

in the regulations, rather than detailed design standards, could simplify and reduce the 400 pages in the Code that cover container requirements. Performance standards prescribe what a container must be capable of doing after it is built. Design standards specify how a container must be built. The 1969 Airlie House Conference also stated that a performance standard approach to hazardous materials regulation should be used, where practical, in the regulations. The United Nations Committee has also recommended the use of performance standards over design standards. Another significant benefit of performance standards would be to encourage technological innovation and increased productivity. In the long run, this would mean increased cost-effectiveness.

The current need for a procedure to acquire an exemption to the design standards, requiring a substantial amount of MTB staff time, would be considerably reduced if performance specifications were used. It is estimated that 1200 exemption applications are filed annually with MTB. The existing design standards should not be thrown out, but should be kept as references in 49 CFR.

It was also pointed out that information is duplicated in 49 CFR and could be eliminated.

Recommendations

1. MTB should develop an "acceptable practices guide" for use by both regulatory inspectors and enforcement agencies that will also permit industry to comply with the regulations from a common set of lay terminology and understanding.

2. The use of jargon and "legalese" should be eliminated in favor of more common words with understood meanings.

3. Conversion to performance standards, where possible, should occur to allow for more innovation and to reduce the quantity of the text of 49 CFR.

4. The index to the Code should be improved to allow for quick reference to specific requirements.

5. The regulations should be rewritten for users and not lawyers. 49 CFR can and should be simplified. Credit language has been simplified in many states as a result of local laws. The life insurance industry is making an effort to simplify the language in insurance policies, and DOT must do the same for these regulations.

Workshop on Training

G.R. Choppin

In Transportation Research Circular 219 (July 1980), the 10 most critical issues in hazardous materials transportation were tabulated. Issue 4 was defined as the "training for all persons involved in the transportation of hazardous materials, including shippers, carriers, and emergency response personnel". It was noted that more than 2 million people require training in hazardous materials transportation and that the existing training opportunities were quite inadequate to meet this demand. It was within the context of these concerns that the panel discussions on training were held at the 1981 strategies conference.

In the position papers on training by Arthur Bensmiller, F.H. Halvorsen, and John Granito (see Appendix 2) the principal issues in training were defined. In brief, these involved questions of who should be trained, the goals and objectives for

training of the various groups, and evaluations of the training programs and of the personnel who participate in the training.

Different groups constituted the panels on each day. The meeting of the first panel group was opened by Bensmiller with a statement of purpose for the panel discussion. This was defined as the development of recommendations on training for a comprehensive national strategy to provide safe and efficient transportation of hazardous materials and waste in the 1980s. Bensmiller proposed that the panel develop a factual statement of the problem to be addressed, followed by discussion of the factors bearing on this problem and possible solutions to the problem. After a discussion of each solution the panel would be asked to recommend the best possible solution. The strategies that might be useful for implementing such a "best possible solution" would be evolved and form part of the solution statement.

The panel members reviewed the issues defined in the position papers and proposed a number of statements of the most serious training problems regarding time and priority. There was strong consensus on this and several problem statements evolved. These are discussed briefly below.

PROBLEM STATEMENT I

Not all persons involved in overall transportation and incidence (e.g., packaging, labeling, shipping, receiving, incident response, etc.) of hazardous materials receive proper training to fulfill their legal and moral obligations.

The panel unanimously endorsed this statement of the major concern in training. The factors identified as having significant bearing on this problem were as follows:

1. The number and types of people to be trained,
2. The technical background of the people who must understand and apply regulations,
3. The complexity of the regulations,
4. The fragmentation of responsibility and of training direction among different federal and state agencies,
5. The lack of defined objectives and standards in training programs,
6. The lack of a means of measuring the effectiveness of the training programs, and
7. Funding for the training programs.

Among the various groups that require training of various extent and type, the following were identified by the panel:

1. Personnel involved in establishing regulations and enforcing them;
2. Shippers whose responsibility involved the classification, packaging, marking, labeling, and certification of the hazardous material to be transported, as well as compliance with applicable rules and regulations for preparation of the hazardous material for shipment;
3. Carrier personnel who have the responsibility for accepting, handling, or transporting hazardous materials in commerce;
4. Personnel who receive the materials from the carriers and must handle them in their dissemination to users; and
5. Emergency-response personnel whose responsibility is to respond to an incident involving hazardous materials.

All of these must be trained in the proper function-

ing of their jobs and in the regulations insofar as they affect these jobs.

