Summary: The Hazard Communication Standard—Issues and Impacts

In the Introduction I outlined seven issues related to the Occupational Safety and Health Administration's (OSHA) Hazard Communication standard.

1. Worker right to know versus worker need to know.
2. Who should define the hazards?
3. Is the federal standard a standard?
4. Does the standard protect the worker?
5. Trade secrets and proprietary information.
6. Community right to know.
7. Preemption and state responsibility.

The papers and panel discussions gave details on requirements, implementation, and controversies related to this regulation. In summary, let us examine and evaluate these issues in more detail as they relate to the papers and panel discussions.

Worker Right to Know Versus Worker Need to Know

The OSHA regulation [*1*] is explicit regarding the workers' right to know, as was pointed out in the first paper by D. W. McDaniel, which gives an overview of the regulation. Certain workers who have a potential for exposure to hazardous materials have a legal right to information about hazardous materials in their workplace. The kinds of information that they are entitled to receive were discussed in the first section on "Regulatory and Compliance Issues." What workers are entitled to know and what they need to know to protect themselves may be different, particularly regarding rights to trade secrets, amount and complexity of information, and relevance of information.

The issue of "need to know" has generated some concerns which are not addressed in the regulation. The kinds of information that must be made available to the worker are specified, but does the worker really need this data? L. M. Wiseman suggested in her paper that there may be hazards in drowning in too much toxicity information so that useful information is lost. The need to know does not imply a need for volumes of information. However, as J. S. Bransford pointed out in the last panel discussion, we generally have a deficiency, not a surplus, of adequate health effects data for most chemicals. How can the worker

best use all the information and data that he/she needs and is entitled to? It is knowledge, not data, that is needed by the worker, and this need, as stressed by A. Capuano, is best served by training. In fact, it is not intended that the material safety data sheet, (MSDS) be widely distributed to workers. The law requires only that they be readily available to the worker.

As was stressed in the first and fourth panel discussions, the worker needs information at a level of language that he or she can understand. OSHA clearly states that the language must be English. For international trade, other languages must be used. In Canada, for example, French as well as English is required. The OSHA regulation requires that information is based on best available scientific evidence and information. This requirement will likely encourage the use of technical jargon that will not be understood by most workers in manufacturing industries. Several panel members stressed that such technical information should be translated into layman's terms. Workers may not understand medical jargon, but physicians and industrial hygienists should be able to understand health effects information in layman's terms. The extent to which the use of nontechnical language is promoted will depend on the manufacturer's and importer's perception of the need to include detailed toxicological effects and medical symptoms in an MSDS to avoid liability claims. Some lawyers will likely advise the precise quoting of scientific information to avoid misinterpretation of the literature. Should this view prevail, a MSDS would become a legal technical document and lose its usefulness as a communication device, which OSHA intended it to be. At the other extreme, some MSDSs will become so simplified that they will consist of general or vague lists of possible hazards and protective measures that are simply checked off for each different product marketed.

Labeling requirements were discussed by D. W. McDaniel and M. Freifeld and by panel members in the first panel discussion. The intent of the label is to identify the material, identify the manufacturer or distributor, provide immediate warnings, and permit easy reference to the MSDS for more detailed information. There is a strong interest among some manufacturers and importers to color-code their labels, include pictographs of hazards, and use numerical hazard codes. Several systems already exist including Department of Transportation (DOT), National Paint and Coatings Association (NPCA), National Fire Protection Association (NFPA), ASTM, J. T. Baker Chemical Co. [*2–6*]. These systems are not standardized, and industry representatives at this symposium expressed the need to use caution when applying them. Numerical rating codes in particular should be used with caution and be precisely defined since they are not standardized. The NFPA hazard rating and the Hazard Materials Information System (HMIS) ratings used by the NPCA are not necessarily the same. These systems are designed to communicate hazard information to workers quickly and effectively, but the worker should be trained to interpret them correctly. For example, an NFPA health code emphasizes health hazards of a chemical in a fire whereas an HMIS health hazard code emphasizes occupational

use. Also, reactivity codes may have quite different meanings which may or may not include chemical or thermal reactivity or stability.

