

HAZARD COMMUNICATION

*Issues and
Implementation*

James E. Brower
editor

STP 932



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HAZARD COMMUNICATION: ISSUES AND IMPLEMENTATION

A symposium
sponsored by
ASTM Committee E-34
on Occupational Health and Safety
Houston, TX, 17-18 March 1985

ASTM SPECIAL TECHNICAL PUBLICATION 932
James E. Brower, Brookhaven National Laboratory,
Editor

ASTM Publication Code Number (PCN)
04-932000-55



1916 Race Street, Philadelphia, PA 19103

Library of Congress Cataloging-in-Publication Data

Hazard communication: issues and implementation.

(ASTM special technical publication; 932)

"ASTM publication code number (PCN) 04-932000-55."

Includes bibliographies and index.

1. Industrial hygiene—Law and legislation—
United States—Congresses. 2. Hazardous substances—
Law and legislation—United States—Congresses.
3. Industrial safety—Law and legislation—United States
—Congresses. 4. Industrial hygiene—United States—
Congresses. 5. Hazardous substances—United States—
Congresses. 6. Industrial safety—United States—
Congresses. I. Brower, James E. II. ASTM Committee
E-34 on Occupational Health and Safety. III. Series.
KF3570.A2H39 1986 344.73'0465 86-22228
ISBN 0-8031-0933-4 347.304465

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Library of Congress Catalog Card Number: 86-22228

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Foreword

This publication, *Hazard Communication: Issues and Implementation*, contains papers presented at the symposium on Hazard Communication, which was held in Houston, Texas, 11-12 March 1985. The symposium was sponsored by ASTM Committee E-34 on Occupational Health and Safety. James E. Brower, Brookhaven National Laboratory, presided as symposium chairman and is editor of this publication. During peer review and revision, the papers presented in this book were updated in almost all cases to April 1, 1986.

Related ASTM Publications

Inhalation Toxicology of Air Pollution, STP 872 (1985), 04-872000-17

**Definitions for Asbestos and Other Health-Related Silicates, STP 834 (1984),
04-834000-17**

A Note of Appreciation to Reviewers

The quality of the papers that appear in this publication reflects not only the obvious efforts of the authors but also the unheralded, though essential, work of the reviewers. On behalf of ASTM we acknowledge with appreciation their dedication to high professional standards and their sacrifice of time and effort.

ASTM Committee on Publications

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Introduction: Communication of Hazard Information—Who is Responsible?

Hazard Communication in the Past

Prior to the passage of the federal Occupational Safety Health Act of 1970 [1], the communication of information to workers about the hazards of materials they were using was primarily a voluntary responsibility of industry. Amendments to the Longshoremen's Act of 1969 required the use of Material Safety Data Sheets (MSDSs) to convey hazard information to workers [2]. However, this regulation applied only to specific maritime industries. In many industries, general worker ignorance of the specific chemicals they used and their hazards was prevalent [3]. When transfer of hazard information occurred, it was influenced by several factors, including:

1. Market forces.
2. Trade secrets.
3. Available toxicity data.
4. Emergency situations.
5. Potential for high hazards.
6. Warnings from health and safety professionals.
7. Worker demands.
8. Liabilities.

Industries that were relatively safety conscious requested health and safety information for materials they purchased, and therefore a market demand was placed on manufacturers to provide such data. This demand, however, was often countered by the manufacturer's need to protect trade secrets of products. Coupled with the paucity of toxicity data on most products, valid health hazard assessment was often limited, particularly for chronic or long-term diseases.

Hazard communication in some industries was often reactive; that is, once an accident or serious threat of an accident occurred, information flowed quickly. Hazard information was heavily concerned with the prevention of accidents that could cause fires, explosions, acute poisonings, or personal injury and disfigurement. Safety training of chemical workers concentrated on these risks. Communication between health and safety professionals and workers using dangerous materials was largely indirect, with information filtering through supervisors or management.

The reasons for the communication of chemical hazard information were

varied, including reducing personnel absences, loss of equipment, and lost time, or just a common concern for the safety of people. Many companies may have been motivated by the risk of corporate liability [4]. There was an incentive to inform and train workers in order to avoid costly legal suits. However, the increased flow of information seems to have had an opposite effect, resulting in increased tort liability cases by workers who believe their illnesses or injuries were caused by real or imagined exposures to chemicals.