There are statements in Transportation Research Circular 219 from several agencies in which non-compliance is cited as due, primarily, to ignorance of regulations. The MTB, the U.S. Coast Guard, the Federal Highway Administration, and the Federal Aviation Administration are all quoted as stating that the primary reason for noncompliance is a lack of knowledge and training of carriers and shippers involved in the transportation of hazardous waste materials (1). Similarly, the training of response personnel has been judged to be inadequate (2). Particularly in the case of emergency-response personnel, the training should provide repeated exposure of each person to "war-game" type maneuvers. These simulated exercises or drills should be performed on the basis of local knowledge of where incidents are likely to occur. They should include training in the equipment and in the resources for the most likely types of incidents and the most likely hazardous materials that might be released in such incidents in a particular locale.

Solution to Problem I

The complex set of problems related to the training of persons involved in the various aspects of transporting hazardous materials and the critical importance of such training is recognized. A systems solution is recommended that would involve the identification of a single agency or coordinating office to work with various other appropriate agencies or organizations. This coordinating office would be invested with the authority to develop standardized curricula for training programs. Instructor training and certification would be a major priority for this office. It is important that industry, emergency groups, etc., be involved in the formulation of these training standards and requirements. Selection and certification standards and procedures should be developed for the various groups to be trained. The training and certification program must be funded to an extent adequate to achieve its goals.

The panel agreed that the most important element in implementing this solution is the control of the training programs under a single coordinating office. Further strategy items agreed on by the panel were as follows:

1. The distribution of training funds should be the responsibility of the coordinating agency or office.
2. In the establishment of these training objectives, current federal, state, and industrial programs should be identified and evaluated.
3. The specific groups to be trained should be identified and realistic goals and objectives for their training developed. Recognizing the large number of personnel to be trained, the coordinating agency should develop a priority ranking for the groups to be trained within the limitations of the funding and the number of training instructors available.
4. An "out-reach" system should be developed to disseminate the training programs at the state and local levels.
5. An advisory committee to the coordinating office drawn from other federal and state agencies, industry, professional organizations, etc., should be established to aid in the development of the training objectives and the implementation of the strategy for training.

Problem Statement II

There is a lack of nationwide minimum training criteria.

On the second day of the conference, a new group was convened to which no summary was given of the panel discussions and decisions from the preceding day. The new panel group defined the major problem in training in terms of a lack of training criteria. The factors that the second panel agreed were relevant to the stated problem included the following.

1. A variety of responses to training are required but no common base exists. The result is a number of diverse programs at present that are of uneven quality.
2. The magnitude of the training required in terms of personnel, funding, etc., is formidable.
3. The diversity of the groups requiring training is great.
4. No single agency is responsible to set standards and to approve different training programs.
5. The complexity and rapidly changing nature of the regulations create additional difficulties in training personnel to be knowledgeable of those regulations.
6. Training programs need to be oriented to the specific needs of each group.
7. There is at present no systematic definition of the training objectives for the various groups requiring training.
8. Training programs must be cost effective. It is not feasible to consider training the large number of people necessary at a single or even at several national centers. Problems of time, expense, etc., prohibit this. A more reasonable program would seem to be one in which a national center concentrates on teaching instructors who would then be available to provide training at state and local sites. This has been recognized and strongly recommended by a rather thorough study of the problems involved in hazardous substance accident control (2).
9. The time available for employees to spend in a training program is often rather limited.
10. An adequate number of well-trained instructor personnel are needed for training programs for the many varied groups requiring training.
11. Management must be convinced of the need for proper training of the personnel under their supervision.
12. There is no listing of the jobs related to the transportation of hazardous materials that may provide a basis for ascertaining the various groups requiring different types of training.
13. There often is a lack of proper knowledge and understanding of the many complex regulations and their implications by agency personnel, regulators, enforcers, etc.

Many of these factors are duplications of those defined by the first panel group. This only serves to reinforce the priority of these factors in the major issue, which is inadequate training for all personnel involved in the transportation of hazardous materials and in the response to incidents involving such materials.

Solution to Problem II

The panel recommends the designation of DOT as the lead agency to develop a nationwide master program for training associated with transportation of hazardous materials for all personnel involved in pub-

lic and private organizations and for all phases of transportation of hazardous materials.