Symbols and pictographs serve those who cannot or will not read labels, and certainly will not read a technical MSDS. These abbreviated approaches may warn the worker of general hazards, but they hardly provide adequate detailed information and many symbols are not standardized. Labels should reference the MSDS, but the MSDS may not likely be read. At what point can the worker say, "I didn't know" or, "Nobody told me"? Clear and meaningful labels and MSDSs with a sound training program are therefore essential to communicate necessary information on hazardous materials. The intent of OSHA is to train the worker about the hazards rather than the specific chemical and its properties.

To help enhance good hazard communication, there are others besides the worker who will have a need to know. This need will likely create a demand for health and safety professionals and cause redefinition of their responsibilities [*7*]. Thus, industry educators, occupational physicians and nurses, industrial hygienists, toxicologists, emergency response teams, and supervisors need MSDS information to assure that workers are properly informed, protected, and treated. The rights of some of these professionals to information are defined in the OSHA regulation, particularly those who have rights to trade secret information. However, occupational nurses were not included in the 1983 regulation, although they may need this information [*7,8*]. These health care professionals now have the same rights to trade secret information as do physicians or industrial hygienists [*17*].

In practice much of the information needed by supervisors, training professionals, and health and safety professionals need not be detailed by federal specifications. Except for trade secrets, information supplied to the employer should be freely available not only to those who are entitled to it but to anyone in that firm who truly needs it. Industrial hygienists and toxicologists will need it to serve as intermediaries and interpreters for the worker. Supervisors will need information since they often have line responsibility to assure worker safety during a workshift. The free flow of information, forces of the marketplace, and legal liabilities will encourage communication of information to these people.

Who Should Define the Hazards?

Although the regulation specifies that manufacturers and importers are responsible for defining the hazards of chemicals they produce or import, there are some who believe that they have been given too much responsibility and leeway and that OSHA has not assumed enough responsibility [*9,10*]. There is concern that this is another case of the "fox guarding the chicken coop." This is an example of a change in direction for OSHA in which the principle of "cooperative regulation" is being applied [*11*]. In the past, the National Institute for Occupational Safety and Health (NIOSH) has been assigned specific roles in assessing and defining hazards for consideration by OSHA in promulgating

regulations. The impracticality of an agency doing this for all hazardous chemicals, mixtures, and other materials used in the workplace should be obvious. Canada and most states in the United States have also delegated this responsibility to suppliers and manufacturers. However, New York and New Jersey are developing their own fact sheets for certain chemicals.

Shouldn't industry be given a list of hazardous chemicals? In part, they have been with a list of about 600 materials that includes any material in OSHA 1910.1000-Subpart Z through 1910.1045 [*12*], the American Conference of Governmental Industrial Hygienists (ACGIH) list of chemicals assigned Threshold Limit Values (TLVs) [*13*], the National Toxicology Program (NTP) list of carcinogens [*14*], and the International Agency for Research of Cancer (IARC) materials designated as carcinogens [*15*]. Critics in this symposium and elsewhere [*8,10*] have claimed that this list is insufficient. OSHA has now expanded this list to cover 2300 substances [*28*], although they have not formally published this expanded list. Since regulation of chemical hazards on a chemical-by-chemical basis is recognized as impractical, OSHA has defined chemical hazards in a generic performance standard. Any material meeting these requirements, regardless if it is not on a list, must be defined as hazardous, and its physical and health hazards must be reported on labels and MSDSs. These criteria have been criticized as arbitrary and overly exclusive [*8,9,10*], particularly concerning the 1% rule for hazardous ingredients and the exclusion of labeling requirements for pesticides. In principle, government has assumed the responsibility of setting the criteria for defining hazardous properties, and industry must comply by applying these criteria to their products. In Canada, developing these criteria has involved concerned parties that include federal and provincial agencies as well as industry and labor representatives.

