to a hazardous materials incident will depend primarily on how well public safety officials have done their planning job.

I think a good deal of work needs to be done with regard to what avoidance measures may be taken if

evacuation is not possible. If guidelines could be developed that would provide such information, they would be of great assistance to emergency response forces. This would be particularly true for metropolitan areas when vapor clouds are released in an accident. It may just not be possible to move large numbers out of the way in time.

It might also be useful to begin a public education effort to provide information on what to do if one becomes involved in a hazardous materials incident and to discourage curiosity seekers. As previously stated, such a program effort might produce few results.

AS VIEWED BY A CARRIER

The era of the 1970s introduced society to a number of new catastrophic potentials involving accidents during the transportation of hazardous materials. The public's concern and interest in such hazards were greatly accentuated by similar threats being discovered as a result of environmental pollution and dump sites for hazardous wastes that affected the health of entire communities. In response to this public concern, the actions taken by Congress in establishing new laws and the resulting actions on the part of regulatory agencies have been of questionable success in bringing about improved conditions or in removing the perceived threats involved in these situations. The preoccupation on the part of the government and regulatory agencies with laws and regulations being the solution to these problems obviously leaves much to be desired. When the lack of significant real improvements is realized, it certainly brings into question the competence of such agencies to truly improve the safety of our society. These proven threats to society will not be eliminated by legislative flurries or increased regulations, unless real problems are identified and their true causes are addressed.

These last 10 years have shown that those in a position to bring about improvements have become involved with the creation of monolithic legislation, regulations, and public relations activities that have not contributed significantly to correcting identified problems or bringing about needed improvements. During the 1980s such chaos must be eliminated and a coordinated policy and program established to ensure proper solutions and competent actions. The multitude of laws and regulations with numbers of narrow viewpoints by numerous agencies has resulted in counterproductive results, increased conflicts, jealousies, and neglect, particularly of the most critical aspect of the entire field of hazardous material emergencies--that is, proper emergency response.

Transportation incidents have posed a major publicly perceived threat to the safety and health of society. Unfortunately, such a perceived threat has been exaggerated and distorted by the media. However, real danger potentials do exist and must be addressed in a much more competent, professional manner by responsible parties if improved safety is to be achieved.

There are five major aspects of transportation emergency response activities that should be considered in greater detail.

Role of Public and Private Sectors

A review of past experiences is necessary to understand the proper role of all parties involved in transportation emergencies. These emergency situations have been occurring for many years and have been handled adequately with little real harm or injury to persons or society. Both the private and

public sectors have responded in the past with remarkable competence and success. Utilities, railroads, and major industrial firms have always been organized and equipped to respond capably to restore services and their operations as promptly and safely as possible in all types of emergencies. Hazardous material incidents are unique types of incidents that occasionally occur and generally have been handled adequately by existing response actions; however, improvements are needed.

The possible unique complexities of hazardous material incidents put an unusual need on all parties involved in response actions to carefully coordinate activities to ensure that maximum use is made of all available knowledge, expertise, and experience. Proper decisionmaking in these incidents is critical. In a number of past incidents such coordination and knowledgeable decisionmaking were not accomplished and these became catastrophes with loss of life among the response personnel. "They should have known, but did not."

This lack of proper technical knowledge or control capabilities cannot be allowed to continue if society is to be protected. Such incidents present a mutual challenge to both public and private sectors to maximize the use of available expertise and to require close coordination and mutual cooperation in major emergency response actions to ensure success in limiting such complex threats to our society.

Planning Needs

Coordinated activities by various groups of individuals demand planning of some degree to permit success in achieving complex goals. Emergency responses to major hazardous material incidents during transportation and particularly railroad incidents with numbers of cars and various materials are certainly complex challenges to all response personnel.

The unique character of major hazardous material incidents during transportation presents the need for greatly improved planning by all involved parties. Planning forces parties to analyze possible situations, likely locations, potential materials, and expected complications that can be involved. This effort presents an ideal opportunity for all interested parties to get involved and learn more of the capabilities, problems, concerns, and needs of others before such incidents occur.

The existing expertise, knowledge, and experience in a community will be able to handle the vast majority of incidents likely to occur if they maximize these capabilities by good planning, involvement, and coordination. The emergency action plan is essential in these hazardous material incidents to identify limitations and needs, as well as capabilities and available expertise. Mutual aid arrangements must also be fully incorporated.

Hazardous material incidents present numerous hazard potentials not readily recognized by the majority of emergency service personnel. A good plan will maximize the use and availability of the community's personnel with the expertise and special knowledge or capabilities to the fullest.

These emergencies can involve hazards as diverse as ground-water pollution to violent rupture and rocketing of tank cars, exposure to poison or toxic gases, or injury from blasts and flying fragments. These hazards can cause injury at sizable distances from the actual site of the event and, consequently, demand a realistic decisionmaking priority system beyond usual emergency events.