Of the various agencies that might be designated as the coordinating office or lead agency, DOT was chosen since it was designated in the Hazardous Materials Transportation Act as the agency to establish and maintain a central reporting system and data center capable of furnishing technical advice to law enforcement and fire-fighting personnel to aid them in responding to emergencies that arise from transporting hazardous materials. That Act further specifies that advanced training of emergency response personnel should be considered an integral part of an adequate response system (3). Moreover, in the Hazardous Transportation Act, which was approved January 3, 1975, the DOT Secretary is authorized to establish criteria for handling hazardous materials. Among such criteria cited in the Act are a "minimum level of training and qualification for such personnel (see 49 U.S.C. 1801 et seq., P.L. 93-633, Jan. 3, 1975).

In the strategy discussion by the panel, there was strong agreement that successful implementation of this solution depends on the following:

1. Congressional designation of DOT as the lead agency that shall coordinate as appropriate with other involved federal agencies;
2. The establishment of a task force to include representatives from involved government, emergency services, and industries concerned with transportation of hazardous materials; and
3. Authorization of this task force to (a) be responsible for development of policy regarding training, (b) define the groups requiring training and the skills needed by each group, (c) promote recognition of the need for proper training of all groups, (d) establish criteria for training curricula, (e) examine the need for regional training networks, and (f) establish a priority scheme for training that considers the urgency of the problem in the various areas of the transportation systems.

The strong coincidence between the definition of the most urgent problem and the best solution by both panel groups emphasized that the highest priority should be given to the establishment of a lead agency to work with a coordinated advisory group in order to establish proper training criteria whereby training programs can be formulated and certified.

In the discussion and formulation of the next problem, the panel followed the definitions established in Halvorsen's position paper. Three classifications of training are specified: (a) preventive, which would emphasize training shippers, carriers, etc., in proper handling, labeling, packaging, etc., in order to minimize the possibility of an incident; (b) initial response in which personnel would be trained to respond immediately to an accident in order to minimize the problems created by the release of hazardous materials; and (c) reflective response in which personnel would be trained to remove the hazardous materials from the area of the accident and to restore that area to its previous condition with a minimum of continuing trauma. The panel felt that a top priority of the coordinating officer recommended in the previous problem solutions should be to give prompt attention to the initial response training program.

PROBLEM STATEMENT III

There is currently a critical need for training in initial response recognizing that training in prevention and in reflective response is more common and more effective at this time. Initial

response groups include fire services, law enforcement personnel, and emergency medical services.

The factors related to this problem were identified by the panel as follows.

1. There is no direct coordination for initial response forces at the local level.
2. There is a reluctance of the initial response forces to accept coordination.
3. The technical ability, education, experience, supervision, equipment, training abilities, etc., of local forces vary widely.
4. There are difficulties in offering training to initial response forces who may have a lack of aptitude or may not be available for training at the time it is offered. These problems can be particularly severe for volunteer groups.
5. There is no mandated training requirement for initial response forces.
6. There often are difficulties at the scene of an accident with the jurisdictional scope and priority of various groups.
7. The vehicle operators should be better prepared to meet their obligations under the law in an accident.
8. Standardization of contingency planning is required.
9. There is a lack of qualified instructors, funds, etc., for training emergency-response forces.
10. There is a lack of knowledge about the availability of such courses at the state and local level.

Solution to Problem III

This panel recommends that the coordinating national agency provide the states with a model program in initial response training through the national contingency plan. It was agreed that the formulation of a central coordinating office in DOT would provide the best strategy for the implementation of the solution of response forces. To further enhance the effort of improving the training and capability of the response forces, the panel recommended that the coordinating office in DOT should give priority to the following:

1. Identify and evaluate the present training courses in emergency response and publish lists of these;
2. Promote the development in each state of an agency to direct and to assess the initial response force capability and its performance and to keep records on the personnel trained for initial response;
3. Work with state, police, and fire service organizations to serve as a training delivery system for courses in emergency response;
4. Provide courses at the federal level to train and certify instructors of initial response courses at the state and local level; and
5. Assist the states in developing a regional inventory of equipment that might be shared in an incident and a mechanism for interfacing with and resolving jurisdictional difficulties in an accident.

REFERENCES

1. Noncompliance with Hazardous Materials Regulations. National Transportation Safety Board, NTSP-HZM-79-2, Aug. 3, 1979.
2. Hazardous Substance Highway Spill Study. California Highway Patrol, Sacramento.
3. Report by the Comptroller General: Programs for Insuring the Safe Transportation of Hazardous

Materials Need Improvement. U.S. General Accounting Office, Rept. CED81-5, Nov. 4, 1980.