Whether to protect trade secrets or to withhold information that they felt could be used against them, industries were resistant to communicating detailed information to the worker unless the need could be justified. As long as the employee was trained and equipped to work safely with the material, the need to know its identification, physical properties, or detailed toxic effects was not considered necessary. The explosion of information and new products in the 1960s and 1970s created an awareness and demand on industry to provide workers with such information.

The 1970s were characterized by a rapid growth of public consciousness about chemical hazards. The Occupational Safety and Health Act [1] put forth legal requirements for protecting workers against unsafe work environments. Hazard communication became part of the Occupation Safety and Health Administration's (OSHA) regulations. MSDSs were generated using the 1972 OSHA Form 20. This form was essentially unchanged from the 1969 MSDS required by the Longshoremen's Act, which was used by the shipbuilding industries [5]. The National Institutes for Occupational Safety and Health (NIOSH) [6] published in 1974 a criteria document called "An Identification System for Occupationally Hazardous Materials." This document provided not only an explanation of items on the OSHA Form 20 but also gave useful criteria and guidelines for hazard determination. However, use of these guidelines was voluntary. OSHA also had requirements for workplace signs to warn workers of potential occupational hazards. Exposure limits were adopted for about 400 materials. Twenty-three specific materials have been designated as specially regulated materials and have specific hazard warning placards and labels required for their use [7].

Other federal and state agencies have incorporated their own hazard communication regulations. The U.S. Department of Transportation (DOT) has its label, placard, and manifest requirements for the shipping and transport of hazardous materials. The U.S. Environmental Protection Agency (EPA) enforces several regulations requiring some level of hazard communication. These include FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act), TSCA (Toxic Substances Control Act), and RCRA (Resource Conservation Recovery Act) for disposal of hazardous wastes. The Food and Drug Administration (FDA) has its regulations governing the labeling of food and pharmaceuticals. Some 31 state governments have passed or pending worker right-to-know laws [23]. These laws, coupled with a greater public and worker consciousness of chemical hazards, have had a dramatic effect on market forces which have promoted

hazard communication in the past. These forces, along with tort liability suits, cause many industries to assume responsibility for assessment and communication of chemical hazards [4].

Thus, in the 1970s, some responsibility for communication of hazards to workers was assumed by the federal government, some by state governments, and by many industries. Each of these sectors had its own definition of hazards, criteria for assessment of hazards, formats for MSDSs, labeling requirements, and requirements for training workers.

On 25 Nov. 1983 OSHA published its regulation on Hazard Communication [8]. It was heralded by Thorne Auchter, then the Director of OSHA, as "the most significant regulatory action ever taken by OSHA" [9]. As papers in this book will show, its impact is viewed negatively as well as positively. Some have viewed it as having a gross lack of protection for the worker [10]. This regulation specifies responsibilities for the federal government, the states, and certain industries. Some organizations and state governments have challenged the legal and ethical basis of these assigned responsibilities. The basis for OSHA's arguments for most of the concerns has been detailed in the preamble to the regulation [11]. This preamble expands and explains most of the items in the regulation and should be studied by anyone who is responsible for implementing its requirements. A brief history of the regulation has been summarized in a Bureau of National Affairs (BNA) special report [19].

Purposes of the Hazard Communication Standard

OSHA listed three principle purposes of its Hazard Communication standard [9]:

1. To ensure the evaluation of chemicals to determine their hazards.
2. To apprise workers in manufacturing industries of the hazards with which they work.
3. To preempt state laws covering hazard communication.

There are five concerns implicit in these objectives, and it is instructive to examine the OSHA Hazard Communication standard in relation to these concerns, which include:

1. Who is to inform?
2. Who is to be informed?
3. What is the information?
4. How is the information transmitted?
5. How can the information be standardized?

Who informs whom is specified by OSHA. Manufacturers and importers have specific responsibilities to evaluate, produce, and transmit information on hazardous materials. Employers have specific responsibilities to transmit this

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information to the workers. However, as we shall see, not all businesses, services, or industries have the responsibility to produce and transmit information.

