NORTH CAROLINA DEPARTMENT OF LABOR
DIVISION OF OCCUPATIONAL SAFETY AND HEALTH
RALEIGH, NORTH CAROLINA

Chapter 7 CFR Revision 101
Subchapter 7C
NC-OSH

Field Information System Part I

Discussion

When Federal OSHA first published its Hazard Communication Standard in 1983, it became apparent that failure to include non-manufacturing employers in the standard's workplace requirements invited challenges in the courts. These challenges were initiated in 1984 and, in 1985, North Carolina adopted its own Hazard Communication Standard, 13 NCAC 7C.0101 (a)(99). The North Carolina standard was similar to the Federal OSHA standard but contained some important differences, including provisions to cover non-manufacturing workplaces, effective May 25, 1987.

After extensive litigation, Federal OSHA published a new Hazard Communication Standard on August 24, 1987, that provided for coverage of non-manufacturing employees effective May 23, 1988. Although that standard has been stayed by the Supreme Court in its application to the construction industry, the uncertainty surrounding it is largely ended. Commissioner Brooks has therefore adopted the Federal OSHA Hazard Communication Standard, 29 CFR 1910.1200, as published at 52 FR 31876 on August 24, 1987. It has also been adopted in North Carolina as part of the Construction Standards, 29 CFR 1926.59, and the Agricultural Standards, 29 CFR 1928.51. Attached to this CFR Revision is a summary of the major differences between the current Federal OSHA standard and the North Carolina standard it will replace effective March 17, 1989.

Action

A copy of the Federal Register announcement is attached for your information and action. Current editions of North Carolina General Industry and Construction Standards do not include the August 24, 1987 text, so additional copies of that text are being printed for distribution to employers until the General Industry and Construction Standards are updated. The provisions of the attached standard will be enforced in North Carolina in the construction industry and agriculture, as well as in other industries. Please file this CFR Revision in Part I of your Field Information System.

James A. Oppold, PhD, PE, CSP
(Signed on Original)

JAO:ckh
Filing Date: January 27, 1989
Effective Date: March 17, 1989
Number: 13 NCAC 7C.0101 (a) (105): 13 NCAC 7C.0102 (a) (29) and: 13 NCAC 7C.0103 (a) (13)

Major Differences Between The North Carolina Hazard Communication Standard and the Federal OSHA 8/24/87 Final Rule

## Pre-emption

1. The federal standard further defines the areas in which the standard pre-empts state/local laws/ordinances by naming the standard's major subdivision. Paragraph (a)(2), page 31877, attached.

## Scope

2. The federal standard adds a provision to limit application of the standard in work operations where employers normally handle only chemicals in sealed containers, as in warehousing and retail sales. Paragraph (b)(4), page 31877.
3. There is no provision in the federal standard that is similar to the North Carolina "small user" limited exemption.
4. The federal standard adds "medical or veterinary devices" to the exemptions from the standard's labeling requirements. Paragraph (b)(5)(ii), page 31877.
5. The federal standard adds exemptions for consumer products and drugs that are similar to the North Carolina versions, but not identical to them. Paragraphs (b)(5)(iv) and (b)(6)(vii), pages 31877 and 31878.
6. The federal standard adds an exemption for food, drugs, cosmetics, and alcoholic beverages in a retail establishment packaged for sale to consumers. Paragraph (b)(6)(v), page 31878.

## Definitions

7. The federal standard clarifies the "container" definition by excluding vehicle operating systems. Paragraph (c), page 31878.
8. The federal standard clarifies the definitions of "employer" and "employee" by specifically including contractors and subcontractors and by excluding office workers and those who encounter hazardous chemicals only in non-routine operations. Paragraph (c), page 31878.
9. The federal standard deletes the definition of "purchaser" and the word itself.
10. The federal standard adds "job site or project" to the definition of a "workplace." Paragraph (c), page 31879.

## Written Program

11. The federal standard deletes the paragraph on contractor employees and adds a paragraph that requires in the written program a section dealing with

employers' responsibilities at multi-employer work sites. Paragraph (e)(2), page 31880.

Labelling

12. The federal standard adds an exemption which allows label information for solid metal objects, such as beams or castings, which are not exempt as articles, to be sent to the customer with the initial shipment or with the MSDS. Paragraph (f)(2), page 31880.
13. The federal standard adds language to include hazardous chemicals that comprise less than 1% of a mixture if they could be released in concentrations exceeding permissible exposure limits. Paragraph (g)(2)(C)(2), page 31881.

Material Safety Data Sheet (MSDS)

14. The federal standard requires retailers to provide MSDS's on hazardous chemicals to their commercial customers on request, and to post a sign so stating. Paragraph (g)(17), page 31882.
15. The federal standard provides additional, guidance on the location of the MSDS for employees who work at more than one location. They can be kept at a central-location, but the employer must assure that required information can be obtained immediately in an emergency. Paragraph (g)(9), page 31882.

Employee Information and Training

16. The federal standard includes no language similar to the North Carolina requirement that employees be informed of the identity of any chemical with which they work within five (5) working days.

Trade Secrets

17. The federal standards rewords the paragraph on the review of contested citations by the Occupational Safety and Health Review Commission and the Administrative Law Judge. Paragraph (i)(11), page 31883.

Appendix C (Optional)

18. The federal standard revises Appendix C to provide updated bibliographic information. Appendix C, page 31885.

*Federal Register, Vol. 52, No. 163 / Monday, August 24, 1987 / Rules and Regulations*

DEPARTMENT OF LABOR

Occupational Safety and Health Administration

29 CFR Parts 1910, 1915, 1917, 1918, 1926, and 1928

[Docket No. H–022D]

# Hazard Communication

**AGENCY:** Occupational Safety and Health Administration (OSHA); Labor.

**ACTION:** Final rule.

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**SUMMARY:** OSHA is revising its Hazard Communication Standard (HCS) (29 CFR 1910.1200), which currently applies to the manufacturing sector, to cover all employers with employees exposed to hazardous chemicals in their workplaces. Expansion of the scope of the HCS requires non-manufacturing employers to establish hazard communication programs to transmit information and the hazards of chemicals to their employees by means of labels on containers, material safety data sheets, and training programs. This action will reduce the incidence of chemically-related occupational illnesses and injuries in non-manufacturing workplaces.

**DATES:** Effective September 23, 1987. The revised standard published today requires that chemical manufacturers, importers, and distributors ensure that material safety data sheets are provided with the next shipment of hazardous chemicals to non-manufacturing employers or distributors after September 23,1987. All employers in the non-manufacturing sector are to be in compliance with all provisions of the standard by May 23, 1988.

**FOR FURTHER INFORMATION CONTACT:** Mr. James F. Foster, Office of Information and Consumer Affairs, Occupational Safety and Health Administration, 200 Constitution Avenue, NW., Room N3637, Washington, DC, 20210; telephone (202) 523–8151.

**SUPPLEMENTARY INFORMATION:** References to the rulemaking record are made in the text of this preamble, and the following abbreviations have been used:

*H–022, Ex.:* Exhibit number in Docket H–022, which includes Dockets H–022A and H–022B.

*Ex.:* Exhibit number in Docket H–022D for exhibits collected since the 1985 Court remand.

*Tr.:* Public hearing transcript page number.

Copies of the official list of entries in the record, as well as the exhibits themselves, are available from the OSHA Docket Office, Dockets H–022 and H–022D, Occupational Safety and Health Administration, 200 Constitution Avenue, NW., Room N3670, Washington, DC, 20210; telephone (202) 523–7894.

## I. Background

### *A. History of OSHA's Hazard Communication Standard*

When Congress passed the Occupational Safety and Health Act of 1970, 29 U.S.C. 651 *et seq*. (the Act), it included language in section (6)(b)(7) stating that any occupational safety or health standard promulgated by the Secretary of Labor under section 6(b) rulemaking authority "shall prescribe the use of labels or other appropriate forms of warning as are necessary to insure that employees are apprised of all hazards to which they are exposed, relevant symptoms and appropriate emergency treatment, and proper conditions and precautions of safe use or exposure" Whenever OSHA has promulgated a substance-specific rule to address the hazards of a particular chemical, this Congressional directive has been followed. However, given the universe of chemicals present in American workplaces (as many as 575,000 hazardous chemical products), and the time-consuming nature of OSHA's rulemaking process, it soon became clear that little information would be available to employees if this substance-by-substance approach were the only one pursued. The Agency thus decided to address the issue of hazard information transmittal on a generic basis. OSHA's experience, as well as our rulemaking record to date, supports the view that when employees have access to, and understand, the nature of the chemical hazards they are exposed to during the course of their employment, they are better able to participate in their employers' protective programs, and take steps to protect themselves. In addition, providing employers with complete chemical hazard information enables them to better design and implement protective programs. Together these actions will result in more effective worker protection and the occurrence of fewer illnesses and injuries due to exposure to chemicals. *See, e.g.*, 48 FR 53282–84, 53321, 53323–24, 53327–29 (Nov. 25, 1983); 47 FR 12093–12101 (Mar. 19, 1982).

In 1974, OSHA established a Standards Advisory Committee on Hazardous Materials Labeling under section 7(b) of the Act to develop guidelines for the implementation of section 6(b)(7). On June 6, 1975, the Committee submitted its final report to the Assistant Secretary for Occupational Safety and Health which recommended categorization and ranking of chemical hazards as well as provisions for labels, material safety data sheets, and training programs for all workers.

The National Institute for Occupational Safety and Health (NIOSH) published a criteria document in 1974 which also recommended a standard to OSHA. The document, entitled "A Recommended Standard…An Identification System for Occupationally Hazardous Materials," included provisions for labels and material safety data sheets.

In 1976, Congressman Andrew Maguire from New Jersey and the Health Research Group petitioned OSHA to issue a standard to require the labeling of all workplace chemicals. The House of Representatives' Committee on Government Operations (1976 and 1977) recommended that OSHA enforce the health provisions of the Act by requiring manufacturers to disclose any toxic ingredients in their products, and by requiring all employers to disclose this information to workers.

On January 28,1977, OSHA initiated the public participation phase of the rulemaking process on these issues by publishing an advance notice of proposed rulemaking (ANPR) on chemical labeling in the Federal Register (42 FR 5372). The ANPR requested comments and information on the need for such a standard, and the particular provisions that should be included. The Agency received eighty-one comments. Most supported the need for the rule, but opinions as to the specific approaches to be pursued varied significantly.

On January 16,1981, OSHA published a notice of proposed rulemaking (NPRM) entitled "Hazards Identification" (46 FR 4412). The rule would have required manufacturing employers to assess the hazards in their workplaces using specified procedures, and to label containers. The requirements were quite different from the comprehensive approach previously recommended by the Standards Advisory Committee and NIOSH as they did not include provisions for material safety data sheet development or training.

OSHA withdrew the NPRM on February 12, 1981 (46 FR 12214) for further consideration of regulatory alternatives. A new NPRM was published on March 19, 1982, and was entitled "Hazard Communication" (47 FR 12092). It proposed to require producers of chemicals to evaluate them to determine their hazards, label containers, and provide material safety data sheets to manufacturing purchasers of their products. The standard also proposed that all employers in the manufacturing

sector have a hazard communication program, label in-plant containers, maintain and provide access to material safety data sheets, and train workers. The proposal also invited comments on whether non-manufacturing employers should be subject to the rule.

Following a period for written comments, informal public hearings, and a post-hearing comment period, OSHA published the final Hazard Communication Standard on November 25, 1983 (48 FR 53280). The provisions of the final rule are very similar to those described above for the proposal, *i.e.*, chemical manufacturers and importers are required to evaluate the hazards of the chemicals they produce or import, and all manufacturers are required to have hazard communication programs for their employees exposed to hazardous chemicals. This comprehensive standard was designed to reduce the hazards faced by manufacturing workers when they handle chemicals without adequate information on, among other things, the physical and health hazards of the chemicals, safe handling precautions, and emergency and first aid procedures. *See, e.g.*, 48 FR 53321. OSHA found that inadequate communication regarding chemical hazards presents a significant risk to workers. *See, e.g.*, 48 FR 53321. *Accord United Steelworkers of America v. Auchter*, 763 F.2d 728, 735 (3d cir. 1985) (*United Steelworkers I*) ("[I]nadequate communication is itself a hazard, which the standard can eliminate or mitigate.").

OSHA decided to limit the scope of coverage of the HCS to the manufacturing sector based on an analysis of the chemical source illnesses and injuries occurring in each industrial sector. (*See* discussion at 48 FR 53284–86.) In particular, since the purpose of the standard is to reduce the occurrence of such incidents, OSHA determined that the rule should focus on those industrial sectors where they are recorded most frequently. The Agency found that over half of these incidents occur in manufacturing although manufacturing accounts for only about 30 percent of total employment. Thus OSHA decided that the greatest need for transmittal of chemical hazard information is in the manufacturing sector. The Agency further recognized that since chemicals are developed and produced in the manufacturing sector, the hazard information would have to be developed in the manufacturing sector first regardless of the eventual coverage of the rule. OSHA believed that requiring the development of the chemical hazard information in manufacturing would lead to its increased availability in the other sectors without the standard specifically requiring the transmittal of hazard information to those sectors. The Agency acknowledged that hazardous chemicals are pervasive throughout industry and that chemical source injuries and illnesses have been recorded in all industry sectors. *See, e.g.*, 48 FR 53282–87. *See also United Steelworkers I*, 763 F.2d at 737. The Agency planned to make a decision regarding the explicit coverage of the non-manufacturing sectors once the HCS was in effect, and a determination could be made as to whether the other industries were, in fact, obtaining

the information they needed. OSHA believed that the Act gives the Secretary of Labor and the Agency the authority to regulate the most hazardous industry first under section 6(g), 29 U.S.C. 655(g), which states in part:

In determining the priority for establishing standards under this section, the Secretary shall give due regard to the urgency of the need for mandatory safety and health standards for particular industries, trades, crafts, occupations, businesses, workplaces or work environments.

*B. Court Challenges*

The HCS was challenged in the U.S. Court of Appeals for the Third Circuit (hereinafter referred to as "the Court" or "the Third Circuit") on several grounds. The Court issued its decision on May 24, 1985 (*United Steelworkers I*, 763 F.2d 728 (3d Cir. 1985)).The standard was upheld in most respects, but three issues were remanded to the Agency for reconsideration. The decision was not appealed.

First, the Court concluded that the definition of trade secrets incorporated by OSHA included chemical identity information that was readily discoverable through reverse engineering and, therefore, was "broader than the protection afforded trade secrets by state law." The Court directed the Secretary of Labor to reconsider a trade secret definition which would not include chemical identity information that is readily discoverable through reverse engineering. Second, the Court held the trade secret access rule in the standard invalid insofar as it limited access to health professionals, but found the access rule otherwise valid. The Secretary was directed to adopt a rule permitting access by employees and their collective bargaining representatives to trade secret chemical identities. OSHA complied with the Court orders regarding the two trade secret issues in a separate rule. published in final form on September 30, 1986 (51 FR 34590).

The third issue remanded to OSHA involved the scope of the standard's coverage. As noted, the HCS currently applies to employers and employees in the manufacturing sector. The Court rejected the Secretary's contention that section 6(g) gave him the flexibility to regulate the most hazardous sector first before commencing rulemaking for other sectors in which workers are exposed, to a lesser extent. to the same hazards: The Court agreed that section 6(g) "clearly permits the Secretary to set priorities for the use of the Agency's resources, and to promulgate standards sequentially." 763 F.2d at 738. The Court also acknowledged that "there is substantial evidence in the record that the manufacturing sector has the highest incidence rate of chemical exposures which the Agency has authority to regulate." *Id.* at 737. However, the Court held that it is not enough merely to establish that the sector selected for coverage presents greater hazards than those that have been left for later rulemaking. Given the record

evidence of high levels of exposure to hazardous chemicals in several job settings outside the manufacturing sector, the Secretary was required to explain "why coverage of workers outside the manufacturing sector would have seriously impeded the rulemaking process" or "why it is not feasible for the same standard to be applied in other sectors where workers are exposed to similar hazards." *Id.* at 738.

The Court was not persuaded that the HCS would provide protection to uncovered workers because chemical hazard warnings would be found on container labels and detailed information on material safety data sheets would become increasingly available in the unregulated sectors as a result of being required in manufacturing. *Id.* There was considerable record evidence that indicated that workers in the non-manufacturing industries are exposed to chemical hazards. The Court concluded that the Secretary had not stated why it would not be feasible to require employers in non-manufacturing industries to give workers material safety data sheets and training as required in the manufacturing sector. *Id.* The Court maintained that the Act required an explanation why the same information, that is, labels, material safety data sheets, and training is not needed for workers in other sectors similarly exposed to hazardous chemicals. *Id.* at 738–39. Therefore, as previously indicated, OSHA was directed by the Court to reconsider the application of the standard to employees in the non-manufacturing industries and to order its application to these other sectors unless the Secretary can state reasons why this application would not be feasible. It should be noted that in previous OSHA litigation, the Courts have defined "feasibility" in terms of OSHA rules as meaning "capable of being done." *American Textile Manufacturers Institute v. Donovan,* 452 U.S. 490, 508–509 (1980)(ATMI).

OSHA decided not to appeal this decision. As stated in the preamble to the final rule (48 FR 53286):

It should be emphasized that the Agency does not believe that employees in other industries are not exposed to hazardous chemicals, or that they should not be informed of those hazards. OSHA has merely exercised its discretion to establish rulemaking priorities, and chosen to first regulate those industries with the greatest demonstrated need.

OSHA was prepared to evaluate the HCS' effectiveness in getting information to downstream employers, and to extend the standard if necessary. In fact, the Agency initiated the process on March 4, 1985, prior to the Court decision, when the Assistant Secretary asked the National Advisory Committee on Occupational Safety and Health (NACOSH) to give OSHA its recommendation on the need and feasibility of expanding the scope of the HCS to other industries. On June 21, 1985, NACOSH adopted the following recommendation:

(NACOSH) strongly endorses the OSHA effort to promulgate a Hazard Communication Standard and selection of the manufacturing sector for its initial scope of coverage. It is the consensus recommendation of the Committee that the Scope of the current Hazard Communication Standard should be expanded to cover all employees in all industries at as early a time as possible. Complete implementation way require phasing in gradually. The BLS [Bureau of Labor Statistics] incidence rates of occupational illnesses, and other appropriate factors, should be primary considerations in expanding the coverage. The Committee further recommends that OSHA establish a task force to address these issues.