As was pointed out several times in this symposium, there can be variable interpretations of these criteria by different manufacturers and importers. Carcinogens, for example, are defined by OSHA as any material that is regulated by OSHA as a carcinogen, listed as a carcinogen by NTP, or found to be a carcinogen by IARC. There are those who will likely follow the letter of the law and recognize only these as carcinogens. Others, following OSHA's criteria of "best available scientific evidence," will include many other materials not designated by NTP or IARC if their toxicologists evaluate the evidence to be positive. Some companies who do not have their own toxicoligists may decide to reduce risks of law suits and record tumorogenic information and nonevaluated data given in the NIOSH Registry of Toxic Effects of Chemical Substances (RTECS) [*16*]. Also, some companies which lack the resources that larger industries have for researching information and making hazard assessments may omit detailed information on hazards.

The accountability of industry in preparing an MSDS is not fully crystalized. The workers have definite rights to information, but who can they hold accountable or liable for the accuracy and completeness of the content of the MSDS or label? This issue was raised in several papers and panel discussions

in this symposium. The employer is not required by OSHA to review or verify information on an MSDS. However, many panel members agreed that since the employer has the right to accept or reject the information of the supplier, the employer may be primarily accountable. The extent to which the employee or the employer can hold the originator of the MSDS accountable for the information is not clear and will likely be tested in the courts. G. Granville stated that this concern has not been fully addressed in the proposed Canadian standard. For clear violations of the regulation by the supplier, the employer can take the case to OSHA for enforcement. Employers can also send an MSDS back to its originator and refuse to order that material until a proper MSDS is supplied.

Is the Federal Standard a Standard?

Several of the previous papers and discussions stressed the importance of having a hazard communication regulation that is performance oriented. This approach to standard setting is another change in OSHA's regulatory direction. The distinction between performance and specification standards was spelled out in A. Capuano's paper on training programs. The justification for using a performance standard and the unworkability of a specification standard has been documented [*8*] and generally accepted in principle by labor, industry, and the states.

Nevertheless, some have become concerned that labels and MSDSs will lack significant standardization [*18*]. The OSHA standard specifically states that a label or MSDS may take any form as long as it contains the kinds of information required in the regulation. The current OSHA MSDS Form 20 will be discontinued and a new voluntary form has been prepared. This new form may be useful to those who have not the resources or the desire to create their own system. Most manufacturers, however, will continue to use their own MSDS formats and labels and modify them to comply with the OSHA standard. Not only may their form and appearance vary and create confusion, but information contained in them may not be standard. The quality of information may vary considerably. Quantitative units of measurement are known to vary. Some MSDSs are highly detailed and technical, others are brief and general. Some are no more than a check list that is marked off to indicate hazards.

It remains to be seen if reputable companies with comparable resources will produce standard information on an MSDS for the same chemical. For example, if one examines eight different MSDSs on phenol, one finds lengths varying from two to six pages. Discrepancies in the physical data on some of the sheets make one wonder if they refer to the same chemical. One states percent volatile matter to be negligible and another to be 100%. Some give the melting point; others do not. Vapor pressures vary from less than 0.1 to 1.0 depending on the temperature reported. The odor for phenol could be "strong sweet," "sharp medicinal," or just "characteristic." Guidance for disposal is confusing: one suggests neutralizing and flushing to sewer if local laws permit it, another

recommends incineration or burial, and a third recommends recovery and recycling. Whether these discrepancies will be corrected following implementation of the OSHA requirements remains to be seen. However, where standard units and specifications were not given by OSHA, there will likely be a great amount of variation between MSDSs on the same chemical. This problem will be even greater for mixtures and trade name products. An employer receiving MSDSs from several vendors may find discrepancies between them. How does the employer evaluate these differences? Does the most recent MSDS signify new data as required by OSHA? Maybe one is just being overly cautious and is giving more details. The differences, however, may represent errors on the MSDS.