Frequently, the best decision is to evacuate everyone from the immediate area and not permit response forces to fight fires or interfere with the

events. These decision criteria, policies, and guidelines are best achieved by advance planning, thorough cooperation of all involved parties, and complete analysis of possible situations and circumstances.

Response Coordinator (Who Is in Charge?)

Coordination and cooperation in emergency response activities to these incidents are particularly critical in view of the possible far-reaching actions and threats to personnel over large areas. The issue of "who is in charge" has the potential of jeopardizing the success of any complex operation if those with certain authorities do not recognize the magnitude of the challenge to make proper decisions on the scene promptly. This decisionmaking ability does not necessarily come with the title or traditional authority for "protecting the public". Often the public is not involved, or should not be, except for prompt evacuation from a danger zone.

Incidents on public highways or streets can pose some threat to the public and, consequently, are more subject to the more traditional safety authorities. Incidents that occur in rural areas, on large industrial plant property, or on railroad rights-of-way, with little or no public exposure, emphasize the duty and rights of private parties to control response actions in a responsible manner and in cooperation and coordination with local safety authorities.

Several recent events involving the question of authority of federal and local officials and their responsibilities in emergency response actions taken are under review in the courts in the United States and Canada. These legal conflicts will continue to occur until clear lines of authority, responsibility, and liability for actions taken are resolved in the court. In spite of the legal questions, it is obvious that the magnitude of the challenge, the complexities of the decisions, and the needed scope of knowledge demand on-scene decisionmaking by the most competent persons available. A coordinated, joint effort by all parties involved is essential. This problem poses an immediate challenge for all parties to develop a workable, mutual response and control function that will satisfy the needs of all parties and ensure proper decisionmaking on the scene.

Communication/Training Procedures

Prompt communication between local on-scene personnel and those with knowledge and expertise is essential if hazardous material response operations are to be conducted with maximum success and safety. This need for immediate communication must be addressed at the federal and state levels to provide authoritative resources and guidance with consistency. Immediate, proper on-scene decisionmaking is critical and emphasizes the serious need for better training of response personnel along with greatly improved communication abilities.

The major obstacles to improved training of response personnel have been the lack of a clear national program or clear responsibility of any agency to accomplish such goals. The frequent changes in regulations, placarding, hazard classification along with alternate versions of such understanding, or essential competence needed by the hundreds of thousands of emergency response personnel in the United States confuse field personnel and destroy existing foundations of knowledge essential in decisionmaking. Such unnecessary changes damage all past training efforts, materials, and programs that have been built on previous identification and

response systems. These frequent, unnecessary changes in guidelines also frustrate those involved in training and diminish their interest or enthusiasm for doing such vital training. Such waffling must be eliminated during the 1980s if real progress is to be made in emergency response training for hazardous material incidents.

Public Involvement

Public concern in regard to the perceived threat to their safety and welfare, posed by hazardous material incidents, has been the basis and justification used repeatedly by the Congress for new transportation laws and by the MTB for increased and revised regulations. When these actions are carefully analyzed and their effects or results are studied, they do not address the real factors or valid causes of the incidents. This is a misapplication of effort, is grossly misleading, if not incompetent, and diminishes real efforts being made to correct or answer valid needs.

A review of regulatory actions taken by the MTB and its predecessors over the last 12 years is disheartening. Obviously, a lack of perception or understanding has been involved. Progress in improving experience is not evident; however, the rampant growth of regulations and the confusion of requirements are overwhelming. The public concern must be put in proper perspective and must not be used as justification for needless actions for questionable purposes or reasons.

The importance of valid public concern and involvement makes it imperative that the public be kept honestly informed and that the real hazards or exposures are explained. The misuse of their real concerns and valid interest must not continue to be used to justify needless or unnecessary regulatory actions.

The media also have a clear duty to improve the integrity of their news coverage and involved parties have an equally clear duty to ensure that the public is given maximum protection and correct information as to these events and their hazard potentials.

AS VIEWED BY A MANUFACTURER

The role of the chemical manufacturer is to provide advice and/or assistance to the public emergency forces, the carrier, and others responding to an emergency incident involving hazardous materials. This calls for a commitment by the company, the establishment of an emergency response system (ERS), and the provision of needed people and tools.

Commitment

There must be a commitment to be responsible for the products manufactured from laboratory to final disposition and to make available all the resources the company has in the event of an incident involving their products.

Emergency Response System

The purposes of an ERS are

1. To advise or assist in handling transportation emergencies so as to minimize their effects, and
2. To help prevent incidents through determining causes and initiating corrective action.