Meanwhile, OSHA's review of the rulemaking record showed that while there was considerable evidence concerning the need for hazard communication in other industries, and general support for a finding that the HCS would be feasible for non-manufacturing, there was a need for more direct evidence of the feasibility of expanded coverage, particularly in the area of economic feasibility. Accordingly, OSHA believed it was necessary and appropriate to initiate further rulemaking. OSHA commissioned a study of the economic impact of extending the HCS to the fifty major non-manufacturing industry groups within its jurisdiction, and issued an Advance Notice of Proposed Rulemaking (ANPR) seeking public comment on present hazard communication practices outside manufacturing, and the likely impact of extending the HCS to industries significantly different from the prototypical manufacturing worksites on which the original standard was based. 50 FR 48794 (Nov. 27, 1985). Over two hundred responses were received. Based on this newly acquired evidence and on the previous rulemaking record, OSHA was in the process of drafting a proposed rule which it expected to publish for notice and comment, followed by promulgation of a final rule in early 1988.

On January 27, 1987, however, the United Steelworkers of America, AFL-CIO-CLC and Public Citizen, Inc., petitioners in the 1985 challenge, filed a Motion For An Order Enforcing The Court's Judgment and Holding Respondent In Civil Contempt. Petitioners claimed that the Court's 1985 order had not authorized OSHA to embark on further fact gathering: that OSHA should have made a feasibility determination on the 1985 rulemaking record. Petitioners also argued that even if further fact gathering had been allowed by the Court's order, OSHA's pace was unduly slow.

In response, OSHA noted that the Court's 1985 order did not specify that OSHA should act on the then-existing record. OSHA believed that seeking further evidence on feasibility in non-manufacturing was appropriate in light of its statutory obligation to issue rules that are well grounded in a factual record. OSHA also asserted that, consistent with Supreme Court precedent, the Agency should be permitted to exercise its discretion in determining the appropriate rulemaking procedures for complying

with the Court's remand order. Lastly, the Agency argued that its schedule to complete the rulemaking was reasonable and did not constitute undue delay.

On May 29, 1987, the Court issued a decision holding that the Court's 1985 remand order required consideration of the feasibility of an expanded standard without further rulemaking. *United Steelworkers of America, AFL-CIO-CLC v. Pendergrass,* No. 63–3554 (3d Cir.) (*United Steelworkers II*). The Court declared that adequate notice had been provided to non-manufacturers during the original rulemaking that they might be covered by the HCS. *Id.* slip op. at 7–10. 26–17. that the answers to the remaining questions OSHA may have had regarding feasibility were "self-evident" or "readily ascertainable from the original record, *id.* at 15.17, and that further fact finding was "unnecessary", *id.* at 15. The Court ordered the Agency to issue, within 60 days of its order, "a hazard communication standard applicable to all workers covered by the OSHA Act, including those which have not been covered in the hazard communication standard as presently written, or a statement of reasons why on the basis of the present administrative record, a hazard communication standard is not feasible." *Id.* at 19. OSHA is responding to the Court order by issuing this final rule expanding the scope of the HCS' coverage to all workers within OSHA's jurisdiction.

OSHA continues to believe that it should have been permitted to follow the rulemaking procedures in the Act by issuing a notice of proposed rulemaking and developing a public record prior to promulgating a final rule. However, as discussed in the following section regarding feasibility, the Agency does not have sufficient evidence in the current record to indicate that the rule would be infeasible for any part of the non-manufacturing sector. OSHA recognizes that information submitted during a normal rulemaking process might have resulted in further changes to the provisions to better address feasibility or practicality concerns.

In light of the fact that there may be additional information regarding the feasibility or practicality of the rule as it applies to some non-manufacturing sectors, the Agency invites persons to provide such information and any recommendations for further rulemaking within sixty days of the date of publication of this final rule. OSHA will then evaluate these submissions and determine whether any additional rulemaking is required. Data or evidence related to feasibility should be addressed to: Directorate of Health Standards Programs, Occupational Safety and Health Administration, Attention: Hazard Communication, 200 Constitution Avenue, NW., Room N3718, Washington, DC, 20210.

*C. Feasibility of the Standard*

In the context of OSHA standard setting, feasibility constraints limit the extent to which standards can address health and safety concerns within the workplace. Section

6(b)(5) of the Act, 29 U.S.C. 655(b)(5). Feasibility analysis involves an inquiry to determine whether a standard is both technologically and economically capable of being done. *ATMI,* 452 U.S. at 512–13 and 513 n.31 (1980). As the Third Circuit has indicated, "the Secretary was able to determine that the hazard communication standard could feasibly be applied in the manufacturing sector." *United Steelworkers II,* slip op. at 16. The Court further noted that OSHA had concluded in the final rule that importers and distributors could feasibly comply with the HCS based on the evidence in the record and that "this is equally true of all non-manufacturer user employers. Plainly, the ease with which the same information can be utilized by those employers can be easily determined from the information already in the record." *Id.* at 18. The Third Circuit has ordered expansion of the HCS to all workers unless OSHA can give reasons why the HCS is infeasible for particular industries, and has forbidden OSHA from gathering further evidence.

OSHA concludes that the original HCS rulemaking record (Docket H–022). does not contain credible evidence indicating the standard would be infeasible for any industrial sector. In fact, OSHA believes that the original record on the whole supports a finding that the performance-oriented HCS is feasible for all industries. In addition, the Agency's experience under the present HCS and other pertinent OSHA standards, the promulgation and implementation of State and local right-to-know laws, and evidence and data gathered by the Agency since the 1985 Court order (Docket H–022D), further supports OSHA's conclusion that non-manufacturing employers are "capable" of implementing the HCS for their employees potentially exposed to hazardous chemicals.

OSHA found that the HCS is technologically feasible for manufacturers, and believes it is clearly technologically feasible for non-manufacturers as well. Twelve of the OSHA-approved State plan States have already extended the rule to cover the non-manufacturing sector, and the requirements are being enforced in those States as workplace standards. This experience provides practical evidence of the technological feasibility of the requirements of the rule. The more technical aspects of the standard—scientific evaluation of chemicals to determine their hazards and creation of material safety data sheets and warning labels—remain a burden on those producing or importing hazardous chemicals. The technical expertise needed to develop the chemical hazard information, and its associated costs, is subsumed within the current rule covering manufacturers, and it has been found feasible. All other requirements in the HCS, such as maintaining material safety data sheets, developing a written hazard communication program, and designing and implementing chemical hazard training, are conventional and common business practices that are administrative in nature, and no technological barriers prevent their development and implementation. OSHA has mandated such practices for some non-manufacturing

workplaces since the early 1970's. *See, e.g.*, 29 CFR 1915.97 (requiring material safety data sheets and chemical hazard training for shipyard workers); 1917.22 (requiring marine terminal workers be instructed as to the chemical hazards presented by cargo); 1918.86 (requiring chemical hazard instruction for longshore workers); 1926.21 (requiring chemical hazard training for construction workers). *See, also,* H–022, Ex. 99 (journal article regarding usefulness of material safety data sheets, written by Dow Chemical Company representatives and published in December 1957).

OSHA also believes that the economic feasibility of extending the current HCS to the non-manufacturing sector is supported by the record. Simply put, economic feasibility is established by evidence that the standard will not threaten the regulated industry's "long-term profitability." *ATMI*, 452 U.S. at 531 n.55. Costs associated with expanding the standard to cover non-manufacturing workplaces will stem from the initial start-up costs and the less substantial recurring program implementation and upkeep costs for maintaining material safety data sheets received from manufacturers, importers, distributors, and other employers; creating labels for in-house containers of hazardous chemicals; developing a written hazard communication program, including a list of hazardous chemicals present in the workplace; and developing and implementing chemical hazard training.

After careful analysis of the original HCS rulemaking record, OSHA concludes that, as a whole, it supports a finding that non-manufacturers are economically capable of providing employees chemical hazard information in the manner prescribed by the HCS. As noted previously, development of the evidentiary record for the HCS began as early as 1974. In that year, NIOSH recommended that OSHA adopt a standard requiring all employers to implement a system of labels, placards and material safety data sheets in their workplaces to inform employees about the chemical hazards to which they may be exposed. (H–022, Ex. 4). The NIOSH recommended standard, like the HCS, included requirements that employers ensure that chemicals in the workplace are marked with hazard warnings and that material safety data sheets are "filed in the establishment" where they are "readily available for examination by workers". *Id.* at 3. This hazard identification and warning system was designed to additionally "help in the education of employees and provide the data necessary for employers to take proper action to safeguard their employees." *Id.* at 1. NIOSH concluded that such a chemical hazard communication program was appropriate for all employers. *See, also* comments of the Air Transport Association, H–022 Ex. 5–3 ("[T]he airlines have no general objection to the (NIOSH) Criteria…[except that it] should clearly delineate the responsibility of the manufacturer supplying the necessary data on the Material Safety Data Sheets.").

The 1975 report of the Standards Advisory Committee on Hazardous Materials Labeling H–022, Ex. 3), recommended a "total system" approach to chemical hazard

communication not unlike the comprehensive approach of the current HCS. The Advisory Committee, which included representatives of non-manufacturers, recommended labeling and placarding systems, the creation and availability of material safety data sheets, and employee education and training programs for all workers potentially exposed to hazardous chemicals. The Committee recognized that these practices "are not new and novel concepts" but "well established in many industries and professional associations as well as regulated by various governmental agencies and international agreements." *Id.* At 3. The Advisory Committee made "no distinction among employees in different sectors of the economy." *United Steelworkers II,* at 7.

As the Court has stated, *id.* at 8, the 1977 ANPR requested public comment from all interested persons on whether a chemical hazard communication standard should be promulgated by OSHA. Comments on the Standards Advisory Committee's recommended standard were specifically requested. Although OSHA did not receive comment from employers in every industrial sector, those non-manufacturers that did respond supported a comprehensive hazard communication system for their workplaces. For example, Sea-Land Service, Inc. (H–022, Ex. 2A–6) supported requirements for container labels (consistent with transportation labels already in place), the availability of material safety data sheets to persons in the workplace, and individual training programs. Panhandle Eastern Pipe Line Company (H–022, Ex. 2A–7) and Truckline Gas Company (H–022, Ex. 2A–9) both "agree[d] that employees need information about the product with which they work" and that this could be accomplished by requiring suppliers of hazardous chemicals to label containers with the "degree and nature of the hazard" and by requiring user employers to "inform employees of the hazard." Those companies had already developed "a special manual of data for all chemicals, solvents and cleaners used in [their] operations and maintenance."

Wisconsin Electric Power Company (H– 022, Ex. 2A–30), stated that given adequate labels and material safety data sheets from chemical manufacturers and suppliers, chemical users such as they "would be in a position to prepare their own Material Safety Data Sheets, hazard placard systems, proper labeling of auxiliary and secondary containers and training of personnel who may use or otherwise contact this material." Recognizing the need for "proper labeling, storage, handling and instructions in the use of hazardous materials," Wisconsin Electric Power Company had already "developed and put into effect a Hazardous Materials Control Program." Southern Gas Association (SGA) (H–022 Ex. 2A–75) also believed that suppliers and manufacturers of hazardous materials should be required to provide proper labeling, warnings and other hazard information to all employers using these materials. SGA further suggested that OSHA promulgate a standard directing all employers "to

establish required training for employees that may handle or otherwise be exposed to any hazardous materials." These comments and others filed in response to OSHA's 1977 ANPR indicate that many non-manufacturers consider maintaining labels received on chemical containers, making material safety data sheets received from suppliers available to employees, and providing information and training to employees regarding chemical hazards present in the workplace to be economically feasible. See, also H–022, Exs. 2A–2 (Schirmer Engineering Corporation); 2A–1–31 (Union Electric Company); 2A–32 (Texaco); 36 (American Trucking Association, Inc.).

Moreover, comments received from non-manufacturers at later stages of the original rulemaking also indicate they are capable of implementing the performance-oriented HCS. In fact, there are comments which indicate that many of these requirements were already being implemented in the non-manufacturing sector.

For example, the Western Agricultural Chemicals Association indicated that members provide material safety data sheets to anyone who requests them, including customers in the non-manufacturing sector (Tr. 2873). Their representative further stated that "[i]n the agricultural field, I would say most technical products have material safety data sheets. I would say maybe 75% to 80% of the inerts have them…" (Tr. 2881).

There was also testimony from employee representatives, including those in the non-manufacturing sector such as airline mechanics, that they requested and were able to obtain material safety data sheets from manufacturers for products in use in their facilities. Tr. 2819–21, 3131, 3828. One union testified that a joint employee-employer safety committee received every material safety data sheet it requested, and that the union then trained workers to be able to use the information. Tr. 2824–A.

Another non-manufacturing union representative, the International Brotherhood of Painters and Allied Trades, indicated that it shared collected material safety data sheets with employers who needed such information. "[T]o contractors who make requests of us for information, we do provide them material safety data sheets, write-ups on the chemicals and the products…We do everything—our union does everything they can as a service to our contractor members to provide them with the information they need to operate safely…." Tr. 2101–2.

Other large companies with manufacturing as well as non-manufacturing establishments testified that information was made available throughout their corporations, and they provide information to all customers regardless of industry. For example, Atlantic Richfield Company testified that they have a company-wide material safety data sheet policy and program. "[U]nder this program, a material safety data sheet is recognized as a source of information for practical health, safety

and environmental information. The MSDS whether generated internally or obtained from a supplier is used to communicate relevant data within the company and to outside customers. It is the responsibility of our various operating companies to distribute copies of each MSDS to customers and company facilities for employee instruction and/or information." Tr. 2439. Their company facilities include such non-manufacturing operations as petroleum production.

Similarly, Exxon, Inc. testified that it too provides material safety data sheets to all customers: "[W]e consider a material safety data sheet a matter of public information that's part of our literature, regularly available to anyone who requests it." Tr. 1708–09. *See, also,* Shell testimony at Tr. 1712 and 2500, and Uniroyal Chemicals at Tr. 1464.

Therefore, based on the recommendations of NIOSH, the Standards Advisory Committee and the comments received from non-manufacturers and their representatives participating in the lengthy rulemaking, OSHA concludes that the original record as a whole indicates that non-manufacturers are capable of complying with the HCS. As long as chemical suppliers provide adequate chemical hazard information in the form of labels and material safety data sheets to non-manufacturers using the chemicals, those user employers, like the manufacturers who use hazardous chemicals which they themselves did not manufacture or import, can develop hazard communication programs and provide employees information and training on the chemical hazards in the workplace.

In light of the evidence in the original rulemaking record, OSHA concludes that non-manufacturers can incorporate the HCS' administrative practices and provide chemical hazard information to their employees. OSHA believes all employers can ensure that containers of chemicals are maintained with proper hazard warnings just as an employer would maintain labels or marks on containers to ensure that employees comprehend their contents and intended uses. Likewise, all employers are able to acquire and maintain up-to-date material safety data sheets for hazardous chemicals just as they are able to acquire and maintain up-to-date cost information and performance specifications on those very same chemicals. OSHA also concludes that it is feasible for employers to inform and train their workers regarding the chemical hazards present in the workplace just as employers are capable of training their workers to perform their jobs in an efficient and speedy manner. These conclusions are further supported by the experience and evidence gathered by the Agency since promulgation of the HCS for manufacturers in 1983.

At this time, OSHA has no evidence indicating that the profitability of manufacturers generally, or even chemical manufacturers in SIC 28 (by far the most economically burdened by the HCS, *see* 48 FR 53333), has been threatened by complying with the

HCS. Manufacturers have had the considerable costs of evaluating, collectively, hundreds of thousands of chemicals for their hazards and creating corresponding labels and material safety data sheets since November 1985, as well as the costs of implementing an in-plant program by May 1986. After thorough analysis, OSHA determined that the current HCS would not impose a substantial burden on manufacturers and that the HCS was economically feasible for them. *See* 48 FR 53333. Experience to date in implementation of the rule supports that finding. For example, if manufacturers were experiencing significant feasibility problems in complying with the rule, OSHA would have expected to receive numerous substantive comments regarding those problems in response to the 1985 ANPR questions addressing feasibility concerns. However, although some manufacturing employers objected to some requirements, substantive comments demonstrating infeasibility were not received, which appears to support OSHA's conclusion that compliance with the HCS was, and continues to be, economically feasible for manufacturers and indicates the standard is also feasible for non-manufacturers. In fact, some manufacturers took the opportunity to state their continuing support for the rule and its requirements. *See, e.g.*, H–022D, Ex. 2–14. (The Chemical Manufacturers Association "strongly believes that the substantive provisions of the Hazard Communication Standard are sound as a matter of science and policy."); Ex. 2–67 (Economics Laboratory, Inc. "considers hazard communication worth the effort.")

Generally, the HCS costs to non-manufacturers would be a function of the number of hazardous chemicals in the workplace, and the number of employees exposed to hazardous chemicals. If employees are not potentially exposed to hazardous chemicals in a particular work operation, the proposed standard does not apply. Also, to the extent that employers are voluntarily providing information, or providing information in order to comply with other regulations or laws, this should significantly reduce the burden of compliance with this rule. Approximately 32 States and several localities already have hazard communication/right-to-know laws covering non-manufacturing industries indicating that many others seeking to protect the safety and health of workers have concluded that industry can comply with these types of requirements. In fact, as evidenced in the original rulemaking record, many companies involved in interstate commerce would benefit from promulgation of a uniform Federal standard as it would preempt different and potentially conflicting State and local laws and lessen overall compliance burdens. 48 FR 53283. *See also, e.g.,* H–022D, Ex. 2–83 (The American Gas Association "believes that a Federal Standard, rather than a variety of differing state regulations, would best serve the needs of the natural gas industry, the employees in our industry, and the general public as well."); Ex. 2–108 (The National Constructors Association has found that "[it] has been nearly impossible to establish uniform interstate policy" and "can clearly see the wisdom of

having one workable/cost-effective government regulation that addresses hazard communication.")