Some states, such as New York and New Jersey, have chosen to create their own standard chemical fact sheets. Several industries have had comprehensive MSDSs for years. Computerized MSDS systems are also available. Some of these may serve as models for standard MSDSs. The American National Standards Institute (ANSI) Standard Z129.1 [*19*] and the National Paint and Coatings Association system [*3*] may serve as voluntary labeling standards. The OSHA regulation will likely need some fine tuning, and some changes have already resulted from recent court rulings [*7,29,30,31*]. Some additional fine tuning that has not been addressed by OSHA or the courts can be done by creating supplementary consensus standards and guidelines through standard-setting societies. Such supplementary standards should be developed with caution and only where needed and should not conflict with the OSHA regulation. Many industries would likely oppose any new standards that would adversely affect systems they have in place and that may cause them to retrofit these systems. The need for clearer and more effective communication to promote worker safety, however, should be the prime consideration.

Does the Standard Protect the Worker?

In those industries in the manufacturing SIC Codes 20 through 39, the worker is covered [*1*]. The justification limiting the standard to these industries was discussed in the first Section on the overview of the regulation and in the regulation's preamble [*8*]. In the papers in the first and third sections presenting labor's view and New York's and New Jersey's positions, OSHA was strongly criticized on this issue. This has been a widely publicized issue and has been tested in court [*9,10,11,18,20*]. Labor maintains that two-thirds of the work force or as many as 60 million workers may be excluded from legal protection [*9,18*]. OSHA's defense to this criticism is threefold:

1. Those SIC codes cover the greatest number of workers at risk.
2. It is more cost-effective.
3. The free flow of information in these designated industries will flow over into the other industries not specifically designated.

The use of cost-benefit considerations to this extent is another example of OSHA's new emphasis on cost-effective regulation and performance-oriented standards [*9,11,18*]. OSHA's preempting state right-to-know laws ensures that conflicting and variable labeling requirements will not burden interstate commerce. The cost of these state laws on interstate commerce is uncertain [*25*]. The trickle-down effect of information from the manufacturing industries to nonmanufacturing industries is not satisfactory to Labor since there are no worker rights guaranteed by voluntary flow of information. As F. M. Mabry of the U.S. Steel Workers pointed out in the first section, Labor feels that the regulation has many good points but that it doesn't go far enough either in protecting all the workers or in providing full disclosure of information.

Most of the current state right-to-know laws and the proposed Canadian regulation include more groups of workers than the OSHA regulation. If a recent court ruling is upheld [*22,31*], there may come into being numerous state standards regulating the other industries not specified in the OSHA regulation. In addition, many of the issues of concern such as community right to know, trade secrets, coverage of nonmanufacturing industries, will likely be used in tort litigation to establish judicial standards in these areas [*24*]. There is pressure to amend the OSHA standard to cover the other SIC codes [*17,29,31*]. As a result of a court decision [*20*], OSHA is intending to expand this coverage [*30*].

Trade Secrets and Proprietary Information

Critics of the standard are concerned that the law is overly protective of trade secrets at the expense of worker protection [*9,18*]. Trade secrets are defined more broadly than in many state right-to-know laws [*24*]. Industry is concerned that there is a fundamental shift from information on the material's hazards to emphasis on its chemical identity [*21*]. Industry can withhold the identity of hazardous ingredients if they can support the trade secret claim. Labor maintains that without knowing the identity of the hazardous material they have been denied the right to independently assess the hazards to workers using that material. This issue is linked to the issue of right to know versus need to know and the issue of responsibility for defining the hazards just discussed. The overly protective use of trade secret rights denies some the right to know and limits checks and balances in the independent assessment of hazards that the employer may wish to make.

Industry does have a need and a legal right to protect bona fide trade secrets [*8*]. Industry and OSHA have argued that the law does provide for use of trade secret information to certain professionals where it is truly needed. Physicians can obtain this information in emergencies, and health and safety professionals have legal means to access the information where chemical identity is necessary to protect the worker. The law limits workers' access to this information.