Workshop on Emergency Response

R. Graziano

The Steering Committee for the National Strategies Conference identified emergency response as a critical issue facing the transportation industry and the public. The workshop on emergency response based its deliberations on the resource papers provided by three authors chosen for their expertise on the subject. The authors were Robert L. Hansen, Robert Mesler, and J.J. Driscoll--all of whom were present during the sessions (see Appendix 2).

The workshop participants represented government at the federal, state, and local levels; chemical and manufacturing industries; rail, highway, pipeline, and water transportation industries; and consultants. Two groups, meeting in separate all-day work sessions, developed their own agenda with respect to the discussion and identification of issues, solutions to problems, and strategy for implementation.

Each group concluded that planning, training, who is in charge, and funding were first-line problems that should be dealt with. The priorities given these items were similar between the two groups [see the table below (not all columns add to exact numbers due to participants not voting for all issues)]:

Priority Ranking

<u>Issue</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>
Planning	13	4	1	1	0	0	0	0
Training	1	7	8	2	1	2	0	0
Who's in charge	5	3	2	3	2	2	1	3
On-scene information	1	2	3	5	8	2	0	0
Funding	1	6	6	2	1	0	5	2
Evacuation	0	0	0	3	5	7	5	0
Liability	0	0	0	3	2	4	4	6
Emergency medical services	0	1	1	1	1	4	6	7

A general viewpoint expressed was that there are too many federal agencies involved in emergency-response activities and, therefore, no one has effective responsibility for this area. This issue received the most overriding attention. A recommendation was made by both groups that a single federal lead agency be appointed to coordinate emergency response activities.

Both groups reached consensus that planning was the number-one priority. The planning function must be coordinated by a single agency at the local, state, and federal levels of government. Producers, transporters, and responders should be an integral part of this planning effort.

Preparedness planning is essential if hazardous materials incidents in transportation are to be handled effectively.

Both groups believed that training was the second-highest priority. Hazardous materials incident response training needs to be conducted by using a program aimed at the various levels of responders' needs. (Since training was more fully covered in another workshop session, our discussion is limited on the subject.)

Who's in charge and who's the coordinator were also priority items for both groups and generated

the most discussion. It appeared to be an individual agenda item revolving around liability, as well as effective and legal responsibility. The consensus was that every jurisdiction shall designate an official who will be responsible for incident management.

Although other problem items were listed, they were not discussed in great enough detail to allow the group to reach consensus. They are identified in the group report attached.

REPORT OF WORKSHOP GROUP 1

Group 1 developed a list of items that it considered to be important problems in emergency response. Those problems were subdivided into preaccident, immediate (during), and secondary (post). Major subject areas were identified from this list of items (see Table 1). These major subject areas are planning, training, who's in charge, on-scene information, funding, evacuation, liability, and emergency medical services. A poll of the group resulted in setting priorities for the major subject areas. The group agreed to deal with the items in order of priority. The group did not reach a consensus on all items.

Planning

The following solutions were reviewed, discussed at length, and adopted by consensus.

1. There shall be a single focus at the federal level to plan for hazardous materials incidents.
2. There shall be at the state and local level a single focus for hazardous material incident planning.
3. Planning shall include private industry as an active participant.
4. A study of existing legislation needs to be undertaken to identify the overlapping of jurisdictions among the federal, state, and local agencies (referred to legal committee).
5. There needs to be a review of existing study data and recommendations for possible directions.
6. There is a need to publish and promote existing guidance materials for hazardous material incident planning such as the Rockwell Study, Fire Scope, Multnamah County Contingency Plan for Hazardous Materials, Puget Sound COG study, the National Contingency Plan, study by Kansas State University, and STL Post-Accident Procedures Study.
7. The administration should establish a single federal lead agency for hazardous materials emergency-response planning. The federal lead agency should establish an interagency committee on hazardous materials involving (a) state and local agencies and (b) private industries to review existing study data and recommend possible directions, publish and promote existing guidance materials, and motivate locals to action.

Training

There needs to be established a government-industry group to develop recommended criteria for hazardous materials incident training at various levels. Significant questions that need to be answered by this group include the following:

1. What is currently available?
2. What do emergency-response people at different levels need to know?
3. What people need to be trained?
4. Who will conduct the training?
5. Who will pay for the training?
6. Who is responsible to get the job done?