Although the original HCS record contained no evidence to indicate the HCS would be economically infeasible for non-manufacturing, OSHA recognized that potential feasibility concerns could arise, for example, with small businesses, businesses with large employee turnover (such as retail stores and construction companies), and businesses with rapid turnover of hazardous chemicals in the workplace (such as warehouses and marine cargo operations). However, based on the original HCS rulemaking record, and additionally based on: (1) The apparent successful implementation of the present HCS by manufacturers; (2) the implementation of other Federal communication standards and of State plan States' laws by non-manufacturers; and, (3) on regulatory impact and regulatory flexibility analyses prepared by the Agency since the 1985 Court order and summarized in Section III of this document. OSHA concludes that the provisions in the current Hazard Communication Standard are economically feasible for all of the non-manufacturing industries.

OSHA is also aware that many employers in the manufacturing sector have been able to satisfy some of their responsibilities under the HCS by using compliance materials obtained from various sources. Trade associations, for example, have frequently been instrumental in assisting their members in developing programs suitable for their type of industrial facility. This is particularly appropriate given the performance orientation of the HCS, and the flexibility employers are permitted to design appropriate compliance programs. Sample written programs and other written materials, as well as training programs regarding the requirements of the rule, have been developed and provided to association members and have facilitated compliance efforts. The ability of associations to accomplish this successfully demonstrates technical feasibility and enhances economic feasibility. Trade associations in states covering non-manufacturing workplaces under their right-to-know rules have also been able to develop materials to assist their members to comply. Materials developed for these State laws or for the manufacturing sector under the current HCS could be adapted for the non-manufacturing workplaces newly covered by the HCS.

There have also been a number of services provided by consultants in the private sector. These range from very specific items, such as computer programs to manage information, to a comprehensive compliance strategy, where a consultant will devise an entire program to enable a facility to comply. Such services will often minimize the burden of compliance by minimizing the time the facility staff must spend to develop and implement a program. The availability of such programs also provides support for the conclusion that the rule is feasible.

For large companies, the burden per facility will often be minimized by corporate development of a standardized program. It can be expected that most corporations with multiple facilities will use this approach (this has occurred in the manufacturing sector as well).

Therefore, OSHA concludes that similar resources will be available to employers in the non-manufacturing sectors, which further demonstrates that the rule is feasible for implementation in all sectors. In fact, given the pre-existing coverage of non-manufacturing under various state rules, and the extent of the materials developed in response to the current HCS which would also be applicable in non-manufacturing, additional development of such materials should require considerably less effort and be easier for non-manufacturers to obtain.

Nevertheless, OSHA recognizes that the unique characteristics of some businesses render certain provisions of the current standard unnecessary or ineffective in communicating the hazards of chemicals to workers. The Agency has thus made some modifications to the standard to ensure that its provisions are practical and effective in communicating hazards to all workers. *Cf. ATMI,* 452 U.S. at 531L n.32 (OSHA may use cost-effectiveness analyses and choose the less costly of two equally effective standards). The inclusion of these "tailoring" provisions is consistent with the Agency's action tailoring the original HCS to make it practical and cost-effective for all manufacturers. *See* 29 CFR 1910.1200(b)(3)–(5). Now that the coverage of the standard is being expanded to non-manufacturing employers as well, it is necessary to tailor the standard to the unique characteristics of these non-manufacturing employers. The tailoring provisions, explained in Section II of this preamble, are based on the original record in the HCS rulemaking, and also on Agency experience in implementing the current rule, State plan State experience in implementing expanded versions of the current rule, and comments submitted to the Agency in response to the ANPR published in November 1985. OSHA believes that the knowledge and experience gained during the past few years of implementation and enforcement of the current rule must be taken into consideration when crafting a rule to appropriately apply to the non-manufacturing sector.

The Agency's position is that all employees are entitled to information regarding the chemical hazards they are exposed to in the workplace, and that a uniform Federal hazard communication standard is the best method to ensure that information is provided. This position is consistent with the Act (Protecting all employees to the extent feasible), as well as with the Court's decision upon review of the rule. Therefore, this final rule addresses communicating chemical hazards to all exposed employees.

It should be emphasized that in preparing a detailed regulatory impact analysis for the expansion of the scope of the HCS, OSHA has accumulated evidence to indicate that some employees in every SIC code designation are exposed to hazardous chemicals, and that it is therefore not appropriate to exempt any particular industry sector. For example, OSHA has received suggestions that retail establishments be exempted since employee exposure to chemicals is believed to be unlikely in these types of facilities. However, there is testimony in the original rulemaking record from the United Food and Commercial Workers International Union (Tr. 3088–97) that demonstrates that workers in such facilities are exposed to hazardous chemicals, and therefore do need the protections afforded by coverage under the HCS:

While supermarkets don't use hundreds of hazardous chemicals like some manufacturing industries, a large number of workers are exposed to the dozen or to they do use. Chemicals used include caustic and acid cleaning compounds, solvents, waxes, paints and disinfectants…Let me relate to you one case within our union where workers were overexposed to an unidentified substance. A group of supermarket workers began experiencing dizziness, upper respiratory tract irritation and headaches…Not until workers started to talk with one another did they start to suspect a possible link between their illness and a certain solvent that was used to remove old price labels from merchandise called Garvey XC–36.

*See* Tr. 3088–89. *See also* Tr. 424 and Tr. 1840–43. The testimony further relates other incidents, as well as the various activities the union had to pursue to obtain information for exposed workers—including chemical analysis of products to determine their contents. This illustrates the need for application of the standard in industries such as retail stores, as well as those industries where chemical exposures are more obvious. For additional testimony regarding the extent of chemical exposures in the non-manufacturing sector, *see, e.g.*, hospital workers: Tr. 411–14, 2738–41, and 3036 ("…hospital workers are exposed to formaldehyde, ethylene oxide, cleaning agents which are often very caustic…") (Tr. 411); barbers and beauticians: Tr. 415–16 ("…work around hair dyes…known to cause cancer…"); longshore workers: Tr. 3143; utility workers: Tr. 417, 3078, 3130; workers in dry cleaners and laundries: Tr. 416, 4084–90 ("…[B]eyond the chlorinated solvents that your dry cleaners use, some cleaners and laundries also use dyes…"); farmworkers: Tr. 2260.

*D. Construction Advisory Committee Recommendations*

On June 23, 1987, the Construction Advisory Committee on Occupational Safety and Health met to discuss a draft proposed standard prepared by OSHA to expand the scope of the HCS to the non-manufacturing industries. The draft proposed rule was very similar to the final standard being promulgated herein. OSHA has reviewed the

recommendations of the Construction Advisory Committee, and incorporated a number of the suggested revisions into this document to tailor the rule for the construction industry, and for other industries which have similar concerns due to similar differences in work operations from the typical manufacturing establishment. Other recommendations called for more substantive changes to the HCS, affecting the obligations of chemical manufacturers and others, and OSHA does not believe they are supported by the record or appropriate to incorporate in to this final rule without further opportunity for notice and comment from those affected. It is important to note, however, that despite the recommended changes there were no indications that members of the Construction Advisory Committee believe that it is infeasible to implement hazard communication programs in the construction industry. In fact, as OSHA has noted previously, the construction industry has been subject to training requirements concerning chemical hazards for many years (see 29 CFR 1926.21).

In preparing the draft proposed rule, and subsequently this final rule, OSHA did review the Report on Occupational Health Standards for the Construction Industry which was submitted by the Construction Advisory Committee to the Assistant Secretary on May 16, 1980. In that report the Committee addressed recommendations for labels, material safety data sheets, and training—all of the major components of the HCS.

Of particular concern to the Committee at that time was that construction employers do not have access to the necessary information upon which to develop appropriate signs and labels or material safety data sheets, and therefore must depend upon suppliers for such information. "[C]onstruction employers may not always be aware of the hazard associated with a particular product or device if the items are not accompanied upon purchase by appropriate labels and data sheet…" OSHA agrees that this lack of information has been a problem for all downstream users of chemicals, and thus developed the approach incorporated into the HCS—producers or importers of chemicals are responsible for evaluating the hazards and transmitting that information to downstream employers or users of the materials. Under the expanded rule, construction employers would be the recipients in this downstream flow of information.

The HCS did not exist at the time of the report, and the Committee thus recommended that a solution to the problem of lack of information "would be to modify and extend the existing OSHA standard for material safety data sheets which now applies only to ship repairing, shipbuilding, and ship breaking (29 CFR 1915, 1916 and 1917). The modified standard would require manufacturers or formulators of harmful materials or agents to supply material safety data sheets along with their products in such a fashion that they reach construction employers." Shipbuilding and ship repairing are in the manufacturing sector, and covered by the requirements of the 1983 final rule—ship

breaking will be covered by these expanded provisions. Therefore, OSHA is doing what was recommended in 1980, *i.e.,* extending the existing OSHA standard for material safety data sheets to construction. The Advisory Committee concluded that although the hazard information may have been difficult for construction employers to acquire in the past, "such information was fundamental to the preparation of warning signs, labels, training programs, and other important job safety and health activities."

The Construction Advisory Committee is now recommending that the construction industry be regulated under a separate standard for Hazard Communication, rather than being treated as any other downstream employer who uses chemicals. The rationale is that construction sites are unique among industrial workplaces and should be addressed in a vertical standard specific to the industry. Although OSHA has found this argument persuasive for a few health standards, where there are fundamental differences in control strategies to achieve permissible exposures for a chemical in a fixed site facility versus the construction site, it does not appear to be appropriate in this situation which simply involves transmittal of information. that can be accomplished on any type of site. Arguments regarding transient workers, mobile work sites, etc. can appropriately be made for other non-manufacturing users of chemicals as well. The problems raised can be dealt with more effectively by modifying the provisions of the current rule to address them rather than preparing completely separate standards for each industry.

It was interesting to note that although the Construction Advisory Committee was essentially maintaining that hazard communication in construction could be treated as a separate issue, many of the changes the members were recommending would often have required substantive changes in the requirements for the manufacturing sector. As noted above, the Committee expects to receive labels on containers and material safety data sheets from its suppliers. This is certainly consistent with OSHA's approach in the rule. But the Committee is also recommending that the labels on containers being shipped to construction contain additional information, and that the requirements for material safety data sheets be slightly different as well. They also recommended changes in the hazard determination provisions, while maintaining that hazard determinations must be accomplished in the manufacturing sector. These recommendations serve to support OSHA's view that in an approach which requires a downstream flow of information, the relationship between the requirements for producers and downstream users are so interdependent that separation of them into two separate standards would be logically inconsistent. And furthermore, since the requirements for hazard determinations, labels, and material safety data sheets were based on an extensive rulemaking record, and are not industry-specific, it would not be appropriate to modify those requirements at this point.

Two separate standards would also require cross-referencing provisions from one rule to another to ensure proper information transmittal, a regulatory format which would be unnecessarily confusing to the regulated community. OSHA believes it is more effective to list, in one standard, the obligations of chemical producers, importers, and suppliers with those of the users so that employers using hazardous chemicals will be aware of the content and quality of the hazard information they are entitled to receive from their suppliers. Furthermore, it would not be appropriate to indicate requirements for chemical manufacturers and importers in a standard which purports to cover solely the construction industry, as would have to be done to accommodate all of the recommendations of the Committee. Therefore, construction employers are included with all other employers in this standard. However, OSHA will print the rule in full in 29 CFR Part 1925 (in § 1926.59) for ease of reference for construction employers and employees. In addition, it will also be printed in 29 CFR Parts 1915, 1917, and 1918, for the use of maritime employers and employees (at new § 1915.99, 1917.28, and 1918.90, respectively), and will be referenced in Part 1928 covering agricultural employments.

*E. Federal Community Right-to-Know Law*

Expansion of OSHA's HCS will also have an impact on employers' obligations under another Federal law to inform State and local communities of the hazardous chemicals present in the workplace. On October 17,1986, the President signed into law the Superfund Amendments and Reauthorization Act of 1986 ("SARA"). Part of the new law, Title III, the Emergency Planning and Community Right-to-Know Act of 1986, encourages and supports emergency planning efforts at the State and local level and provides citizens and local governments with information concerning potential chemical hazards present in their communities.

Two provisions in the new law, sections 311 and 312, mandate that employers required under the Occupational Safety and Health Act of 1970 and regulations under that Act to prepare or have available material safety data sheets for hazardous chemicals in their workplaces, must also submit chemical hazard information to State and local governments. Specifically, employers required by the OSHA HCS to create or maintain material safety data sheets for employees must also submit to the State emergency response commissions, the local emergency planning committee and the local fire department: (1) A material safety data sheet for each hazardous chemical for which a data sheet is available (section 311); and (2) an emergency and hazardous chemical inventory form (section 312). The public may request material safety data sheets and inventory information from the local planning committee.

Because all manufacturing employers are currently subject to the OSHA HCS and required to create or maintain data sheets for the hazardous chemicals present in their

workplaces, they must also comply with the community reporting requirements of the Emergency Planning and Community Right-to-Know Act. An expanded HCS covering non-manufacturers will require non-manufacturers to provide chemical hazard information not only to their employees but also to the surrounding communities.

On January 27, 1987, EPA proposed regulations to implement the community data sheet and invention reporting requirements. A detailed explanation of the EPA proposal can be found at 52 FR 2836 (January 27, 1987). A final rule is expected to be published in the near future. OSHA has prepared a preliminary estimate of the costs of expansion of the EPA requirements into the non-manufacturing sector. This estimate is addressed further in the section of this preamble dealing with the regulatory impact analysis for the final rule.

EPA has established a toll-free hotline to answer questions concerning the requirements: Chemical Emergency Preparedness Program Hotline, 1–800/535–0202; in Washington, DC at 1–202/479–2449.

## II. Summary and Explanation of the Issues and the Provisions of the Final Standard

This final rule is both an expansion and revision of the current HCS. The regulatory text presented herein includes the unchanged provisions of the present rule, as well as those which OSHA is changing. This was done to ensure that readers can clearly follow where these changes would appear in the standard. As explained below, the substantive changes were found to be necessary and appropriate for a hazard communication standard covering all workers exposed to hazardous chemicals. OSHA is also making several corrections and minor technical amendments to the standard. OSHA finds prior public notice and comment for these minor amendments to be unnecessary because of their non-substantive nature. 5 U.S.C. 553(b); 29 CFR 1911.5.

The discussion which follows will address the changed provisions of the rule, as well as the issues related to these changes. A detailed summary and explanation of the current rules provisions is only provided when necessary for the discussion of the modification. For a complete explanation of the existing provisions, please see the preamble to the current HCS (48 FR 53334–40). The current rule is codified at 29 CFR 1910.1200, and was published at 48 FR 53340–48. The modified trade secret provisions are discussed at 51 FR 34590.

This discussion is organized by paragraph of the standard, and is presented in the order these paragraphs appear in the HCS.

For ease of reference, OSHA will be printing the same rule in full in 29 CFR Part 1910 (in § 1910.1200) for general industry, 29 CFR Part 1926 (in § 1926.59) for construction, and in 29 CFR Parts 1915, 1917, and 1918, for the use of the maritime industry (at new §§ 1915.99, 1917.28, and 1918.90, respectively).

*(a) Purpose*

All references to the manufacturing sector, SIC Codes 20 to 39, have been deleted to reflect the expansion of the scope to all employers and employees. It should be noted that these changes have been made throughout the provisions of the rule, wherever the HCS currently addresses employers and employees in the manufacturing sector rather than employers and employees in general. Despite the expansion of covered employers from manufacturers to all employers, however, OSHA retains in this final rule the distinction between chemical manufacturers and importers who produce or import hazardous chemicals, and downstream employers who merely use the chemicals. Only the former are to prepare the technical hazard information for labels and materials safety data sheets accompanying hazardous chemicals, whereas all employers are to pass this information on to their workers potentially exposed to the chemicals through a comprehensive hazard communication program which includes individual training.

The original Hazard Communication Standard included, at 29 CFR 1910.1200(a)(2), a generally-worded statement concerning the Agency's position regarding the preemptive effect of the standard. This paragraph has been revised to more explicitly state the Agency's position regarding preemption based on the provisions of the Act and related legal actions. This final rule significantly expands the number of industrial groups to which the Federal standard applies, and thus it significantly expands the area in which state and local laws will be preempted.

Section 18(a) of the Act, 29 U.S.C. 667(a), provides that a state may assert jurisdiction through any court or agency over "any occupational safety or health issue with respect to which no standard is in effect under section 6." Conversely, where OSHA has issued a standard, section 18 expressly preempts states from asserting jurisdiction through any court or agency over the issue addressed by that standard, unless a Federally-approved State plan is in effect. 29 U.S.C. 667(a) and (b); 29 CFR 1901.2.

The express preemption provisions of the Act apply to all state or local laws which relate to an issue covered by a Federal standard, without regard to whether the state law would conflict with, complement, or supplement the Federal standard, and without regard to whether the state law appears to be "at least as effective as" the Federal standard. The "at least as effective as" test applies only to state standards

adopted under an approved State plan. 29 U.S.C. 667(c)(2). In enacting OSHA, Congress rejected provisions which would have permitted states to enforce laws which were "not in conflict with" or "at least as effective as" Federal OSHA standards. *See* Senate Comm. on Labor and Public Welfare, 92d Cong., 1st Sess., Legislative History of the Occupational Safety and Health Act of 1970, at 58.705 (Comm. Print 1971). Instead, Congress enacted section 18 providing that Federally-approved State plans are the exclusive alternative to preemption.

Since the promulgation of OSHA's original Hazard Communication Standard, a number of court decisions have dealt with the effect of express and implied Federal preemption upon state and local hazard communication or "right-to-know" laws. *United Steelworkers of America v. Auchter,* 763 F.2d 728, 733–36 (3d Cir. 1985) (Federal Hazard Communication Standard expressly preempts state hazard disclosure laws in manufacturing sector); *New Jersey State Chamber of Commerce v. Hughey,* 774 F.2d 587 (3d Cir. 1985) (provisions of New Jersey right-to-know law which pertain primarily to community or environmental safety and health are not expressly preempted; right-to-know laws subject to implied preemption if they make it impossible to comply with Federal law or pose an obstacle to objectives of the Federal Act); *Manufacturer's Association of Tri-County v. Knepper,* 801 F.2d 130 (3d Cir. 1986) (similar holding in connection with Pennsylvania right-to-know law).