The company should appoint an ERS manager to be responsible for formulating plans to meet the needs and requirements for the materials to be shipped by

the company. For ensuring that the incidents are properly handled and that the system meets the company's expectations and fulfills the company's policy, the ERS manager should be an experienced person who is capable of managing the ERS and of making sound judgments under emergency conditions. His or her primary consideration should be to assure that each incident is handled safely so as to minimize the impact on people, environment, and property.

People

The expertise of many people is often needed to handle hazardous materials incidents. In some incidents medical personnel will need to be involved to respond to inquiries concerning exposure or injuries involving products. Where possible, contact should be made between the company's medical personnel and the on-scene medical personnel to enable rapid transmission of medical advice and to minimize the possibilities of misunderstanding. Medical personnel must be available on a 24-h basis. Chemical data files on toxicology, exposure, and inhalation studies need to be available to the doctor making the response.

Employees processing special product knowledge--for example, trained production or trained technical personnel--should be identified and trained in responding to the product-related aspects of an emergency. They should also be familiar with the transportation equipment involved and handling emergencies in public areas. These persons should have preplanned emergency response procedures for handling and safely disposing of their products. Whether to provide telephone advice only or on-scene assistance are decisions that should be made jointly by the emergency response manager and the knowledgeable contact.

If the decision is reached to dispatch assistance to the emergency scene, then the team concept should be considered. An emergency response team may consist of two or more persons. Team size and composition will depend on the types of problems likely to be encountered in each specific incident. The team's primary responsibility is to advise the emergency personnel involved in handling the incident rather than to handle the emergency operations. Various types of expertise may be required, such as product, safe product-handling methods, transportation equipment and operations, spill control, analysis, and health and environmental effects. Public relations personnel should be part of the team for all major incidents and those incidents that are likely to receive media coverage. The public relations person should be briefed on the materials involved and be kept informed of events at the scene. A coordinated public relations effort between the parties involved is the objective, so it is very important that the on-scene public relations person be kept informed in order to maintain a credible contact with the media.

Team members should be thoroughly trained in the special areas likely to be encountered at an incident. Training should include safe methods of field repair and product transfer, use of various personal protective equipment, and methods for performing emergency operations in public areas.

Technical support in other areas may be provided by a variety of other functions: analytical, distribution, environmental, industrial hygiene, legal, reactive chemicals, safety, toxicology, waste control, and others. The support of these various disciplines is a very important part of the total commitment of a company to product stewardship.

Tools

An emergency response system needs some tools to put

into the hands of the emergency response coordinator, knowledgeable contact, and others involved in the response effort. Most important is the emergency response phone.

Each manufacturer-processor and/or shipping point should establish and maintain a 24-h designated emergency response telephone. The size and/or complexity of the business will play a major role in determining if the phone will be manned by full-time employees or an answering service. The emergency response phone personnel should be trained in handling emergency calls. They must remain calm and obtain as much key information on the incident as possible. They must then contact appropriate personnel quickly and relay this information to them for response. An emergency response phone has four basic responsibilities:

1. To obtain full information on each emergency during the initial call,
2. To provide immediate response information from data sheets prepared for this purpose,
3. To relay full information to the emergency response coordinator or others who may be involved, and
4. To avoid statements or discussions on liability or responsibility.

Emergency response information (ERI) sheets should be established and maintained. These ERI sheets should contain the following for each product manufactured and/or shipped: physical properties, hazardous material classification, primary and other hazards, what to do for spill or leak, fire, and contact or exposure (first aid).

Medical personnel, knowledgeable contact, and other technically trained people may understand the technical language, but the public emergency people do not. Response statements should be prepared that cover the above in language that is easily understood by those responding to an emergency.

Other data or call lists may be required and will vary depending on the size and complexity of the company's operation. Worthy of consideration are aircraft chartering services, travel agencies, legal contact, insurance contacts, travel money, and other factors.

Each person who has been designated as an emergency response team member should have a personal safety kit. In addition, repair kits of various types, patching kits, and any special kits, i.e., chlorine repair kits or analytical kits, may be required. These should be assembled and kept in a secure location for ready access by the team members. All kits, regardless of purpose, should be sized so that they can be transported aboard aircraft.

Operations

Operations of an emergency response system will vary due to the internal organization and management of the system, but, regardless, all systems are activated by an initial phone call.

The assistance needed most often can be handled by a phone call, but there are times when sending people to the incident scene will be appropriate. When the team arrives on the scene, their first act should be to locate the person in charge, and to make themselves available to advise in their areas of expertise. The manufacturer and/or shipper are present in an advisory capacity, and this advice may be accepted or rejected by the person(s) in charge of the incident.