Critics have argued that there are really very few true trade secrets regarding chemical identities of mixtures. They feel that industry can use this OSHA

provision to conceal information that may not be considered bona fide trade secrets. A large number of manufacturers give composition information freely on their MSDS; it is required on labels of food, pharmaceuticals, pesticides, and other consumer products. In addition, composition of many products can be analyzed by a good analytical chemist although such analyses may be expensive and not practical. Generally what needs to be confidential is not always the identity of components but the process used to make that product. In addition, patent laws provide the legal means to halt copying of patented products. The law, however, is protective of trade secrets, and free flow of this information by many industries is not likely.

Of greater concern is the policy of some industries to classify toxicological data as proprietary information. I have had experiences of not being able to freely get copies of toxicity studies from certain industries for independent assessment of hazards. One major chemical company would not disclose details regarding experimental protocols and the number of rats used in their experiments. As long as they used "standard toxicology procedures" and gave you the LD50 results, they claimed that was sufficient. Some industries may feel that this information may come back to haunt them. Even the federal government, particularly the Defense Department, is known to classify some toxicity data. Even obtaining unclassified data may require time to cut the red tape. With the OSHA standard requiring hazard assessments based on sound scientific data, one may have a legal basis for freeing some of this proprietary data without resorting to freedom of information procedures.

Community Right to Know

In the third section, community right to know was presented and discussed. To what extent does hazard communication extend beyond the gates of the plant? The mission of OSHA is clear on this issue. Community right to know is not under their jurisdiction. However, a recent court ruling appears to preempt state community right-to-know laws in SIC Codes 20–39, if they are included as part of the worker right-to-know law [*22,23*]. Passage of separate state community right-to-know laws would not likely be affected by federal jurisdictions. As was mentioned in the introduction, the incident in Bhopal has focused interest on community rights to know. To what extent the New Jersey law or similar laws will serve as a model for other states remains to be seen. One can see various needs for informing police, fire departments, emergency response teams, local health departments, zoning boards, and even realtors and home owners of potential hazards to the community from industries using, storing, or disposing of significant amounts of hazardous materials. Some corporations have cooperated voluntarily on this issue.

Although there is some congressional initiatives for community right to know, restraint of trade would not be a significant factor that would promote federal standardization of state and local laws. The community issues are not generally

concerned with container labels or MSDSs but rather with on-site inventories of significant amounts of hazardous materials and the potential for accidents and environmental contamination that would affect community health and property. Most of the issues are local and involve municipal, town, or county jurisdictions. In the future, national corporations will likely have to deal with proliferation of various state and local community right-to-know laws. Some aspects of community right to know, however, may be incorporated into existing federal legislation such as the Resource Conservation and Recovery Act (RCRA) and the Comprehensive Environmental, Response, Compensation and Liability Act (CERCLA, i.e. Superfund). These proposals could be modeled after some aspects of New Jersey's right to know law.

Preemptive Issues and State Responsibility

As was discussed in the third section, this new OSHA regulation is unlike many other OSHA and environmental protection standards in that it preempts the states' rights to formulate stricter standards. Many state laws provide greater protection to the worker by covering more industries and materials and having stricter disclosure requirements [*26*]. Each state must have a federally approved plan that will be as strict as OSHA's but will not unduly burden interstate commerce. A New Jersey court decision on 3 Jan. 1985 ruled that OSHA does have preemption rights claimed in the standard, but that this only applies to the SIC Codes 20 thru 39 [*22,23*]. States, however, have the right to regulate those industries not covered by the standard and can promulgate community right-to-know laws as long as they are not linked to the worker right to know laws preempted by the federal Hazard Communication standard [*23,31*]. As pointed out by R. Stone during this symposium, one of the major concerns of states that have existing right-to-know laws is that workers who are now protected do not lose those rights under the federal standard. Also, OSHA exempts several materials such as pesticides, now included in some state right-to-know laws.

One of the primary incentives for passing the federal Hazard Communication regulations and its preemptive clause was the burden to interstate commerce from conflicting labeling requirements [*8*]. T. F. Evans from Monsanto discussed, in the panel discussion in the third section, the problems that have arisen and will continue to proliferate if the various state laws on labeling are upheld by the courts. Each industry will have to decide for itself if it should standardize all its labels to comply with a few differing state requirements or if they should just issue supplementary stickers for containers shipped to those states.