The revised paragraph (a)(2) specifically provides that both state and local laws pertaining to occupational hazard communication are preempted by the Federal standard. In the one court decision which has addressed the question, the United States Court of Appeals for the Sixth Circuit ruled that the Federal Hazard Communication Standard preempts local as well as state laws. *Ohio Manufacturers Association v. City of Akron,* 801 F.2d 824 (1986). The court noted that the text of § 1910.1200(a)(2) did not mention localities and referred only to preemption of "state" laws. *Id.* at 827, 831–832. Nevertheless, relying upon references to local as well as state laws in the preamble to the 1983 standard, the court correctly inferred that OSHA had intended to preempt all non-Federal occupational hazard communication laws. *Id.* at 832. Therefore, in accordance with the Court decision, OSHA is making a technical amendment to paragraph (a)(2) so that it explicitly states that the HCS preempts local worker right-to-know laws.

The revised § 1910.1200(a)(2) not only defines hazard communication as an "issue" under the terms of the Act, but also enumerates the generic areas addressed by the standard for purposes of establishing the parameters of preemption. Thus any State or local government provision requiring the preparation of material safety data sheets, labeling of chemicals and identification of their hazards, development of written hazard communication programs including lists of hazardous chemicals present in the workplace, and development and implementation of worker chemical hazard training

for the primary purpose of assuring worker safety and health, would be preempted by the HCS unless it was established under the authority of an OSHA-approved State plan.

*(b) Scope and Application*

*Laboratories.* With regard to the coverage of laboratories, specifically addressed in paragraph (b)(3), OSHA concludes that the current rule's provisions, requiring only that labels and material safety data sheets received with incoming chemicals be maintained and that the general training of paragraph (h) be provided, are feasible for non-manufacturing laboratories as well. *See, e.g.,* comments of the Massachusetts Institute of Technology. H–022D, Ex. 2–120 ("We agree that the Hazard Communication Standard's requirements for labs are adequate….We expect our compliance costs to remain at the current level of spending because the majority of these are startup costs and some activities have been absorbed and integrated within existing programs.") OSHA believes that these somewhat limited hazard communication requirements for manufacturing laboratories are also appropriate for non-manufacturing laboratories because both share the operating conditions that distinguish them from the typical industrial workplace: they commonly use small quantities of many different hazardous chemicals for short periods of time; the conditions and purposes of the use of the chemicals frequently change, often unpredictably; many substances are of unknown toxicity; and many workers are highly trained. *Compare* 48 FR 53287–89, *with* 51 FR 26663–64. OSHA concludes that the same HCS provisions tailored for manufacturing laboratories are appropriate for the protection of all laboratory workers within OSHA's jurisdiction.

It should also be noted that OSHA is currently proceeding with a specific rulemaking to directly address "Occupational Exposure to Toxic Substances in Laboratories" (51 FR 26660; July 24,1986). When that rule becomes final, its provisions may supplement the information transmittal requirements of the HCS by directly reducing hazardous chemical exposures in laboratories by requiring, among other things, safe work practices. As noted in that proposal, the final rule might modify the general information and training requirements in the HCS to incorporate other aspects of that standard. Any changes in the application of the HCS provisions to laboratories will be addressed in detail in the final rule for laboratories and will be based on that rulemaking record (Docket H–150).

*Coverage determined by "exposure."* The HCS covers situations where employees "may be exposed" to hazardous chemicals (paragraph (b)(2)), and such exposure is defined to include potential exposure as well as actual exposure. This is to ensure that employees receive information about all chemical hazards in their work areas, and that they are prepared to deal with any unexpected releases or emergency situations,

as well as exposures during the normal course of employment. OSHA concluded that employees are entitled to information regarding the chemicals to which they are exposed in their work areas. It should be noted, however, that individual facilities and workplaces may have some employees who are covered since their work involves exposure to hazardous chemicals, and others who are not covered because their work does not. For example, in a retail department store, maintenance workers or workers in a graphic arts department may be covered since their jobs involve exposure to chemicals, but an accountant in the billing department would not be likely to experience exposure that would require coverage by the HCS.

There are a number of work situations where employees only handle sealed containers of chemicals, and under normal conditions of use would not open the containers and would not expect to experience any measurable exposure to the chemicals. Such work operations include, for example, warehousing, retail sales, marine cargo handling, and trucking terminals. It is reasonable to assume, however, that all such containers are subject to leakage and breakage, and these employees are in fact potentially exposed by virtue of the presence of these hazardous chemicals in their workplaces. Because of this potential exposure. they need information to protect themselves from the hazards of these chemicals in the event such an emergency situation occurs.

However, OSHA has considered the extent of information necessary or appropriate in this type of operation, and the practicality of requiring such work operations to be subject to all of the provisions of the rule. The primary need is to ensure that these employees know how to acquire and use the hazard information available to them, and to handle an emergency exposure situation. As in laboratory operations, maintaining lists of chemicals where the chemicals present may change on short notice, sometimes on a daily basis, is not a useful requirement. Similarly, obtaining material safety data sheets for every chemical in a sealed container that passes through a facility—even if it is there less than a day, in some situations—would result in a considerable amount of paperwork, with little discernible benefit for the employees involved. Therefore, OSHA has added a provision, paragraph (b)(4), to limit the duties of employers for those work operations where employees only handle sealed containers that are not intended to be opened under normal conditions of use. (Some States which have adopted right-to-know laws have also recognized the practical problems of coverage in this area, and have included provisions limiting coverage of workplaces where chemicals are handled in sealed containers. *See, e.g.,* Tennessee Hazardous Chemical Right to Know Law, Tennessee Code Annotated, 50–3–2001 through 50–3–20019.) In these situations, employers must not remove labels affixed to incoming containers of hazardous chemicals, must maintain and provide access to material safety data sheets that are received for hazardous chemicals while the chemicals are in the workplace, and obtain material safety data sheets when they are not received but an

employee requests one; and must train employees in accordance with the provisions of the rule to ensure they are protected in the event of a spill or leak.

The employees in these operations will always have access to the label information, which will provide appropriate hazard warnings and be a visual reminder of the potential hazards if exposure occurs. Employees will also be trained regarding the general classes of chemical hazards faced and the means by which they can protect themselves from these hazards when there is a spill or leak. The training must also address the availability and use of substance-specific information found on labels and material safety data sheets, where available. These requirements should provide employees handling only sealed containers of chemicals with the information they need.

This limited provision also addresses some of the concerns raised by representatives of industries with these types of workplaces. (*See, e.g.* Exs. 2–53, 2–75, 2–201, and 2–214.) Although they generally were arguing that this type of operation warrants exclusion from the rule, OSHA does not agree that no protection under the HCS is required in these situations. As already described, a potential for exposure does exist, and therefore such employees must be appropriately covered. OSHA believes the limited coverage described will effectively protect employees while recognizing the constraints of the particular work operations involved with regard to the applicability of the current rule to these types of work.

*Labeling exemptions.* The HCS includes a number of labeling exemptions to ensure that OSHA does not provide duplicative coverage for products which are already labeled under the rules of another Federal agency. It should be reemphasized that these exemptions (in paragraph (b)(4) of the original rule; paragraph (b)(5) in this final rule) are only from the container labeling requirements under paragraph (f)—all other provisions of the rule are still in effect. A minor correction is being made, however, to these exemptions to indicate that when medical or veterinary devices are labeled in accordance with the labeling requirements of the Food and Drug Administration (FDA) under authority of the Federal Food, Drug, and Cosmetic Act (21 U.S.C. 301 *et seq.*), those items are exempted from HCS labeling requirements. All other items regulated by FDA under that Act were listed in the HCS labeling exemption. Medical and veterinary devices were inadvertently omitted from the list of items that might be subject to FDA labeling requirements under the Federal Food, Drug, and Cosmetic Act, and they are exempted from HCS labels for the same reasons that the other items are exempt when subject to labeling under FDA. *See* 48 FR 53289. To ensure that all these FDA regulated items are treated in the same manner and that devices are exempted from HCS labeling if subject to FDA labeling, paragraph (b)(5)(ii) is amended by adding medical and veterinary devices.

*Other exemptions.* The HCS includes a number of specific, total exemptions from the requirements of the rule for certain types of chemicals. This rule adds three categories of exemptions: food, drugs, cosmetics, or alcoholic beverages in a retail establishment packaged for retail sale (paragraph (b)(6)(vi); consumer products (paragraph (b)(6)(vii)); and certain pharmaceuticals (paragraph (b)(6)(viii)).

*Food, drugs, cosmetics, alcoholic beverages.* The current HCS includes an exemption for food, drugs or cosmetics brought into the workplace for employee consumption. These types of exposures are not related to an employee's work, and therefore do not need to be covered under the HCS.

The expansion of the HCS into the non-manufacturing sector will result in many of these types of products being present in workplaces (*e.g.,* liquor stores) where they are not intended for employee consumption, and where they normally would not result in employee exposure because they are packaged for sale to consumers. Although some of these products may meet the definition of a "hazardous chemical" (*e.g.,* vinegar is acetic acid), when packaged for retail sale they do not pose a hazard to workers that is any different than the hazards of such products in their homes. The label information required by other Federal agencies for foods, drugs, cosmetics, and alcoholic beverages should thus provide sufficient protection for workers, and OSHA has exempted these products from coverage under the rule. It should be noted that this is not an exemption for facilities of any particular industry, as all facilities may have other chemicals in use that would be covered by the HCS. In addition, since these products are exempted, employers which package them for retail sale would not have to furnish material safety data sheets to distributors receiving the products.

*Consumer products.* The current rule provides a labeling exemption for consumer products when they are labeled in accordance with the requirements of the Consumer Product Safety Commission (CPSC). CPSC requires consumer products which contain hazardous substances to be appropriately labeled. Examples of consumer products would include such items as oven cleaner, paint stripper, and adhesive, which may be found in various types of workplaces. In addition to the specific labeling exemption, OSHA has been interpreting the rule as not being applicable to consumer products when used as a consumer would use them. OSHA is now adding this interpretation to the rule itself, paragraph (b)(6)(vi), stating that where such consumer products are used in the workplace in a manner comparable to normal conditions of consumer use, resulting in a duration and frequency of exposure to employees which is no greater than exposures experienced by ordinary consumers, under such conditions the chemical would not have to be included in the employees hazard communication program. This position is consistent with OSHA's reason for originally limiting the exemption for hazardous consumer products used in the course of employment to only an exemption from HCS labeling, and not material safety data

sheet and training requirements. "OSHA recognizes…that "there may be situations where worker exposure is significantly greater than that of consumers, and that under these circumstances, substances which are safe for contemplated consumer use may pose unique hazards in the workplace." 48 FR 53289. However, to the extent that workers are exposed to the substances in a manner similar to that of the general public, there is no need for any HCS requirements.

One example of such a differentiation in exposure situations involves the use of abrasive cleaners in the workplace. Where these are used intermittently to clean a sink, much as they would be used at home, the cleaners would not be covered under the standard. But if they are used to clean out reactor vessels, thus resulting in a much greater level of exposure, they would be covered. Or if an employee cleans sinks all day long, thus resulting in more frequent exposures, the abrasive would also be included in the hazard communication program. Thus workplaces which only have chemicals which are consumer products used in the same way and as frequently as the general public would normally use them, would not have to have a hazard communication program.

It should be noted that OSHA intends to read this exemption narrowly. Where an employer is uncertain whether the duration and frequency of exposure to these products is comparable to consumer use, an employer should obtain or develop the material safety data sheet and make it available to employees.

In response to questions raised in the 1985 ANPR, OSHA received a few comments on the use of consumer products in the non-manufacturing sector. A number indicated that overexposure may occur from the use of such products, or that the frequency and duration of workplace exposure is typically greater than that experienced by consumers (Exs. 2–59, 2–83, 2–100, 2–120, and 2–164). Others stated that the exposure was comparable to consumer use (Exs. 2–46 and 2–63). There were several that felt the label provided enough information, and no additional requirements were needed to protect employees (Exs. 2–75, 2–79, 2–99, 2–107, and 2–116), while others felt the employer should be required to request material safety data sheets because employees are not getting enough information (Exs. 2–109, 2–128, and 2–169). One suggested that the label note that a material safety data sheet is available on request (Ex. 2–100), while another contended that when a product is used by a professional, it is no longer a consumer product (Ex. 2–199). OSHA believes that the consumer product exemption in this final rule takes all of these concerns into consideration, and strikes a balance between the practical considerations of acquiring and maintaining material safety data sheets on CPSC regulated products which employees are exposed to at home as well as at work, and the worker's need for more hazard information than a CPSC label when exposures are greater or more frequent than typical public use of the chemical would generate.

A number of States adopting right-to-work laws have also developed consumer product exemptions. (*See, e.g.*, Wisconsin "Employees' Right to Know Law"; Illinois "Toxic Substances Disclosure to Employees Act.") However, most of these rules have taken a broader approach to the consumer product exemption, generally eliminating coverage of such products unless exposure is "significantly greater" than consumer exposure during the "principal consumer use." OSHA considered and rejected such language for the consumer product exemption. It would be very difficult from an enforcement perspective to determine when exposure to a consumer product is "significantly greater" than consumer exposure. The key elements of concern to OSHA are as stated in the consumer product exemption included in this rule—that the consumer product be used in the same manner as a consumer would use it (and therefore as intended by the manufacturer when preparing the label information), and that the duration and frequency of exposure be essentially the same as would be experienced by a consumer (and thus the label warnings would provide adequate protection). A broader exemption than this would not be appropriate to protect workers from occupational exposures that were not anticipated by the manufacturer when the labels and thus the protective measures were developed.

*Application to Office Products.* A number of questions have been raised about the application of the rule to office products that may contain hazardous chemicals. It is OSHA's determination that office products such as pencils, pens, typewriter ribbons, and the like, are "articles" under the rule and therefore exempted, paragraph (b)(6)(iv). Employers are not therefore required to implement a program for such products. OSHA has also determined that intermittent, occasional use of a copying machine to make copies is not covered by the rule. The copying machine would also be considered an article for purposes of this standard. However, if a firm has a copying machine operator who is responsible for handling the chemicals associated with its use, or who operates the machine frequently, that individual would be entitled to information under the rule.

*Medicine.* The rule, paragraph (b)(6)(vii), also includes an exemption for drugs when they are solid, and are in final form for direct administration to the patient (*i.e.,* pills or tablets). Employees handling such finished drug products would not be exposed to the chemicals involved, and would not need information other than that supplied on the container label under FDA requirements. (The State of North Carolina adopted a similar exemption in their Hazard Communication Standard, 13 NCAC s7C.101(a)(99)).

*Wood dust.* As OSHA has received a number of questions regarding the application of the wood and wood products exemption to wood dust, OSHA would like to reiterate its interpretation regarding the wood and wood product exemption in paragraph (b)(6)(iii) of this final rule. The wood and wood products exemption was included in

the HCS for two reasons. First, the presence and identity of wood and wood products in the workplace is "unmistakable" and second, their hazards (*i.e.,* flammability or combustibility) are well-known to workers. 48 FR 53289. Because wood and wood products, characteristic hazards are self-evident, regulations requiring formal notification were not thought to be necessary. Wood and wood products "are not expected to be hazardous for purposes of this standard." *Id.* at 53335. OSHA never intended, however, that wood dust be excluded from the standard's coverage under the wood and wood products exemption. Wood dust is not generally a wood "product," but is created as a byproduct during manufacturing operations involving sawing, sanding, and shaping of wood. Wood dust does not share solid wood products' "self-evident" hazard characteristics that supported the exemption of wood products from the HCS' coverage. Except for the chemical additives present in the wood, products such as lumber, plywood, and paper are easily recognizable in the workplace and pose a risk of fire that is obvious and well-known to the employees working with them. The potential for exposure to wood dust within the workplace, especially with regard to respirable particles, is not self-evident, nor are its hazards through inhalation so well-known that hazard communication programs are unnecessary.

"Wood dust" is a recognized health hazard, with exposure limits recommended by the American Conference of Governmental Industrial Hygienists (ACGIH) to control employee exposures to the substance. Under the provisions of the HCS, this means that wood dust is to be considered a hazardous chemical (paragraph (d)(3)(ii)), and therefore subject to the requirements of the rule including material safety data sheets and training.

*(c) Definitions*

The only changes to the definitions in the current HCS are those that need to be made to accomplish the expansion of the HCS.

The reference to SIC Codes 20 through 39 is being deleted from the definition of "chemical manufacturer" to be consistent with the extent scope of the rule. Any employer who produces a hazardous chemical for "use or distribution" is considered a "chemical manufacturer" under the HCS, and must prepare and provide the appropriate hazard information.

OSHA has modified the definition of "container" to exempt "engines, fuel tanks, or other operating systems in a vehicle." The Agency has received some questions regarding the need for labeling such parts of a vehicle in applying the rule to the manufacturing sector. Expansion into non-manufacturing will greatly increase the number of vehicles involved in work operations, and thus OSHA determined that this clarification will ensure that the Agency's position regarding this issue is clear—

vehicles do not have to bear labels regarding hazardous chemicals used to operate them. This does not exempt such chemicals from coverage by the rule—it simply eliminates the need to label once they are placed into the vehicle.

The definition of "distributor" has also been changed to reflect the extended scope of the rule. A "distributor" means "a business, other than a chemical manufacturer or importer, which supplies hazardous chemicals to other distributors or to employers." Among other things, distributors must transmit hazard information they receive from chemical manufacturers and importers to all their employer customers.

Under the current rule, OSHA defined "employee" as someone working in the manufacturing sector, and stated that those employees in manufacturing whose jobs did not involve routine potential exposure to hazardous chemicals would not generally be covered by the rule. Examples related to the manufacturing sector were provided. This was intended to limit the coverage primarily to those employees in the industry who were actually involved in production operations. However, since the scope of the entire standard is being expanded to cover employees in all types of work operations, the definition has been modified to clarify that workers who are exposed to hazardous chemicals as part of their assigned jobs would generally be covered under the rule, except for those who only encounter hazardous chemicals in non-routine, isolated instances. OSHA believes most office workers, and many other workers, are not exposed to the hazardous chemicals covered by the HCS in such a way that the rule would apply to those types of work operations. The rule, therefore, simply defines a covered "employee" as any "worker who is exposed to hazardous chemicals under normal operating conditions or in foreseeable emergencies" and further states that workers such as office workers or bank tellers who encounter hazardous chemicals only in non-routine, isolated instances are not covered." "Normal operating conditions" are those which employees encounter in performing their job duties in their assigned work areas. For example, if the receptionist in a facility receives and delivers a telephone message for someone in a different work area where hazardous chemicals are present, this does not mean that the receptionist would be covered under the rule by virtue of the one potential exposure from delivering the message. However, if performance of the receptionist's job entails walking through the production area every day, and thus being potentially exposed during the performance of regular duties, that job would be covered under the rule.