There are some products that, due to their physical properties, i.e., chlorine, vinyl chloride

monomer (VCM), and pesticides, require some special attention on the part of the manufacturers. In the case of these, three mutual assistance programs have been established. The Chlorine Institute oversees the Chlorep program of 67 chlorine safety teams that are available to respond to any type of incident involving chlorine. The Chlorep Team closest to the incident makes the initial response. The VCM producers have a mutual assistance program whereby each producer is available to assist with the handling of a VCM transportation incident in their area.

The National Agricultural Chemicals Association (NACA) has established the Pesticide Safety Team Network (PSTN). The country is divided into 10 areas with a pesticide manufacturer representative serving as the PSTN coordinator in each area. In addition, each area has one or more safety teams. Each team has a pre-designated captain. The team members are pre-assigned but may be different depending on the type of incident involved. The PSTN may send members to an incident scene through either of two methods: at the request of the manufacturer, or by the PSTN area coordinator if the gravity of the incident warrants and the manufacturer cannot be identified. All of these mutual assistance systems are activated through CHEMTREC.

Being prepared to provide advice or assistance is only part of an emergency response system. Each incident must be evaluated as to cause, effects, and handling procedures. These data are then used in the planning and execution of preventative programs and training programs.

Preventative activities are a major part of an emergency response system. These activities may include, but are not limited to, the following:

1. Transportation equipment specifications;
2. Transportation equipment inspections;
3. Proper filling of drums;
4. Loading patterns and techniques;
5. Blocking and bracing;
6. Appropriate placards, labels, or markings; and
7. Final gage inspections for proper shipping papers.

With any of these, there is the potential cause of an emergency incident or the ingredients for improper handling of an incident.

Preventative programs begin with the purchasing of packaging--e.g., cans, drums, or tank cars. Products must be packaged in the right container to survive the transportation environment they are likely to encounter. Loading patterns, tightness of the load, blocking, and bracing require the establishment of standards and the inspection necessary to assure compliance with the standards--assurance that all employees who need to know the various regulations receive this training and that compliance with these regulations is part of their job responsibilities.

Not all of the attention in the area of emergency response can be directed inward. There is the need to become involved with the planning and training of the public safety and emergency programs. Of the nearly 30 000 public fire-fighting forces, only a small number are full-time, professionally staffed units. The small fire companies are desperately in need of training in recognizing and identifying hazardous materials. Various association-sponsored training programs are available, but, without the involvement of the chemical manufacturer at these training sessions, the public emergency people are unaware of our concern.

The training program developed by the American Association of Railroads (AAR) and the Chemical Manufacturers Association (CMA) brings together the

railroad and chemical industries in a joint effort to provide the public emergency forces with an introductory program entitled "Recognizing and Identifying Hazardous Materials". There are currently more than 200 of these programs in circulation in the continental United States. An organization that combines railroad and chemical representatives is making this program available to public emergency forces, public agencies, civic organizations, or others. A prime contact has been designated in each of the 48 states and may be reached either through AAR or CMA.

Emergency response in the chemical industry is a multifaceted program. It requires the commitment of the company's management and is an integral part of the company's safety philosophy and product stewardship programs. There must be the willingness to make available all the resources of the company to a single event that may be many miles away from these resources. And there must be the dedication of those involved every day to assure that training, inspection, and planning are the best. Finally, to work with the transportation companies and the public emergency and safety organizations and to make sure that when an incident does happen the people responding are trained to handle the incident in a manner that minimizes public and environmental exposure ensure everyone's safety and are achieved in the spirit of cooperativeness.

Civil Liability and Social Regulation

Stanley Hoffman

Both regulation and the criminal law constitute the direct exercise of governmental power to coerce conduct perceived to be socially desirable or to prohibit or restrict conduct perceived to be socially undesirable. Historically, and for constitutional reasons, the operation of the criminal law system depends on the separate exercise of legislative, judicial, and executive powers. Regulation, however, concentrates power in a single, specialized body endowed with legislative authority to define the specific content of required or restricted conduct, executive authority to investigate and enforce compliance with regulatory standards, and, usually in connection with economic regulation, jurisdiction to adjudicate disputes between private parties.

It has been asserted, therefore, that regulation is essentially a procedural mechanism which, in itself, does not establish or create substantive societal controls. Thus, in 1936 the late Justice Harlan F. Stone (1) expressed the view that regulation merely substitutes

new methods of control...for the controls traditionally exercised by courts--a substitution made necessary, not by want of an applicable law, but because the ever expanding activities of government in dealing with the complexities of modern life had made indispensable the adoption of procedures more expeditious and better guided by specialized experience than any which the courts had provided.

Justice Stone's failure to recognize that regulation could be employed not merely to substitute for otherwise "applicable law", but also to supplement and modify such law, may reflect the limited perception of an era not yet burdened by extensive social