The states may continue to have a free hand in formulating state right-to-know laws for other SIC Codes that will cover industries such as construction, exploration and mining, research and development laboratories, transportation, communications, and the wholesale/retail business. Some materials and procedures in these industries may be preempted by the OSHA standard under its exemptions for transportation regulations, pesticides, and consumer products.

Most manufacturing industries are linked through supply of materials, corporate ownerships, contractual arrangements or economic forces to service, construction, research, and wholesale businesses. Any state regulation of these businesses will undoubtedly "trickle up" to the manufacturing industries covered by OSHA. In serving those businesses, some industries may have to comply voluntarily with the demands of those sectors regulated by various and inconsistent state laws. Certainly those industries and services not currently covered by OSHA will certainly feel the need for some federal standardization, particularly if they do business in several states. The cost of not having a federal standard covering them may be far greater than having one.

The rights of the states to formulate stricter regulations as they can with other OSHA regulations and EPA regulations is a key states rights issue that will continue to be fought in the courts. However, unlike regulating workplace exposures and safety practices or emissions from a plant, MSDSs and particularly labeling requirements have a direct impact on interstate commerce according to views expressed by industry representatives in the second and third sections. It is interesting that these two concerns, which have not been of concern to OSHA administrators in the past, have been delegated to OSHA through the Office of Management and Budget (OMB). It is by these arguments that OSHA has been able to preempt stricter state right-to-know laws. Many of these pitfalls seem to be avoided in Canada by bringing together the federal and provincial agencies with industry representatives. Therefore, differences are being worked out before a federal law is passed.

Impact of the Standard

Opponents and proponents of OSHA's requirements generally agree that this regulation will have far-ranging impacts. If the OSHA regulation is upheld by the courts with regard to the issues presented in this symposium, then it will indeed make a historical mark for OSHA on several accounts.

1. Using criteria of interstate commerce and economic impacts for inclusion and exclusion of groups of workers to be protected.
2. Preemption of stricter state regulations.
3. Granting the legal right to know to only a limited group of workers.
4. Promulgation of requirements for protection of industry trade secrets.
5. Promulgation of a regulation that is performance oriented.
6. Delegating to industry the responsibility to define and describe hazards of materials they produce.

Specific requirements related to these issues are changing as a result of court decisions. The issues related to trade secrets have been modified, and the inclusion of others' rights to access this information has been expanded [*29,31*]. Expansion of the scope to cover other industries is also being amended by OSHA [*30*].

Cost-effective issues influenced the scope of the OSHA requirements. The burden of state laws on interstate commerce is and will continue to be tested in the courts. Economic effects of the standard may have been underestimated. According to Dow Chemical Co. [*26*], costs could exceed $1 billion compared to the $604 million estimated by OSHA. Neither of these figures consider added costs if strict preemption is not applied to the states. State requirements, particularly in the nonregulated SIC code industries, will add to the costs of hazard communication. Many companies will likely go beyond the specific requirements of OSHA in order to minimize the risks of tort liability, and this will certainly add to costs.

As a result of this standard more information will become available to more workers and health and safety professionals than ever before. Although it legally covers specific industries and limits disclosure of information for certain materials to certain people, labor has a strong foot in the door to obtain further worker protection. Court cases involving toxic materials are increasing [*27*]. As several panelists in this symposium stated, tort liability will likely be a significant force influencing free flow of needed information. The requirements for training and the communication of chemical hazards will likely redirect current efforts of health and safety professionals [*7*].

Finally, the general acceptance of performance criteria will likely change a practice of OSHA enforcement using specification rules and inspections to a more response-oriented and flexible enforcement. The responsibility for characterizing hazards is now industry's responsibility. Noncompliance with these performance criteria will likely be enforced by petitioning OSHA or by suing the suppliers of faulty information. There will likely be a degree of nonstandardized labeling and MSDS practices. To the extent that industries will need more specific standards, the OSHA regulation can be modified or voluntary consensus standards can be developed by standard-setting organizations.

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