The definitions of "employer" and "importer" are also amended to indicate that all employers are covered in the standard. In addition, the definition of "employer" is amended to indicate the term includes contractors and subcontractors. This reflects that definition of employer used in OSHA's construction standards. Similarly, the definition of "workplace" has been modified o specifically include job sites and projects.

*Hazard warning.* While OSHA is not modifying the definition of "hazard warning" contained in the current rule, the Agency wishes to reiterate the intent to help employers better understand and comply with the requirements. "Hazard warning" means "any words, pictures, symbols, or combination thereof which convey the hazard(s) of the chemical(s) in the container(s)." "Appropriate hazard warnings" are to be put on container labels. (*See* final rule paragraphs (f)(1)(ii) and (f)(5)(ii)). Since the rule covers "physical" and "health" hazards, specific information regarding these would be required on a label to comply.

Many labels at the time the HCS was promulgated includes only precautionary statements, rather than providing necessary information about the specific hazards of the chemicals. Thus employees encountered statements such as "avoid inhalation" on virtually every chemical container, but were not provided with statements regarding what type or severity of effect inhalation could be expected to produce.

Therefore, OSHA's standard requires identity and hazard information on labels. Although employers can choose to provide additional statements, OSHA's requirements are limited to that required to convey the hazards to the workers. Under the OSHA scheme, other data regarding protective measures, first aid, etc., are to be included on the material safety data sheet or in training, rather than appearing on the label itself. This approach is in keeping with the Agency's evaluation of available data on effectiveness of labels which indicates that the more detail there is on a label, the less likely it is that employees will read and act on the information. The Purpose of the label is to serve as an immediate visual warning of the chemical hazards in the workplace. (*See generally,* 48 FR 53300–03).

There have been misinterpretations of the requirements made based on to the statements in the preamble to the current rule concerning various labeling systems (see 48 FR 53301). This preamble discussion involves format of labels, and is not an unqualified endorsement of any particular labeling system. It simply states that any format may be used as long as the label includes information regarding the chemical hazards required by the standard. It should be noted that it can be expected that some labels prepared in accordance with any of the available labeling systems can be expected to be found to be deficient. Again, the preamble discussion cited merely reemphasized that employers are not constrained to use any particular format or wording, but are constrained by the necessity to comply with the requirements of the rule concerning the information to be provided—the identity, the hazards, and for containers leaving the workplace, the name and address of the responsible party.

The terms "physical" and "health" hazards are already defined in the rule, and these are the specific hazards that are to be "conveyed" in an "appropriate" hazard warning. There are some situations where the specific target organ effect is not known. Where

this is the case, a more general warning statement would be permitted. For example, if the only information available is an $LC_{50}$ test result, "harmful if inhaled" may be the only type of statement supported by the data and thus may be appropriate.

It will not necessarily be "appropriate" to warn on the label about every hazard listed in the MSDS. The data sheet is to address essentially everything that is known about the chemical. The selection of hazards to be highlighted on the label will involve some assessment of the weight of the evidence regarding each hazard reported on the data sheet. This does not mean, however, that only acute hazards are to be covered on the label, or that well-substantiated hazards can be omitted from the label because they appear on the data sheet.

It may be "appropriate" to provide less detailed information on the chemical hazards in an in-plant labeling system, where MSDSs and training are readily available, than on a label placed on a container leaving the workplace, where it may provide the only hazard information in certain situations and where there is no guarantee that the downstream employees handling or using the chemical will fully understand the less detailed label. This difference in appropriateness allows employers to establish standardized, in-plant labeling systems, as long as training regarding the use of these systems is conducted and MSDSs provide the required, detailed information.

*Article.* OSHA is not modifying the definition of "article" but would like to provide some clarification regarding the Agency's interpretation. Releases of very small quantities of chemicals are not considered to be covered by the rule. So if a few molecules or a trace amount are released, the item is still an article and therefore exempted. In an earlier discussion in this preamble, application of the rule to office products was discussed and it was stated that items such as pens or pencils are to be considered articles. Other examples would be: emissions from tires when in use; emissions from toner on pieces of paper or emissions from newly varnished furniture.

Furthermore, it should be reiterated that the HCS is limited to hazardous chemicals "known to be present" (paragraph (b)(2)), and does not require any chemical analysis or testing to determine or verify such presence. *See* 48 FR 53334–35. Thus although one may assume that molecules are being emitted from an item, under the standard one does not "know" that a particular hazardous chemical is "present."

The article exemption applies solely to the ultimate end use—intermediate users which result in exposure are covered and require hazard information to be provided. The following are examples of items which would require information for intermediate use prior to being finally installed: encapsulated asbestos insulation where the normal installation involves hammering the material into openings thus releasing the asbestos; tiles to be placed on a ship's hull which contain lead that is

released during installation; and glass mercury switches to be installed in equipment, a percentage of which are expected to break during this installation process. In these cases, installation is the "normal condition of use" for the employees installing the items, and thus hazard information is required for these intermediate uses. Once installed, these items would be articles and thus exempted.

Although installation of an item may render the exemption temporarily void (until the item is installed, information must still be provided if there is a potential for exposure), OSHA does not believe that the possibility that exposure could occur when the item is repaired or worked on need be considered in the determination of when information must be transmitted downstream. Employers of employees performing repairs must provide the best information they have concerning the potential exposures. There would be no way to ensure, for example, that a material safety data sheet prepared for a lead pipe would be available to a worker repairing the pipe some years following installation. The employer would provide the employees with general information concerning the hazards of the operations they were performing in lieu of specific information on the pipe itself.

*(d) Hazard Determination*

OSHA is not modifying the current rule's hazard determination requirements. The burden of evaluating chemicals to determine whether they are hazardous remains on the chemical manufacturers and importers who produce or import them and on those user employers who choose not to rely on the evaluations made by their suppliers and instead evaluate the chemicals themselves. A detailed explanation of these provisions can be found at 48 FR 53296–99, 53335–36.

*(e) Written Hazard Communication Program*

Under the current rule, a written hazard communication program must be developed and implemented for each workplace. Since the current rule covers fixed manufacturing sites, it did not appear to be necessary to specifically state that the written program be available at the site. With expansion to non-manufacturing, however, particularly in the construction industry where a firm may have multiple sites, the standard must be tailored to specifically state that the intent is to maintain the written program at each site. Employees will then be able to access the information as required. The current written hazard communication program requirements include a provision that requires manufacturing employers to provide hazard information to on-site contractor employers who have employees who may be exposed to the hazards generated by the manufacturer (current paragraph (e)(1)(iii)). The current standard does not address the reverse situation, *i.e.,* where a contractor employer brings hazardous materials on-site, and exposes the manufacturer's

employees to them. Since the expanded rule will affect more worksites with work arrangements of this type (*e.g.,* construction), and the need for an exchange of hazard information is obvious, OSHA has revised the requirements to tailor it to address the multi-employer workplace. (This was suggested in comments submitted in response to the ANPR. *See* Ex. 2–225, comments from the National Constructors Association. In addition, this situation has also been addressed in existing State right-to-know laws. *See, e.g.,*, Alabama Act 85–658; Tennessee "Hazardous Chemical Right to Know Law.")

Under these provisions (paragraph (e)(2)), the employers must exchange material safety data sheets, as well as information about precautionary measures necessary to protect employees and an indication of the type of labeling system in use, where exposures may occur to another employer's employees. Each employer will then have the information necessary to inform and train their employees. This will help ensure that all employees have sufficient information to protect themselves in the workplace, regardless of which employer uses the hazardous chemical.

Consistent with the performance-orientation of the rule, the provisions do not specify how this coordination is to be accomplished. This is best left to the discretion of the parties involved. In many cases, it would probably be most efficient for the general contractor to coordinate the function. For example, the general contractor could keep and make available material safety data sheets in the office on the site.

It should be emphasized that the exchange of information is limited to those situations where exposures of other employers' employees may occur. Given the nature of multi-employer work sites in construction, there would be many situations where subcontractors responsible for various phases of the building project would not have employees present during other phases and thus no such exchange would be required. For example, if the electricians are not working near, or at the same as, the paving contractor, then no interchange is required. But if a painting contractor's workers are using flammable solvents in an area where another subcontractor is welding pipes, this information exchange is vital to ensure proper protection of employees.

*(f) Labels and Other Forms of Warning*

A tailoring provision has been added concerning shipments which consist of solid metal. OSHA considers this change to be necessary since the problem addressed will occur more frequently in shipments to the non-manufacturing sector than has been the case in the manufacturing sector. (Paragraph (f)(2)). Solid metal is often considered to be an "article" under the rule, and thus exempt. Where the metal is not an "article" since its downstream use results in hazardous chemical exposure to employees working with it, a provision has been added which allows shippers of this type of

material to send the label information once, similar to material safety data sheet transmittal, as long as the material is the same and it is being shipped to the same customer. In these situations, there should be no hazard to anyone handling the metal from the time it is produced in solid form, until the time someone works on it in a way that releases a chemical hazard. Since the label information transmitted would only reflect the chemical hazards released when it is later worked on, the label would not provide any hazard information that is needed by those handling the material in transit. It must be emphasized that this exception is only for the solid metal itself—any hazardous chemicals present in conjunction with the metal in such a form that employees may be exposed when handling the material (*e.g.,* cutting fluids, lubricants, and greases), require labels with each shipment. This tailoring provision, therefore, does not diminish worker protection—workers get the hazard information they need.

*(g) Material Safety Data Sheets*

Under the hazard determination provisions, a requirement is included which indicates that there are situations where the percentage cut-off for mixtures would not apply—when the released chemical is particularly hazardous, or when it could exceed an established permissible exposure limit or Threshold Limit Value when released (paragraph (d)(5)(iv)). Although this is clearly a requirement of the rule, *see also* 48 FR 53336, the material safety data sheet provisions for disclosure of hazardous ingredient identities did not address that particular situation. Clearly it was OSHA's intent to have all hazardous ingredients of mixtures listed on a material safety data sheet, even those in very small concentrations, when the hazard determination provisions of paragraph (d) mandate that they are to be considered hazardous for purposes of the HCS. As noted in the HCS preamble discussion of the material safety data sheet provisions: "Employers must also list ingredients present in concentrations of less than one percent if there is evidence that the permissible exposure limit may be exceeded or if it could present a health hazard in those concentrations." *Id.* at 53337. This obvious oversight has been corrected by a minor amendment to the rule. Paragraph (g)(2)(i)(C)(2).

Another situation which raises practicality concerns because of the expansion of the scope of the rule involves employers who purchase hazardous chemicals from local retail distributors, rather than directly from the chemical manufacturer or importer, or from wholesale distributors as is more commonly done in the manufacturing sector. Under the current HCS, distributors of hazardous chemicals must automatically provide commercial customers material safety data sheets (paragraph (g)(7)). Retail distributors, however, often sell to businesses and the general public and frequently have no way of knowing who a particular purchaser is. Under the current rule, retail distributors might have to give material safety data sheets to each customer to ensure that commercial customers get the information they need under the HCS. A specific

statement regarding retail distributors is, therefore, included in paragraph (g)(7) to address this practical problem. Those retail distributors who sell hazardous chemicals to employers must provide a material safety data sheet upon request, and must post a sign or otherwise inform the employers that an MSDS is available. According to Schneider Hardware of

Banksville, Inc., this is a reasonable approach (Ex. 2–179):

If OSHA does require commercial customers to get information through a retail outlet, I do not foresee any problems with that arrangement. The manufacturers could supply us with the information as they are required to now for shipments to manufacturing plants, and we could make it available to customers upon request. We would merely keep the sheets in a file drawer and post a sign informing customers of their availability. We have less than 100 chemicals that would probably be affected, and keeping information on those would require at most, one file drawer. It would not be burdensome.

The retail distributors likely affected are those selling building supplies, hardware, etc. Retail distributors will have to assess their product lines, and whether or not they have commercial accounts, to determine whether they must comply with this provision. It is clear that most other types of retail establishments (*e.g.,* grocery stores, clothing stores, etc.) would not.

With regard to the maintenance of material safety data sheets so that they are readily available to employees, whereas manufacturing facilities are generally fixed work sites with fixed locations for these materials, in some types of non-manufacturing work operations, employees must travel between work areas during a workshift. For example, employees involved in servicing oil and gas wells may have a central office location, but then travel by truck to the wells to perform their work. These remote locations may not have any staff, or may not have an office facility. OSHA has added a provision to the MSDS requirements to allow MSDSs to be kept at a central location in this type of situation as along as the employer ensures that the employees can immediately obtain the information in an emergency, paragraph (g)(9). OSHA believes that this provision tailors the HCS so that it remains practical, yet effective, in getting workers the hazard information they need. This was also supported by a number of ANPR commenters (*see, e.g.,* Exs. 2–83, 2–107, 2–114, 2–116, and 2–117).

The current rule, as well as the expanded standard, allows downstream employers to rely on upstream chemical manufacturers and importers to provide MSDSs. However, there is a duty for downstream users to request an MSDS when they don't receive one at the time of the first shipment. There have been some questions regarding how the

downstream user will know a data sheet is required without doing a hazard evaluation. Such an evaluation is not necessary. If the label indicates a hazard, the employer will know he needs a data sheet and must request one if it is not received. If there are no hazards on the label, the downstream user can assume the product is not hazardous and a data sheet is not required.

*(h) Employee Information and Training*

OSHA is not making any modifications to the current rule's information and training provisions. These requirements remain performance-oriented and designed so that each employer will adequately address the hazards posed by chemicals in the workplace. An explanation of these provisions can be found at 48 FR 53310– 12, 53337–38.

One question that does arise regarding training is whether it needs to be done specifically on each chemical, or whether employers can train regarding categories of hazards. Either method would be acceptable. *See* 48 FR 53312, 53338. If employees are exposed to a small number of chemicals, the employer may wish to discuss the particular hazards of each one. Where there are large numbers of chemicals, the training regarding hazards could be done on categories (*e.g.,* flammable liquids; carcinogens), with employees being referred to substance-specific information on the labels and MSDSs. Similarly, the re-training occurs when the hazard changes, not just when a new chemical is introduced into the workplace. If the new chemical has hazards which employees have been trained about, no re-training occurs. If the chemical has a hazard they have not been trained about, re-training would be limited to that hazard.

*(i) Trade Secrets*

Paragraph (i)(11) of the current rule states that "[i]f, following the issuance of a citation and any protective orders, the chemical manufacturer, importer, or employer continues to withhold the information, the matter is referrable to the Occupational Safety and Health Review Commission for enforcement of the citation…." This provision was worded in such a manner that it left the impression that OSHA could refer the matter to the Review Commission. This is incorrect as a matter of law. An enforcement proceeding is referred to the Review Commission when a citation is issued by OSHA, and is subsequently contested by the employer receiving the citation. Therefore, OSHA has made a technical amendment to paragraph (i)(11) to reflect the applicable procedural law.

*(j) Effective Dates*

The expansion of the rule to cover all employers becomes effective nine months from the date of promulgation of the final standard. Since the chemical hazard information for labels and material safety data sheets has already been generated in the manufacturing sector, and in many cases has also been distributed in non-manufacturing due to State law requirements and voluntary transmittal by suppliers, one month should be sufficient time for chemical manufacturers, importers, and distributors to initiate provision of material safety data sheets to other distributors and to customers in the non-manufacturing sector. An additional eight months is being provided for non-manufacturers to complete preparation of a written hazard communication program for each facility and to conduct employee training. It should be noted that this eight month period for compliance only applies to those employers which are newly covered under the expanded provisions—employers in SIC Codes 20 through 39 are covered under the current HCS and are already required to be in compliance with the provisions of that rule. Those tailoring provisions that apply to manufacturing workplaces, such as the consumer product exemption, go into effect immediately for those facilities.

*Appendices A and B*

OSHA is not amending Appendix A's discussion of the health hazards posed by chemicals, or Appendix B's discussion of hazard determination. They remain applicable to all chemical manufacturers, importers, and employers performing hazard determinations.

*Appendix C*

The reference sources listed in this non-mandatory appendix have been updated to reflect currently available sources.

*Appendix D*

The recent rulemaking on trade secrets added a new Appendix D regarding the evaluation of the validity of trade secret claims. 51 FR 34590. The full text of this appendix has been reprinted in this document as well.

## III. Analyses of Regulatory Impact, Regulatory Flexibility, and Environmental Impact

The following is a summary of the regulatory impact and regulatory flexibility analysis prepared by OSHA for the revision of the Hazard Communication Standard which extends the scope of the existing standard to the non-manufacturing sector. The full text of the document may be examined and copied in OSHA's Docket Office, 200

Constitution Avenue, NW., Room N3670, Washington, DC 20210; telephone (202) 523–7894.

*Economic Analysis*

As part of OSHA's efforts to gather information concerning the economic feasibility of extending the coverage of the HCS to include workplaces in the non-manufacturing sector, the JACA Corporation performed a study examining the benefits, costs, and overall economic impact of such a revision. This report was used as the basis for the regulatory impact analysis prepared by OSHA.

The analysis reflects the extent to which employers in the non-manufacturing sector are currently subject to state right-to-know laws and are voluntarily implementing their own hazard communication programs. The analysis also takes into account OSHA's existing policy regarding the use of consumer products and training requirements already imposed on employers by other OSHA standards. With respect to consumer products covered by the HCS, OSHA Instruction CPL 2–2.38A ("Inspection Procedures for the Hazard Communication Standard, 29 CFR 1910.1200") states:

A common sense approach must be employed whenever a product is used in a manner similar to which it could be used by a consumer, thus resulting in levels of exposure comparable to consumer exposure. The frequency and duration of use should be considered. For example, it may not be necessary to have a data sheet for a can of cleanser used to clean the sink in an employee restroom. However, if such cleanser is used in large quantities to clean process equipment, it should be addressed in the Hazard Communication Program.