The target persons to be informed are the workers who handle or are potentially exposed to the material and are in the industrial manufacturing sectors. Who is to be informed is a concern spelled out in the standard and will be discussed in several of the papers. There are also others who need this information, including doctors, nurses, health and safety professionals, and supervisors.

What kind of information is needed is specified in the standard. Six basic types of required information will be discussed.

1. Material identification.
2. Company identification.
3. Material properties.
4. Hazard information.
5. Protective information.
6. Emergency information.

Criteria for each type is specified in the standard to various degrees [29CFR 1910.1200, Section (g) (2) (i to xii)] [8].

How information is to be transmitted is specified for three modes of communication:

1. Labeling.
2. Material Safety Data Sheets.
3. Training.

Containers of hazardous materials must be labeled by manufacturers and importers. MSDSs which are crossed-referenced to the label are intended to detail the information on the material's properties, hazards, and safe practices. Training will provide verbal instructions to workers and will give them information necessary to understand the labels and the MSDS. Requirements for each of these items will be discussed in the papers.

Two aspects of this law are meant to promote standardization of information.

1. Generic performance criteria for six requirements which include:

- (a) Hazard determination.
- (b) Written hazard communication plans.
- (c) Labeling.
- (d) Material Safety Data Sheets.
- (e) Employee information and training.
- (f) Release of trade secret information.

2. Preemption of state laws which are not consistent with the OSHA standard.

Performance guidelines will be presented in the first section entitled, "Regulatory and Compliance Issues." The third section, entitled "Other Jurisdictions and Legal Issues," will be concerned largely with state right-to-know problems.

Hazard Communication Issues

Several issues have been raised by this federal Hazard Communication standard. While many of these issues were addressed in the preamble to the standard [11], some have not been resolved and are in litigation, and others have been resolved with a few requirements amended [19, 20]. These controversial issues include:

1. Worker right to know versus worker need to know.
2. Who should be responsible for defining hazards?
3. Is this federal standard a real standard?
4. Does the standard protect the worker sufficiently?
5. The manufacturer's right to protect trade secrets.
6. The community right to know.
7. States' rights to formulate stricter standards.

There is a distinction, which is often blurred, between the concept of right-to-know and need-to-know information. Industry generally accepts the idea that workers need to have certain information about hazardous materials in order to work safely with them. Labor and government, however, believe that workers have the right to know information about the materials they work with. The right to know implies freedom of information, that is, free access to all information that is related to safe use of that material. For example, if a chemical worker has no education or training in toxicology, he or she would not likely have the expertise to interpret oral LD-50 data from rats exposed to a chemical with a complex technical name. The workers may need only to know that this chemical is highly toxic if ingested or inhaled and know how they can best protect themselves. However, do workers need to know the oral LD-50 value or the Threshold Limit Value? They have an explicit legal right to the latter value but not to the former. Other kinds of quantitative data are required on an MSDS even though most workers are not fully trained to interpret them. Although training is prescribed in the OSHA standard, the worker cannot be expected to become technically proficient about the information they have a right to access.

The OSHA standard gives the worker the right to know this information, but some may question whether anyone other than an industrial hygienist or a physician needs to know or will in practice use this information. Still, there is a valid reason to include these kinds of technical data on an MSDS even though the average worker may not have the proficiency to evaluate it. The right to know gives workers an avenue to obtain independent opinions from other occupational health professionals who can interpret the MSDS. Basically OSHA is saying that employees have a right to make informed decisions about risks to their health and life from materials to which they may be exposed. If workers are told what adverse effects to expect from exposure to a hazardous material, they can recognize the symptoms and evaluate the need for corrective action.

Assignment of responsibility to manufacturers and importers for defining hazards is stated in the standard. Many groups are concerned that more

responsibility was not assigned to the government and less to manufacturers and importers [14, 15]. Some concerns include:

1. Lack of a specific list of known hazardous substances.
2. Arbitrary and limited criteria for hazard assessment.
3. Variable interpretations of hazardous properties of the same material by different manufacturers and importers.
4. Bias on the side of industry in evaluating hazards.
5. Lack of technical expertise among smaller industries to assess hazard information and to produce detailed MSDS.
6. No clear accountability or authority assigned to those who define and assess the chemical hazards.