This policy has been incorporated into the revisions to the HCS and was taken into account when evaluating data describing the number of hazardous chemicals in the various two-digit SIC groups that could be affected by extension of the HCS to the non-manufacturing sector.

Assessing the net impact of the training provisions required identifying and deducting the costs of existing OSHA standards which already require employers to provide the types of information and training activities prescribed in the HCS. This was done for construction (§ 1926.21), shipbreaking (§ 1915.97), marine terminals (§ 1917.22), and longshoring (§ 1918.86). However, it was not possible to separately identify and deduct the existing training costs for substance-specific standards that currently apply to the non-manufacturing sector. Thus, the compliance costs presented in this analysis are somewhat overstated.

In extending the rule for manufacturing to the non-manufacturing sector, OSHA has made revisions to reflect unique aspects of some work operations. For example, the standard allows MSDSs to be maintained at central locations in circumstances where employees must travel between work operations during a workshift, provided that the information can be obtained immediately in an emergency. This provision is expected to lower costs in SIC groups 07, 08, 09, 13, 46, 49, and 73. (*See* Table 1 for a description of the SICs.)

The standard also allows for limited coverage in those work situations where employees handle chemicals in sealed containers that are not opened under normal conditions of use, and thus have little potential for measurable exposures. Employers would be required to leave warning labels on containers, and make available any MSDSs received with the containers. Employers would also have to be trained in accordance with the standard, with particular emphasis on procedures to follow if there is a spill or leak of the hazardous chemicals in the normally sealed containers. Affected establishments would not have to make special efforts to obtain and keep MSDSs that are not received with the chemicals, and no written plan for complying with the HCS would be required. This provision is expected to result in lower costs in SIC groups 42, 44, 45, 47, 51, and 52.

Thus the changes made to establish more appropriate provisions for unique work situations should result in lower costs than would be experienced if the HCS for manufacturing were extended to the non-manufacturing sector without revision.

**Table 1.—SIC Groups Covered in the OSHA Analysis**

Division A. Agriculture, Forestry, and Fishing
Major Group 01. Agricultural production—crops
Major Group 02. Agricultural production—livestock
Major Group 07. Agricultural services
Major Group 08. Forestry
Major Group 09. Fishing, hunting, and trapping

Division B. Mining
Major Group 13. Oil and gas extraction

Division C. Construction
Major Group 15. Building construction—general contractors and operative builders
Major Group 16. Construction other than building construction—general contractors
Major Group 17. Construction—special trade contractors

Division E. Transportation, Communication, Electric, Gas, and Sanitary Services
Major Group 40. Railroad transportation
Major Group 41. Local and suburban transit and interurban highway passenger transportation
Major Group 42. Motor freight transportation and warehousing
Major Group 44. Water transportation
Major Group 45. Transportation by air
Major Group 46. Pipe lines, except natural gas
Major Group 47. Transportation services
Major Group 48. Communication
Major Group 49. Electric, gas, and sanitary services

Division F. Wholesale Trade
Major Group 50. Wholesale trade—durable goods
Major Group 51. Wholesale trade—nondurable goods

Division G. Retail Trade
Major Group 52. Building materials, hardware, garden supply, and mobile home dealers
Major Group 53. General merchandise stores
Major Group 54. Food stores
Major Group 55. Automotive dealers and gasoline service stations
Major Group 56. Apparel and accessory stores
Major Group 57. Furniture, home furnishing, and equipment stores
Major Group 58. Eating and drinking places
Major Group 59. Miscellaneous retail

Division H. Finance, Insurance, and Real Estate
Major Group 60. Banking
Major Group 61. Credit agencies other than banks
Major Group 62. Security and commodity brokers, dealers, exchanges, and services
Major Group 63. Insurance
Major Group 64. Insurance agents, brokers, and service
Major Group 65. Real estate
Major Group 66. Combinations of real estate, insurance, loans, law office
Major Group 67. Holding and other investment offices

Division I. Services
Major Group 70. Hotels, rooming houses, camps, and other lodging places
Major Group 72. Personal services

Major Group 73. Business services
Major Group 75. Automotive repair, services, and garages
Major Group 76. Miscellaneous repair services
Major Group 78. Motion pictures
Major Group 79. Amusement and recreation services, except motion pictures
Major Group 80. Health Services
Major Group 81. Legal Services
Major Group 82. Education Services
Major Group 83. Social Services
Major Group 84. Museums, art galleries, botanical and zoological gardens
Major Group 86. Membership organizations
Major Group 89. Miscellaneous services

The analysis of the benefits, costs, and economic impacts of extending the HCS to the non-manufacturing sector are projected for 40 years. As indicated, the analysis reflects requirements of state right-to-know laws and voluntarily implemented hazard communication programs.

*Risk Evaluation/Benefits Analysis*

For this analysis OSHA estimated the percentage of workers exposed to hazardous chemicals. The percentage and numbers of exposed workers are shown in Table 2 by SIC group. [*Tables 2 to 10 appear at the end of this article.*] The analysis of risks and benefits proceeds from the current annual incidence of chemical-related injuries and illnesses in the non-manufacturing sector. For workers in this sector, measures of acute chemical source injuries and illnesses included non-lost workday (NLWD) injuries (13,671) and LWD illnesses (38,249); and fatalities (102). Measures for chronic illnesses include: chronic illness cases (17,153), cancer cases (25,388), and cancer deaths (12,890). The cancer cases category includes cancer deaths. (Note that tables used in the computer models for this analysis may vary slightly from these figures due to rounding.)

The benefits of the standard result from its expected reduction of injuries and illnesses that are chemically related. Specifically, OSHA projects that the standard will avert 20 percent of these injuries and illnesses. (Five percent of all cancer cases are assumed to be occupationally related; the 20 percent reduction is applied to this 5 percent of all cases among occupationally exposed workers in the non-manufacturing sector.) However, the full reduction of chronic illnesses and cancers will not occur immediately; rather, the reduction for these cases is phased in over time. For chronic illnesses, the standard is expected to reduce 1 percent of the cases in the first year, 2 percent in the second year, and so on, until it reaches the full reduction of 20 percent. For cancer cases and cancer deaths, the standard is expected not to have an effect for

the first 10 years, then it is expected to reduce 2 percent of the cases in the eleventh year, 4 percent in the twelfth year, and so on until it reaches the full reduction of 20 percent.

Benefits were monetized using two independent approaches. The first took into account medical costs and lost earnings incurred by each victim. This "human capital" approach resulted in first-year benefits of $56.3 million, and a 40 year present value of $6.66 billion (summarized in Table 3).

A second estimate of benefits was made using the "willingness-to-pay" approach. This approach resulted in first-year benefits of $568.7 million, and a 40 year present value of $54.6 billion (Table 3).

To provide comparability with the estimates of compliance costs, benefits were attributed to the states with right-to-know laws in proportion to the share of hazard communication costs projected for firms in those states. Under the "human capital" approach the present value of the 40 year stream of benefits from the extension of the HCS, after deducting states with right-to-know laws, is $3.80 billion (1985 dollars). Under the willingness-to-pay approach, the present value of the 40-year stream of benefits from extension of the HCS is $31.0 billion, after deducting the amount attributable to states with right-to-know laws.

The monetized benefits of hazard communication in the non-manufacturing sector, whether monetized in terms of human capital or willingness to pay, are presented after discounting (at 10 percent). Such discounting does not convey the magnitude of the expected number of injuries, illnesses and deaths that should be averted by the extension of hazard communication to the non-manufacturing sector. The actual number of NLWD cases, LWD cases, chronic illness cases, cancer cases, cancer deaths, and other fatalities that are expected to be averted in the first, twentieth, and fortieth years are presented in Table 4.

The numbers of cases presented in Table 4 are projections of cases that will be averted by the state right-to-know laws and the extension of the HCS. Approximately 43 percent of these cases will be averted as a result of the hazard communication (*i.e.,* right-to-know) laws of the states. The remaining 57 percent uniquely relate to the extension of HCS and translate into the following: 148,400 cancer cases and 74,200 cancer deaths, 119,200 chronic disabling illnesses, 448,500 lost work day cases, 702,000 non-lost work day cases, and about 653 non-cancer fatalities avoided over the next 40 years. This estimate is believed to be conservative since OSHA assumed that only 5 percent of all cancers are occupationally related.

The original Regulatory Impact Analysis (RIA) for the HCS in manufacturing included estimates of benefits arising from the reduction of the incidence of chemical fires in the manufacturing sector. Using the RIA's methodology and newer data obtained from the U.S. Fire Administration's National Fire Incidence Reporting System, OSHA has determined that extension of the HCS to the non-manufacturing sector would yield first-year benefits (*i.e.,* the value of property damages and losses avoided) of $1.6 million (1985 dollars). For the twentieth and fortieth years, the estimates are $2.2 and $2.9 million, respectively. The present value of the 40-year stream of benefits is $20.3 million (using a 10 percent discount rate).

Extending the HCS to the non-manufacturing sector will also yield benefits by eliminating the need for employers to comply with multiple state and local right-to-know laws with differing requirements. The estimated benefits for the first year amount to $39.6 million (1985 dollars). For the twentieth and fortieth years, the benefits are $69.5 and $125.5 million, respectively. The present value of the 40-year stream of benefits is $578 million (using a 10 percent discount rate).

*Compliance Costs*

Compliance costs were estimated for five items: preparation of a written hazard communication program; container labeling; provision of MSDSs; maintenance of MSDSs; and information and training.

Table 5 provides a summary of total regulatory costs, the costs attributable to state right-to-know laws and the costs to the extension of the OSHA standard. Costs are presented for the twentieth, and fortieth year of the standard, as well as in terms of total present value over forty years. Present values were calculated using a 10 percent discount rate. Table 6 presents the costs by provision.

The total cost attributable to hazard communication laws during the first year the expanded HCS is effective is $1.28 billion (1985 dollars). The first year cost associated with compliance with state right-to-know laws is $597.3 million and $687.3 million with the Federal HCS. The present value of the total HCS-related compliance costs over the 40 year period is $1.57 billion.

Recordkeeping activities are required in the maintenance of MSDSs. As shown in Table 6, the Year 1 costs for this function amount to $44.9 million (1985 dollars). The costs for the twentieth and fortieth years are $6.0 and $13.3 million. The present value of the costs over 40 years is $84.8 million.

*Economic Impacts*

In order to assess the potential economic impacts of expanding the hazard communication standard, OSHA studied the impact of the first year costs on typical establishments that have not implemented any of the provisions. No allowance was made for partial compliance. If establishments can pass through or absorb first year costs, it is assumed that they can afford the minimal recurring costs related to training new employees and the introduction of new hazards. Table 7 presents the average compliance costs, assuming no current compliance, for typical establishments in each SIC Code. Typical establishments in the preponderance for SICs (over 60 percent) would incur compliance costs of less than $700 in the first year.

In only one of the SICs does the average total first year cost exceed $800 per establishment. The average first year cost per exposed employee in all SICs is less than $250, or less than $5.00 per worker per week.

Table 8 presents a comparison of the post-tax compliance costs to a typical firm's revenues and profits. A typical establishment's pre-tax compliance cost will be a negligible percentage (less than one-half of one percent) of the establishment's average annual revenue in over 96 percent of the SICs. The only exceptions, SIC 83 (Social Service) and SIC 86 (Membership Organizations), are primarily composed of nonprofit establishments that are characterized by relatively inelastic demand for their services. Given the magnitude of the compliance costs in relation to revenue, and the fact that the affected industry sectors are predominantly service providers, which are necessarily characterized by localized markets, it appears likely that most firms will pass the compliance costs on to their customers. The post-tax compliance cost as a percent of profits is less than two percent in most (over 80 percent) of the SICs. Typical firms in these SICs should be able to absorb the costs even if they cannot pass them on to their customers. Given the small absolute magnitude of the compliance costs, and the fact that the analysis was conducted using first year compliance costs which are significantly higher than the recurring compliance costs for subsequent years, the expansion of the hazard communication standard should have little or no economic impact on typical firms.

*Community Right-to-Know*

The cost of extending the Superfund Amendments and Reauthorization Act (SARA) requirements for community right-to-know to the non-manufacturing sector was also estimated. Under Title III of SARA, establishments holding a given hazardous chemical in amounts greater than specified threshold must report these chemicals and their quantities to State and local emergency planning committees and the local fire department. Cost estimates were based on EPA's projected phase-in threshold quantities of 10,000 pounds of hazardous chemicals in the first two years, and 500 pounds in the third and subsequent years that the requirements apply to the non-

manufacturing sector. The estimated costs for the first and second years are $8,614,300 and $3,524,000, respectively. Third and fourth year costs were estimated to be $63,492,800 and $32,736,300.

The economic impact of extending SARA to non-manufacturing was also estimated by OSHA. The third year average total cost of SARA was combined with OSHA's recurring average total costs of the Hazard Communication Standard to estimate the impact. The analysis indicated that the economic impact per facility of extending SARA to non-manufacturing is minor, and that costs incurred by affected establishments could be passed on to the consumer. OSHA believes that the extension of SARA to non-manufacturing will not affect the feasibility of the Hazard Communication Standard.

*Regulatory Flexibility*

As is shown in Table 9, a majority of establishments in all of the potentially impacted SICs are small businesses with fewer than 20 employees. Thus, the average compliance costs for small firms are very similar to those for typical firms. No disproportionate economic impact is foreseen for small firms.

Most establishments in the potentially affected SICs are service providers, which typically compete on the basis of many factors (*e.g.,* location, specialized service, customer relations, etc.) in addition to price. Assuming all firms try to pass their compliance cost on to their customers, minor price differentials of less than one-half of one percent, shown in Table 10, are unlikely to adversely affect the overall competitive position of small entities.

As can be seen from Table 10, the cost differential between small and large firms in over 80 percent of the SICs is anticipated to be less than 0.2 percent of revenue. In SICs 83 and 86 the difference is about 2 percent. However, these SICs are dominated by non-profit firms which are less likely to be subject to price competition.

*Environmental Impacts*

At the time the current HCS was promulgated in the Federal Register (48 FR 53280), OSHA stated that the standard was unlikely to result in the occurrence of significant health or environmental impacts outside of the workplace. The extension of the HCS does not entail any change from the current HCS in terms of impacts outside the workplace. As concluded previously, the labeling of containers will not have a direct or significant impact on air or water quality, land or energy use, or solid waste disposal outside of the workplace. Similarly, the requirements for preparation of a

written compliance plan, provision and maintenance of MSDSs, and provision of information and training should have no adverse environmental impact.

## IV. Clearance of Information Collection Requirements

On March 31,1983, the Office of Management and Budget (OMB) published a new 5 CFR Part 1320, implementing the information collection provisions of the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.* (48 FR 13666). Part 1320, which became effective on April 30, 1983, sets forth procedures for agencies to follow in obtaining OMB clearance for information collection requirements. The sections of the Hazard Communication Standard which may create recordkeeping requirements are paragraphs (d) hazard determination; (e) written hazard communication program; (f) labels and other appropriate forms warning; (g) material safety data sheets; (h) information and training; and (i) trade secrets.

In accordance with the provisions of the Paperwork Reduction Act and the regulations issued pursuant thereto, OSHA certifies that it has submitted the information collection requirements contained in its rule on hazard communication to OMB for review under section 3504(h) of that Act.

## V. State Plan Applicability

The 25 States with their own OSHA-approved occupational safety and health plans must adopt a comparable standard within six months of the publication date of a final standard. These States include: Alaska, Arizona, California, Connecticut (for State and local government employees only), Hawaii, Indiana, Iowa, Kentucky, Maryland, Michigan, Minnesota, Nevada, New Mexico, New York (for State and local government employees only), North Carolina, Oregon, Puerto Rico, South Carolina, Tennessee, Utah, Vermont, Virginia, Virgin Islands, Washington, and Wyoming. Until such time as a State standard is promulgated, Federal OSHA will provide interim enforcement assistance, as appropriate. (Thirteen (13) of these States (Alaska, California, Iowa, Maryland, Michigan, Minnesota, New Mexico, North Carolina, Oregon, Tennessee, Vermont, Washington, and Wyoming) have already expanded the scope of their hazard communication standard/right-to-know law to cover private sector, non-manufacturing workplaces.)

Although a State HCS becomes effective in accordance with State promulgation provisions, and is enforceable upon promulgation, OSHA must also review and approve the standard to assure that it is "at least as effective" as the Federal standard. OSHA intends to closely scrutinize State standards submitted under current or future State plans to assure not only equal or greater effectiveness, but also that any additional requirements do not conflict with, or adversely affect, the effectiveness of

the national application of OSHA's standard. Because the HCS is "applicable to products" in that it permits the distribution and use of hazardous chemicals in commerce only if they are in labeled containers accompanied by material safety data sheets, OSHA must determine in its review whether any State plan standard provisions which differ from the Federal are "required by compelling local conditions and do not unduly burden interstate commerce." Section 18(c) of the Act, 29 U.S.C. 667(c).

## VI. Authority. Signature, and the Final Rule

This document was prepared under the direction of John A. Pendergrass, Assistant Secretary of Labor for Occupational Safety and Health, U.S. Department of Labor, 200 Constitution Avenue, NW., Washington, DC 20210.

For the reasons set out in the preamble, and under the authority of section 41 of the Longshore and Harbor Workers' Compensation Act (33 U.S.C. 941), section 107 of the Contract Work Hours and Safety Standards Act (Construction Safety Act) (40 U.S.C. 333), sections 4, 6 and 8 of the Occupational Safety and Health Act of 1970 (29 U.S.C. 653, 655, 657), Secretary of Labor's Order No. 9–83 (48 FR 35736) and 29 CFR Part 1911, and 5 U.S.C. 553, the Occupational Safety and Health Administration hereby amends Parts 1910, 1915, 1917, 1918, 1926, and 1928 of Title 29 of the Code of Federal Regulations, as set forth below.

## List of Subjects in 29 CFR Parts 1910, 1915, 1917, 1918, 1926 and 1928

Hazard communication, Occupational safety and health, Right-to-know, Labeling, Material safety data sheets; Employee training.

Signed at Washington, DC, this 18th day of August 1987.
**John A. Pendergrass,**
*Assistant Secretary for Occupational Safety and Health.*

TABLE 2.—WORKER EXPOSURE TO HAZARDOUS CHEMICALS

| Industry | Total number of establishment | Total employment | Percent of workers exposed to hazardous chemicals | Number of exposed employees |
|---|---|---|---|---|
| SIC 01 | 31,739 | 504,025 | 70 | 352,818 |
| SIC 02 | 10,994 | 126,039 | 70 | 88,227 |

| | | | | |
|---|---|---|---|---|
| SIC 07 | 65,704 | 459,479 | 70 | 321,635 |
| SIC 08 | 2,117 | 20,223 | 70 | 14,156 |
| SIC 09 | 3,886 | 13,549 | 20 | 2,710 |
| SIC 13 | 31,572 | 591,714 | 70 | 414,200 |
| SIC 15 | 166,012 | 1,137,853 | 70 | 796,497 |
| SIC 16 | 44,702 | 791,892 | 70 | 554,324 |
| SIC 17 | 320,208 | 2,406,916 | 70 | 1,684,841 |
| SIC 40 | 18,539 | 324,206 | 40 | 129,682 |
| SIC 41 | 15,539 | 285,578 | 20 | 57,116 |
| SIC 42 | 99,805 | 1,323,495 | 20 | 264,699 |
| SIC 44 | 8,346 | 178,013 | 70 | 124,609 |
| SIC 45 | 8,691 | 490,395 | 40 | 196,158 |
| SIC 46 | 959 | 18,405 | 60 | 11,043 |
| SIC 47 | 30,783 | 267,113 | 40 | 106,845 |
| SIC 48 | 22,910 | 1,321,116 | 5 | 66,056 |
| SIC 49 | 15,571 | 890,586 | 40 | 356,234 |
| SIC 50 | 300,972 | 3,357,168 | 10 | 335,717 |
| SIC 51 | 191,745 | 2,295,451 | 25 | 573,863 |
| SIC 52 | 66,756 | 662,051 | 50 | 331,026 |
| SIC 53 | 29,818 | 2,230,449 | 5 | 111,522 |
| SIC 54 | 137,393 | 2,696,839 | 20 | 539,368 |

| | | | | |
|---|---|---|---|---|
| SIC 55 | 173,902 | 1,850,359 | 60 | 1,110,215 |
| SIC 56 | 99,022 | 1,004,666 | 5 | 50,233 |
| SIC 57 | 93,338 | 714,264 | 5 | 35,713 |
| SIC 58 | 309,650 | 5,479,633 | 25 | 1,369,908 |
| SIC 59 | 261,694 | 2,133,614 | 20 | 426,723 |
| SIC 60 | 24,949 | 1,681,408 | 5 | 84,070 |
| SIC 61 | 43,408 | 733,201 | 5 | 36,660 |
| SIC 62 | 17,995 | 346,214 | 5 | 17,311 |
| SIC 63 | 30,139 | 1,190,103 | 5 | 59,505 |
| SIC 64 | 96,706 | 536,223 | 5 | 26,811 |
| SIC 65 | 191,400 | 1,077,550 | 5 | 53,878 |
| SIC 66 | 2,937 | 13,752 | 5 | 688 |
| SIC 67 | 15,792 | 138,488 | 5 | 6,924 |
| SIC 70 | 44,697 | 1,273,343 | 25 | 318,336 |
| SIC 72 | 158,272 | 1,068,670 | 50 | 534,335 |
| SIC 73 | 284,684 | 4,092,820 | 50 | 2,046,410 |
| SIC 75 | 121,431 | 713,798 | 50 | 356,899 |
| SIC 76 | 57,900 | 316,365 | 60 | 189,819 |
| SIC 78 | 15,338 | 216,806 | 30 | 65,042 |
| SIC 79 | 58,064 | 757,287 | 20 | 151,457 |
| SIC 80 | 365,758 | 6,167,908 | 60 | 3,700,745 |

| | | | | |
|---|---|---|---|---|
| SIC 81 | 119,861 | 670,317 | 5 | 33,516 |
| SIC 82 | 23,280 | 1,174,052 | 10 | 117,405 |
| SIC 83 | 66,380 | 1,182,651 | 5 | 59,133 |
| SIC 84 | 1,592 | 39,021 | 25 | 9,755 |
| SIC 86 | 83,774 | 724,283 | 5 | 36,214 |
| SIC 89 | 117,155 | 1200,885 | 5 | 60,044 |
| **Totals.....** | **4,503,879** | **58,890,236** | | **18,391,096** |

Source: U.S. Department of Labor, OSHA, Office of Regulatory Analysis.

TABLE 3.—ESTIMATED BENEFITS OF HAZARD COMMUNICATION
[Millions of 1985 dollars]

| **Type of injury/illness** | **Benefits—Year** | | | |
|---|---|---|---|---|
| | **1** | **20** | **40** | **TPV** |
| HUMAN CAPITAL APPROACH | | | | |
| NLWD: Lost earnings | 0.7 | 1.3 | 2.5 | 9.3 |
| NLWD: Medical costs | 1.7 | 4.6 | 13.4 | 30.3 |
| LWD: Lost earnings | 15.2 | 28.3 | 57.1 | 209.3 |
| LWD: Medical costs | 10.9 | 29.2 | 86.5 | 192.2 |
| Chronic: Lost earnings | 20.5 | 722.8 | 1,365.8 | 2967.5 |
| Chronic: Medical costs | 2.8 | 143.4 | 404.1 | 582.8 |
| Cancer: Lost earnings | 0 | 651.6 | 1,309.6 | 1,735.2 |
| Cancer: Medical costs | 0 | 298.9 | 906.4 | 875.8 |

| | | | | |
|---|---|---|---|---|
| Fatalities: Lost earnings | 4.4 | 7.3 | 13.0 | 56.6 |
| **Total** | **56.3** | **1,887.3** | **4,158.3** | **6,659.1** |
| WILLINGNESS TO PAY APPROACH | | | | |
| NLWD | 59.6 | 107.8 | 211.9 | 804.5 |
| LWD | 374.4 | 686.4 | 1,371.1 | 5,099.8 |
| Chronic | 61.7 | 2,173.7 | 4,121.6 | 8,924.3 |
| Cancer | 0 | 14,529.0 | 29,651.2 | 38,812.0 |
| Fatalities | 72.9 | 123.4 | 255.3 | 946.9 |
| **Total** | **568.7** | **17,620.7** | **35,581.2** | **54,587.4** |

Source: JACA Corporation Report.

TABLE 4.—INJURIES, ILLNESSES, AND FATALITIES AVERTED BY HAZARD COMMUNICATION IN THE NONMANUFACTURING SECTOR

| Year | 1 | 20 | 40 | Commulative total |
|---|---|---|---|---|
| FEDERAL AND STATE STANDARDS COMBINED | | | | |
| NLWD | 17,000 | 30,800 | 60,600 | 1,354,500 |
| LWD | 10,700 | 19,600 | 39,200 | 865,800 |
| Chronic | 150 | 6,200 | 11,800 | 230,100 |
| Cancer cases | 0 | 8,200 | 17,000 | 286,500 |
| Cancer deaths | 0 | 4,100 | 8,500 | 143,300 |
| Noncancer deaths | 0 | 20 | 80 | 1,260 |
| IMPACT OF FEDERAL STANDARD ALONE | | | | |

| | | | | |
|---|---|---|---|---|
| NLWD | 8,800 | 16,000 | 31,400 | 702,000 |
| LWD | 5,500 | 10,200 | 20,300 | 448,500 |
| Chronic | 78 | 3,200 | 6,100 | 119,200 |
| Cancer cases | 0 | 4,248 | 8,806 | 148,400 |
| Cancer deaths | 0 | 2,100 | 4,400 | 74,200 |
| Noncancer deaths | 0 | 10 | 41 | 653 |

Source: U.S. Department of Labor, OHSA, Office of Regulatory Analysis

TABLE 5.—SUMMARY OF HAZARD COMMUNICATION COSTS
[Millions of 1985 dollars]

| Year | Total | State | OHSA |
|---|---|---|---|
| 1 | 1,284.5 | 597.3 | 687.2 |
| 20 | 214.5 | 101.3 | 113.2 |
| 40 | 384.0 | 184.0 | 200.0 |
| Total Present Value | 2,926.4 | 1,356.3 | 1,570.1 |

SOURCE: U.S. Department of Labor, OHSA, Office of Regulatory Analysis.

TABLE 6.—SUMMARY OF FEDERAL HCS COSTS BY PROVISION
[Millions of 1985 dollars]

| Year | Maintain MSDS's | Labeling | Written | Training | Provide MSDS's | Totals |
|---|---|---|---|---|---|---|
| 1 | 44.9 | 12.8 | 137.4 | 472.9 | 19.3 | 687.2 |
| 20 | 6.0 | 20.3 | 5.7 | 78.7 | 2.5 | 113.2 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 40 | 13.3 | 35.2 | 9.4 | 136.5 | 5.6 | 200.0 |
| TPV | 84.8 | 170.9 | 170.9 | 1054.6 | 88.9 | 1570.1 |

Source: U.S. Department of Labor, OHSA, Office of Regulatory Analysis

TABLE 7.—SUMMARY OF HCS COSTS PER ESTABLISHMENT NOT IN COMPLIANCE WITH HCS
[1985 dollars]

| | First Year | | Second Year | |
|---|---|---|---|---|
| **Industry** | **Average costs per establishment** | **Average costs per exposed employee** | **Average costs per establishment** | **Average costs per exposed employee** |
| SIC 01 | 502 | 45 | 32 | 3 |
| SIC 02 | 475 | 59 | 23 | 3 |
| SIC 07 | 490 | 100 | 28 | 6 |
| SIC 08 | 358 | 54 | 26 | 4 |
| SIC 09 | 304 | 242 | 6 | 5 |
| SIC 13 | 497 | 38 | 72 | 5 |
| SIC 15 | 150 | 31 | 12 | 3 |
| SIC 16 | 225 | 18 | 34 | 3 |
| SIC 17 | 169 | 32 | 14 | 3 |
| SIC 40 | 603 | 86 | 51 | 7 |
| SIC 41 | 285 | 76 | 11 | 3 |
| SIC 42 | 273 | 98 | 12 | 4 |
| SIC 44 | 442 | 30 | 55 | 4 |

| | | | | |
|---|---|---|---|---|
| SIC 45 | 892 | 40 | 72 | 3 |
| SIC 46 | 461 | 40 | 55 | 5 |
| SIC 47 | 398 | 115 | 15 | 4 |
| SIC 48 | 319 | 50 | 15 | 2 |
| SIC 49 | 798 | 35 | 64 | 3 |
| SIC 50 | 472 | 238 | 14 | 7 |
| SIC 51 | 700 | 234 | 32 | 11 |
| SIC 52 | 335 | 68 | 20 | 4 |
| SIC 53 | 372 | 50 | 27 | 4 |
| SIC 54 | 323 | 82 | 18 | 5 |
| SIC 55 | 437 | 68 | 31 | 5 |
| SIC 56 | 265 | 149 | 6 | 3 |
| SIC 57 | 288 | 190 | 6 | 4 |
| SIC 58 | 337 | 76 | 17 | 4 |
| SIC 59 | 321 | 184 | 7 | 4 |
| SIC 60 | 410 | 61 | 21 | 3 |
| SIC 61 | 217 | 76 | 9 | 3 |
| SIC 62 | 312 | 79 | 18 | 5 |
| SIC 63 | 250 | 46 | 16 | 3 |
| SIC 64 | 236 | 155 | 5 | 3 |
| SIC 65 | 306 | 186 | 8 | 5 |

| | | | | |
|---|---|---|---|---|
| SIC 66 | 238 | 181 | 5 | 4 |
| SIC 67 | 415 | 167 | 12 | 5 |
| SIC 70 | 408 | 57 | 37 | 5 |
| SIC 72 | 500 | 148 | 16 | 5 |
| SIC 73 | 444 | 62 | 43 | 6 |
| SIC 75 | 381 | 130 | 14 | 5 |
| SIC 76 | 325 | 99 | 15 | 5 |
| SIC 78 | 351 | 83 | 26 | 6 |
| SIC 79 | 346 | 117 | 20 | 7 |
| SIC 80 | 581 | 57 | 57 | 6 |
| SIC 81 | 242 | 153 | 7 | 5 |
| SIC 82 | 287 | 46 | 10 | 2 |
| SIC 83 | 337 | 132 | 11 | 4 |
| SIC 84 | 608 | 99 | 39 | 6 |
| SIC 86 | 273 | 149 | 6 | 3 |
| SIC 89 | 312 | 146 | 10 | 5 |

Source: U.S. Department of Labor, OSHA, Office of Regulatory Analysis

TABLE 8.—ANALYSIS OF POST-TAX FIRST YEAR COMPLIANCE COSTS
[1985 dollars]

| Industry | Average annual revenue per establishment | Average cost as a percent of revenue per establishment | Average net income per establishment | Average post-tax cost per establishment | Post-tax cost as a percent of net income per establishment |
|---|---|---|---|---|---|

| | | | | | |
|---|---|---|---|---|---|
| SIC 01 | 2,794.100 | 0.018 | 103,382 | 377 | 0.36 |
| SIC 02 | 11,275,400 | 0.04 | 417,190 | 356 | 0.09 |
| SIC 07 | 286,600 | 0.171 | 7,165 | 368 | 5.13 |
| SIC 08 | 1,689,100 | 0.021 | 42,228 | 268 | 0.64 |
| SIC 09 | 797,500 | 0.038 | 19,938 | 228 | 1.14 |
| SIC 13 | 6,185,800 | 0.008 | 346,405 | 373 | 0.11 |
| SIC 15 | 816,700 | 0.018 | 19,601 | 113 | 0.57 |
| SIC 16 | 1,419,700 | 0.016 | 56,788 | 169 | 0.30 |
| SIC 17 | 372,400 | 0.045 | 10,800 | 127 | 1.17 |
| SIC 40 | 2,584,100 | 0.023 | 111,116 | 453 | 0.41 |
| SIC 41 | 411,400 | 0.069 | 13,165 | 214 | 1.62 |
| SIC 42 | 730,100 | 0.037 | 21,903 | 205 | 0.94 |
| SIC 44 | 2,214,300 | 0.020 | 141,715 | 331 | 0.23 |
| SIC 45 | 5,900,000 | 0.015 | 70,800 | 669 | 0.94 |
| SIC 46 | 20,569,600 | 0.002 | 1,069,619 | 346 | 0.03 |
| SIC 47 | 831,900 | 0.048 | 14,974 | 299 | 1.99 |
| SIC 48 | 5,347,900 | 0.006 | 390,397 | 239 | 0.06 |
| SIC 49 | 16,269,000 | 0.005 | 732,105 | 599 | 0.08 |
| SIC 50 | 1,866,900 | 0.025 | 28,004 | 354 | 1.26 |
| SIC 51 | 3,371,500 | 0.021 | 57,316 | 525 | 0.92 |
| SIC 52 | 793,800 | 0.042 | 20,639 | 251 | 1.22 |

| | | | | | |
|---|---|---|---|---|---|
| SIC 53 | 5,702,000 | 0.007 | 136,848 | 279 | 0.20 |
| SIC 54 | 2,089,700 | 0.015 | 25,076 | 242 | 0.96 |
| SIC 55 | 2,016,100 | 0.022 | 16,129 | 327 | 2.03 |
| SIC 56 | 507,600 | 0.052 | 19,796 | 199 | 1.00 |
| SIC 57 | 371,400 | 0.078 | 11,513 | 216 | 1.88 |
| SIC 58 | 363,500 | 0.088 | 11,122 | 252 | 2.27 |
| SIC 59 | 829,100 | 0.039 | 20,728 | 241 | 1.16 |
| SIC 60 | 14,970,800 | 0.003 | 509,007 | 307 | 0.06 |
| SIC 61 | 2,585,300 | 0.008 | 41,365 | 163 | 0.39 |
| SIC 62 | 1,856,900 | 0.017 | 135,554 | 234 | 0.17 |
| SIC 63 | 12,911,400 | 0.002 | 438,988 | 187 | 0.04 |
| SIC 64 | 220,400 | 0.107 | 15,869 | 177 | 1.11 |
| SIC 65 | 338,400 | 0.090 | 27,749 | 230 | 0.83 |
| SIC 66 | 661,600 | 0.036 | 54,251 | 178 | 0.33 |
| SIC 67 | 798,300 | 0.052 | 167,643 | 311 | 0.19 |
| SIC 70 | 607,000 | 0.067 | 34,599 | 306 | 0.88 |
| SIC 72 | 228,500 | 0.219 | 10,283 | 375 | 3.64 |
| SIC 73 | 531,600 | 0.084 | 21,264 | 333 | 1.57 |
| SIC 75 | 351,800 | 0.108 | 8,795 | 286 | 3.25 |
| SIC 76 | 187,100 | 0.174 | 7,671 | 244 | 3.18 |
| SIC 78 | 815,900 | 0.043 | 31,820 | 263 | 0.83 |

| | | | | | |
|---|---|---|---|---|---|
| SIC 79 | 782,100 | 0.044 | 51,619 | 260 | 0.50 |
| SIC 80 | 198,200 | 0.293 | 6,342 | 436 | 6.87 |
| SIC 81 | 456,000 | 0.053 | 10,032 | 182 | 1.81 |
| SIC 82 | NA | 0.168 | NA | 215 | NA |
| SIC 83 | NA | 1.763 | NA | 252 | NA |
| SIC 84 | NA | 1.763 | NA | 252 | NA |
| SIC 86 | NA | 0.094 | NA | 456 | NA |
| SIC 89 | 290,500 | 0.107 | 11,039 | 234 | 2.12 |

Source: U.S. Department of Labor, OSHA, Office of Regulatory Analysis

## TABLE 9.—ESTABLISHMENTS WITH FEWER THAN 20 EMPLOYEES

| SIC code | Total number of establishments | Number of establishments with 1 to 19 employees | Percent of establishments with 1 to 10 employees |
|---|---|---|---|
| 01 | 31,739 | 27,440 | 86 |
| 02 | 10,994 | 9,574 | 87 |
| 07 | 65,704 | 61,928 | 94 |
| 08 | 2,117 | 1,852 | 87 |
| 09 | 2,160 | 2,088 | 97 |
| 13 | 31,572 | 26,037 | 82 |
| 15 | 166,012 | 154,819 | 93 |
| 16 | 44,702 | 37,484 | 84 |
| 17 | 320,208 | 294,850 | 92 |

| | | | |
|---|---|---|---|
| 40 | 18,539 | 15,756 | 85 |
| 41 | 15,267 | 11,998 | 79 |
| 42 | 94,561 | 80,822 | 85 |
| 44 | 8,346 | 6,917 | 83 |
| 45 | 8,691 | 6,514 | 75 |
| 46 | 959 | 724 | 75 |
| 47 | 30,788 | 28,420 | 92 |
| 48 | 10,319 | 6,612 | 64 |
| 49 | 15,571 | 10,922 | 70 |
| 50 | 169,451 | 133,233 | 79 |
| 51 | 191,745 | 166,562 | 87 |
| 52 | 66,756 | 60,097 | 90 |
| 53 | 14,909 | 8,963 | 60 |
| 54 | 137,393 | 114,738 | 84 |
| 55 | 173,902 | 152,920 | 88 |
| 56 | 28,181 | 23,874 | 85 |
| 57 | 23,582 | 20,474 | 87 |
| 58 | 309,650 | 241,282 | 78 |
| 59 | 244,849 | 227,803 | 93 |
| 60 | 12,475 | 6,318 | 51 |
| 61 | 12,912 | 9,561 | 74 |

| | | | |
|---|---|---|---|
| 62 | 4,380 | 3,079 | 70 |
| 63 | 10,998 | 7,263 | 66 |
| 64 | 17,577 | 15,608 | 89 |
| 65 | 32,714 | 28,099 | 86 |
| 66 | 524 | 488 | 93 |
| 67 | 2,790 | 2,239 | 80 |
| 70 | 44,697 | 34,693 | 78 |
| 72 | 158,272 | 149,812 | 95 |
| 73 | 284,684 | 249,553 | 88 |
| 75 | 121,431 | 116,344 | 96 |
| 76 | 57,900 | 55,543 | 96 |
| 78 | 15,338 | 13,314 | 87 |
| 79 | 50,981 | 42,916 | 84 |
| 80 | 365,758 | 338,396 | 93 |
| 81 | 21,210 | 18,659 | 88 |
| 82 | 18,661 | 11,197 | 60 |
| 83 | 23,148 | 17,068 | 74 |
| 84 | 1,592 | 1,250 | 79 |
| 86 | 19,757 | 16,416 | 83 |
| 89 | 28,103 | 23,179 | 82 |

Source: U.S. Department of Labor, OSHA, Office of Regulatory Analysis.
[a] From Chapter 5 of the JACA Report [4].
[b] Column 2 divided by Column 1.