Some have argued and will continue to argue that the OSHA standard is not a true standard. The controversy centers around OSHA writing a performance standard instead of a specification standard. The differences between these two approaches are discussed in the papers. This OSHA standard, unlike others, is performance oriented. Its intention is to promote consistency in the kinds of information to transmit rather than specifying contents of labels and MSDSs, which line for line look alike and adhere to fixed specifications. The standard provides the rules for the game, not the score cards.

There is concern that the standard does not sufficiently protect the worker [10,14,15]. Labor and several states feel that only a select group of workers are protected by the standard and that full disclosure to the worker is limited. OSHA argues that the primary coverage of manufacturing industries protects most of the workers facing potential chemical exposures and that those in other industries will still be able to get information they need. The extent that this is true is discussed. This issue was under litigation [16], and OSHA will broaden its scope [21,22]

Trade secret issues will continue to be a concern. Industry spokesmen have stated that emphasis on identification of materials shifts the emphasis away from identification of hazards [17]. Labor maintains that specific identification of hazardous materials is needed so the worker can adequately assess hazards [14,15]. OSHA provides the means for disclosing trade secret information, and the details and limitations of this provision will be discussed in the papers. An amendment to the trade secret provision has been made [20].

Community rights to hazard information is an issue, particularly as required by some states. This issue is a key element in the New Jersey Right-to-Know law. The community right to know and need to know what hazardous materials are used in a neighboring plant and their health risks to the public was strongly brought to the forefront with the tragic accident with methyl isocyanate in Bhopal, India. A comprehensive review of this accident and its scientific, toxicological, engineering, social, political, and economic implications was given in the 11 Feb. 1985 issue of *Chemical & Engineering News*. [13]. Since OSHA's jurisdiction is the protection of workers, the standard is not concerned

with the community aspect of hazard communication. However, several states and local communities have or are considering such laws [4]. Separate state and local community right-to-know laws, which are separate from worker right-to-know laws, do not conflict with the OSHA standard [12].

One of the more heated issues of the standard is the preemption of state right-to-know laws. As with other OSHA and environmental standards, states have the right to formulate stricter standards. New Jersey has been in the forefront of this litigation with one court decision ruled on OSHA's favor on preemption in manufacturing industries [12,18]. Some of the recent and pending court decisions of this issue are presented in the papers.

Objectives of the Symposium

This symposium was intended to achieve eight objectives:

1. Provide an overview of the OSHA standard.
2. Discuss implementation requirements of the standard.
3. Critique the standard from the views of labor, industry, and the states.
4. Provide examples and problems of industry compliance.
5. Examine state and local right-to-know issues.
6. Examine legal issues.
7. Compare the proposed Canadian systems with the United States standard and examine international implications.
8. Evaluate available information resources.

The papers may overlap and cover several of these objectives. Although an overview of the standard is covered in the first paper by Dean McDaniel, most of the other papers will expand on the specific requirements of the law. Overlap of information was difficult to reduce in a symposium such as this where there are several points of view on each of the OSHA requirements.

This publication is organized into four sections, as was the symposium:

1. Regulatory and Compliance Issues.
2. Industry Programs.
3. Other Jurisdictions and Legal Issues.
4. Information Resources.

Many of the issues and objectives are discussed in the panel discussions following each of the sections; these discussions are edited transcriptions of the actual discussions taped at the ASTM symposium.

The incorporation of some papers in a particular section may seem arbitrary due to the overlap of information between them. For example, much of the information on legal issues could have fit in the first section, but due to the recent court cases centering on state preemptive issues, this paper is included in the third section. Similarly, labor issues could easily have been presented with legal issues, but were included in the first section in response to OSHA's

overview. The paper by J. Bransford stresses a theme of legal liability, but was included in the fourth section because of its emphasis on information needs for labels and MSDSs. Requirements of the regulation have been modified since this symposium was held [19,20]. Where feasible, these court rulings have been updated in the papers.

References

- [1] "Occupational Safety and Health Act," PL 91-596, U.S. Department of Labor, Washington, DC, 1970.
- [2] "Longshoremen and Harbor Workers Compensation Act," (33 U.S.C. 941) 29CFR 1501, 1502, and 1503, U.S. Department of Labor, Washington, DC, 1969.
- [3] Bureau of National Affairs, "State Industry Officials Dispute Effects of State Regulation on Interstate Commerce," *Occupational Safety and Health Reporter*, 18 Oct. 1984, pp. 395-396.
- [4] Baram, M. S., "The Right to Know and the Duty to Disclose Hazard Information," *American Journal of Public Health*, No. 74, 1984, pp. 385-390.
- [5] "Material Safety Data Sheet. Requirements for Reporting Hazardous Materials. Safety and Health Regulations for Shiprepairing, Shipbuilding, Shipbreaking," Bureau of Labor Standards, U.S. Department of Labor, Wage and Labor Standards Administration, 0-367-264, U.S. Government Printing Office, Washington, DC, 1969.
- [6] "A Recommended Standard. . . . An Identification System for Occupationally Hazardous Materials," NIOSH, U.S. Department of Health, Education and Welfare, Public Health Service, Center for Disease Control, Washington, DC, HEW Pub. No. (NIOSH) 75-126, 1974.
- [7] OSHA, 29CFR 1910.1000-1047.
- [8] "Hazard Communication," 29CFR 1910.1200, U.S. Department of Labor, OSHA, *Federal Register*, 48:53280-53348, 25 Nov. 1983.
- [9] "OSHA Issues Final Hazard Communication Standard," U.S. Department of Labor news release, USDL 83-498, Office of Information, 22 Nov. 1983.
- [10] "Hazard Communication Rule Should Cover All Employees, Public Citizen Maintains," Bureau of National Affairs, *Chemical Regulation Reporter*, 21 Sept. 1984, pp. 625-626.
- [11] "Preamble to Final OSHA Standard on Workplace Hazard Communication," U.S. Department of Labor, OSHA, *Federal Register*, 48:53280-53340. 25 Nov. 1983.
- [12] *New Jersey State Chamber of Commerce v. Robert E. Hughey*, No. 84-3255, U.S. District Court District of New Jersey, 3 Jan. 1985.
- [13] "Bhopal Report," Heylin, M., Ed., *Chemical and Engineering News*, Vol. 63, No. 6, 1985, pp. 14-75.
- [14] "Hazard Communication Rule Should Extend Beyond Manufacturing Sector, Proposal Says," Bureau of National Affairs, *Occupational Safety and Health Reporter*, 13 Sept. 1984, pp. 319-320.
- [15] "OSHA Issues Final Labeling Standard; AFL-CIO Files Suit for Review of Rule," Bureau of National Affairs, *Occupational Safety and Health Reporter*, 1 Dec. 1983, pp. 691-692.
- [16] *United Steelworkers of America v. Aucther*, U.S. Court of Appeals, Third circuit, Philadelphia, 24 May 1985.
- [17] Wilkenson, P. R., "Right-to-Know: OSHA Standard Serves as Guide," *Journal of Commerce*, 7 June 1985.
- [18] "New Jersey Worker Statute Preempted by OSHA Communication Standard, Court Rules," Bureau of National Affairs, *Chemical Regulation Reporter*, 11 Jan. 1985, pp. 1229-1230.
- [19] Right-to-Know; A Regulatory Update on Providing Chemical Hazard Information," BNA special report, Bureau of National Affairs, Washington DC, 1985.
- [20] "Hazard Communication, Disclosure of Trade Secrets to Nurses," U.S. Department of Labor, *Federal Register*, 50:49410, 2 Dec. 1985.
- [21] "Appeals Court Narrows OSHA Preemption of State Laws on Hazardous Substances Data," Bureau of National Affairs, *Chemical Regulations Reporter*, 18 Oct. 1985, pp. 784-785.

- [22.] "OSHA Drafting Rule on Trade Secrets, Advanced Notice on Expanding Scope of Standard," Bureau of National Affairs, *Occupational Safety and Health Reporter*, 24 Oct. 1985, p. 419.
- [23] "State Right-to-Know Status Chart," Bureau of National Affairs, *Chemical Substance Control*, 1986, pp. 221:1191.

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