TABLE 10.—ANALYSIS OF IMPACT ON SMALLEST VERSUS LARGEST ESTABLISHMENTS
[Comparing average costs as a percent of revenue]

| SIC code | Average cost as a percent of revenue per establishment +250 employees | Average cost as a percent of revenue per establishment 1–19 employees | Difference in cost as a percent of revenue due to size of establishments |
|---|---|---|---|
| 01 | 0.003 | 0.044 | 0.040 |
| 02 | 0.001 | 0.009 | 0.008 |
| 07 | 0.038 | 0.189 | 0.151 |
| 08 | 0.007 | 0.018 | 0.011 |
| 09 | 0.002 | 0.021 | 0.019 |
| 13 | 0.002 | 0.035 | 0.033 |
| 15 | 0.003 | 0.044 | 0.042 |
| 16 | 0.007 | 0.064 | 0.057 |
| 17 | 0.017 | 0.065 | 0.048 |
| 40 | 0.008 | 0.082 | 0.075 |
| 41 | 0.007 | 0.248 | 0.240 |
| 42 | 0.007 | 0.103 | 0.096 |
| 44 | 0.007 | 0.060 | 0.053 |
| 45 | 0.009 | 0.105 | 0.096 |
| 46 | 0.000 | 0.174 | 0.174 |
| 47 | 0.003 | 0.101 | 0.096 |

| | | | |
|---|---|---|---|
| 48 | 0.002 | 0.041 | 0.039 |
| 49 | 0.002 | 0.049 | 0.047 |
| 50 | 0.003 | 0.037 | 0.034 |
| 51 | 0.006 | 0.038 | 0.032 |
| 52 | 0.008 | 0.046 | 0.038 |
| 53 | 0.002 | 0.029 | 0.026 |
| 54 | 0.002 | 0.054 | 0.052 |
| 55 | 0.006 | 0.044 | 0.038 |
| 56 | 0.002 | 0.104 | 0.102 |
| 57 | 0.003 | 0.117 | 0.114 |
| 58 | 0.008 | 0.158 | 0.150 |
| 59 | 0.003 | 0.055 | 0.051 |
| 60 | 0.001 | 0.012 | 0.011 |
| 61 | 0.000 | 0.038 | 0.038 |
| 62 | 0.003 | 0.028 | 0.025 |
| 63 | 0.000 | 0.069 | 0.069 |
| 64 | 0.002 | 0.179 | 0.177 |
| 65 | 0.005 | 0.124 | 0.119 |
| 66 | 0.001 | 0.054 | 0.053 |
| 67 | 0.003 | 0.096 | 0.093 |
| 70 | 0.021 | 0.283 | 0.262 |

| | | | |
|---|---|---|---|
| 72 | 0.007 | 0.346 | 0.339 |
| 73 | 0.028 | 0.204 | 0.175 |
| 75 | 0.004 | 0.151 | 0.148 |
| 76 | 0.099 | 0.205 | 0.106 |
| 78 | 0.007 | 0.113 | 0.106 |
| 79 | 0.016 | 0.071 | 0.055 |
| 80 | 0.269 | 0.370 | 0.101 |
| 81 | 0.118 | 0.077 | -0.041 |
| 82 | 0.025 | 0.915 | 0.890 |
| 83 | 0.428 | 2.293 | 1.865 |
| 84 | 0.033 | 0.259 | 0.226 |
| 86 | 0.035 | 2.109 | 2.074 |
| 89 | 0.008 | 0.210 | 0.202 |

Source: U.S. Department of Labor, OSHA, Office of Regulatory Analysis.

OSHA is amending Parts 1910, 1915, 1917, 1918, 1926, and 1928 of Title 29 of the Code of Federal Regulations as follows:

## Part 1910—OCCUPATIONAL SAFETY AND HEALTH STANDARDS

1. The authority citation for Subpart Z of Part 1910 continues to read as follows:

Authority: Secs. 6, 8, Occupational Safety and Health Act (29 U.S.C. 655, 657); Secretary of Labor's Order No. 12–71 (36 FR 8754); 8–76 (41 FR 2509); or 9–83 (48 FR 35736) as applicable; and 29 CFR Part 1911.

Section 1910.1000 Tables Z–1, Z–2, Z–3 also issued under 5 U.S.C. 553.

Section 1910.1000 not issued under 29 CFR Part 1911, except for "Arsenic" and "Cotton Dust" listings in Table Z–1.

Section 1910.1001 not issued under Sec. 107 of Contract Work Hours and Safety Standards Act, 40 U.S.C. 333.

Section 1910.1002 not issued under 29 U.S.C. 655 or 29 CFR Part 1911; also issued under 5 U.S.C. 553.

Sections 1910.1003 through 1910.1018 also issued under 29 U.S.C. 653.

Section 1910.1025 also issued under 29 U.S.C. 653 and 5 U.S.C. 653.

Section 1910.1043 also issued under 5 U.S.C. 551 *et seq.*

Sections 1910.1045 and 1910.1047 also issued under 29 U.S.C. 653.

Sections 1910.1200, 1910.1499 and 1910.1500 also issued under 5 U.S.C. 553.

## Part 1915—OCCUPATIONAL SAFETY AND HEALTH STANDARDS FOR SHIPYARD EMPLOYMENT

2. The authority citation for Part 1915 is revised to read as follows:

Authority: Sec. 41, Longshore and Harbor Workers' Compensation Act (33 U.S.C. 941); secs. 4, 6, 8, Occupational Safety and Health Act of 1970 (29 U.S.C. 653, 655, 657); Secretary of Labor's Order No. 12–71 (36 FR 8754), 8–76 (41 FR 25059), or 9–83 (48 FR 35736), as applicable; 29 CFR Part 1911.

Section 1915.99 also issued under 5 U.S.C. 553.

## PART 1917—MARINE TERMINALS

3. The authority citation for Part 1917 is revised to read as follows:

Authority: Sec. 41, Longshore and Harbor Workers' Compensation Act (33 U.S.C. 941); secs. 4, 6, 8, Occupational Safety and Health Act of 1970 (29 U.S.C. 653, 655, 657); Secretary of Labor's Order No. 12–71 (36 FR 8754), 8–76 (41 FR 25059), or 9–83 (48 FR 35736), as applicable; 29 CFR Part 1911.

Section 1917.28 also issued under 5 U.S.C. 553.

## PART 1918—SAFETY AND HEALTH REGULATIONS FOR LONGSHORING

4. The authority citation for Part 1918 is revised to read as follows:

Authority: Sec. 41, Longshore and Harbor Workers' Compensation Act (33 U.S.C. 941); secs. 4, 6, 8, Occupational Safety and Health Act of 1970 (29 U.S.C. 653, 655, 657); Secretary of Labor's Order No. 12–71 (36 FR 8754), 8–76 (41 FR 25059), or 9–83 (48 FR 35736), as applicable.

Section 1918.90 also issued under 5 U.S.C. 553 and 29 CFR Part 1911.

## PART 1926—SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION

5. The authority citation for Subpart D of Part 1928 is revised to read as follows:

Authority: Sec. 107, Contract Work Hours and Safety Standards Act (Construction Safety Act) (40 U.S.C. 333); secs. 4, 6, 8, Occupational Safety and Health Act of 1970 (29 U.S.C. 653, 655, 657); Secretary of Labor's Order No. 12–71 (36 FR 8754), 8–76 (41 FR 25059), or 9–83 (48 FR 35736), as applicable.

Section 1928.59 also issued under 5 U.S.C. 553 and 29 CFR Part 1911.

## PART 1928—OCCUPATIONAL SAFETY AND HEALTH STANDARDS FOR AGRICULTURE

6. The authority citation for Part 1928 is revised to read as follows:

Authority: Secs. 6 and 8, Occupational Safety and Health Act of 1970 (29 U.S.C. 655, 657); Secretary of Labor's Orders 12–71 (36 FR 8754), 8–76 (41 FR 25059), or 9–83 (48 FR 35736), as applicable; 29 CFR Part 1911.

Section 1928.21 also issued under 5 U.S.C. 553.

## PARTS 1910, 1915, 1917, 1918, 1926 and 1928—[AMENDED]

7. Parts 1910, 1915, 1917, 1918, and 1926 are amended by revising §1910.1200 as set forth below, and by adding §§ 1915.99, 1917.28, 1918.90, and 1926.59 to contain the identical text of the revised § 1910.1200, including Appendices A, B, C, and D of 1910.1200:

(a) *Purpose.* (1) The purpose of this section is to ensure that the hazards of all chemicals produced or imported are evaluated, and that information concerning their hazards is transmitted to employers and employees. This transmittal of information is to be accomplished by means of comprehensive hazard communication programs, which are to include container labeling and other forms of warning, material safety data sheets and employee training.

(2) This occupational safety and health standard is intended to address comprehensively the issue of evaluating the potential hazards of chemicals, and communicating information concerning hazards and appropriate protective measures to employees, and to preempt any legal requirements of a state, or political subdivision of a state, pertaining to the subject. Evaluating the potential hazards of chemicals, and information concerning hazards and appropriate protective measures to employees, may include, for example, but is not limited to, provisions for: developing and maintaining a written hazard communication program for the workplace, including lists of hazardous chemicals present; labeling of containers of chemicals in the workplace, as well as of containers of chemicals being shipped to other workplaces; preparation and distribution of material safety data sheets to employees and downstream employers; and development and implementation of employee training programs regarding hazards of chemicals and protective measures. Under section 18 of the Act, no state or political subdivision of a state may adopt or enforce, through any court or agency, any requirement relating to the issue addressed by this Federal standard, except pursuant to a Federally-approved state plan.

(b) *Scope and application.* (1) This section requires chemical manufacturers or importers to assess the hazards of chemicals which they produce or import, and all employers to provide information to their employees about the hazardous chemicals to which they are exposed, by means of a hazard communication program, labels and other forms of warning, material safety data sheets, and information and training. In addition, this section requires distributors to transmit the required information to employers.

(2) This section applies to any chemical which is known to be present in the workplace in such a manner that employees may be exposed under normal conditions of use or in a foreseeable emergency.

(3) This section applies to laboratories only as follows:

(i) Employers shall ensure that labels on incoming containers of hazardous chemicals are not removed or defaced;
(ii) Employers shall maintain any material safety data sheets that are received with incoming shipments of hazardous chemicals, and ensure that they are readily

accessible to laboratory employees; and,
(iii) Employers shall ensure that laboratory employees are apprised of the hazards of the chemicals in their workplaces in accordance with paragraph (h) of this section.

(4) In work operations where employees only handle chemicals in sealed containers which are not opened under normal conditions of use (such as are found in marine cargo handling, warehousing, or retail sales), this section applies to these operations only as follows:

(i) Employers shall ensure that labels on incoming containers of hazardous chemicals are not removed or defaced;
(ii) Employers shall maintain copies of any material safety data sheets that are received with incoming shipments of the sealed containers of hazardous chemicals, shall obtain a material safety date sheet for sealed containers of hazardous chemicals received without a material safety data sheet if an employee requests the material safety data sheet, and shall ensure that the material safety data sheets are readily accessible during each work shift to employees when they are in their work area(s); and,
(iii) Employers shall ensure that employees are provided with information and training in accordance with paragraph (h) of this section (except for the location and availability of the written hazard communication program under paragraph (h)(1)(iii)) to the extent necessary to protect them in the event of a spill or leak of a hazardous chemical from a sealed container.

(5) This section does not require labeling of the following chemicals:

(i) Any pesticide as such term is defined in the Federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C. 136 *et seq.*), when subject to the labeling requirements of that Act and labeling regulations issued under that Act by the Environmental Protection Agency;
(ii) Any food, food additive, color additive, drug, cosmetic, or medical or veterinary device, including materials intended for use as ingredients in such products (*e.g.,* flavors and fragrances), as such terms are defined in the Federal Food, Drug, and Cosmetic Act (21 U.S.C. 301 *et seq.*) and regulations issued under that Act, when they are subject to the labeling requirements under that Act by the Food and Drug Administration;
(iii) Any distilled spirits (beverage alcohols), wine, or malt beverage intended for non-industrial use, as such terms are defined in the Federal Alcohol Administration Act (27 U.S.C. 201 *et seq.*) and regulations issued under that Act, when subject to the labeling requirements of that Act and labeling regulations issued under that Act by the Bureau of Alcohol, Tobacco, and Firearms; and,
(iv) Any consumer product or hazardous substance as those terms are defined in the

Consumer Product Safety Act (15 U.S.C. 2051 *et seq.*) and Federal Hazardous Substances Act (15 U.S.C. 1261 *et seq.*) respectively, when subject to a consumer product safety standard or labeling requirement of those Acts, or regulations issued under those Acts by the Consumer Product Safety Commission.

(6) This section does not apply to:

(i) Any hazardous waste as such term is defined by the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976, as amended (42 U.S.C. 6901 *et seq.*), when subject to regulations issued under that Act by the Environmental Protection Agency;
(ii) Tobacco or tobacco products;
(iii) Wood or wood products;
(iv) Articles;
(v) Food, drugs, cosmetics, or alcoholic beverages in a retail establishment which are packaged for sale to consumers;
(vi) Foods, drugs, or cosmetics intended for personal consumption by employees while in the workplace;
(vii) Any consumer product or hazardous substance, as those terms are defined in the Consumer Product Safety Act (15 U.S.C. 2051 *et seq.*) and Federal Hazardous Substances Act (15 U.S.C. *et seq.*) respectively, where the employer can demonstrate it is used in the workplace in the same manner as normal consumer use, and which use results in a duration and frequency of exposure which is not greater than exposures experienced by consumers; and,
(viii) Any drug, as that term is defined in the Federal Food, Drug, and Cosmetic Act (21 U.S.C. 301 *et seq.*) when it is in solid, final form for direct administration to the patient (*i.e.,* tablets or pills).

(c) *Definitions.*

"Article" means a manufactured item: (i) Which is formed to a specific shape or design during manufacture; (ii) which has end use function(s) dependent in whole or in part upon its shape or design during end use; and (iii) which does not release, or otherwise result in exposure to, a hazardous chemical, under normal conditions of use.

"Assistant Secretary" means the Assistant Secretary of Labor for Occupational Safety and Health, U.S. Department of Labor, or designee.

"Chemical" means any element, chemical compound or mixture of elements and/or compounds.

"Chemical manufacturer" means an employer with a workplace where chemical(s) are produced for use or distribution.

"Chemical name" means the scientific designation of a chemical in accordance with the nomenclature system developed by the International Union of Pure and Applied Chemistry (IUPAC) or the Chemical Abstracts Service (CAS) rules of nomenclature, or a name which will clearly identify the chemical for the purpose of conducting a hazard evaluation.

"Combustible liquid" means any liquid having a flashpoint at or above 100 °F (37.8 °C), but below 200 °F (93.3 °C), except any mixture having components with flashpoints of 200 °F (93.3 °C) or higher, the total volume of which make up 99 percent or more of total volume of the mixture.

"Common name" means any designation or identification such as code name, code number, trade name, brand name or generic name used to identify a chemical other than by its chemical name.

"Compressed gas" means:

(i) A gas or mixture of gases having, in a container, an absolute pressure exceeding 40 psi at 70 °F (21.1 °C); or
(ii) a gas or mixture of gases having, in a container, an absolute pressure exceeding 104 psi at 130 °F (54.4 °C) regardless of the pressure at 70 °F (21.1 °C); or
(iii) A liquid having a vapor pressure exceeding 40 psi at 100 °F (37.8 °C) as determined by ASTM D–323–72.

"Container" means any bag, barrel, bottle, box, can, cylinder, drum, reaction vessel, storage tank, or the like that contains a hazardous chemical. For purposes of this section, pipes or piping systems, and engines, fuel tanks, or other operating systems in a vehicle are not considered to be containers.

"Designated representative" means any individual or organization to whom an employee gives written authorization to exercise such employee's rights under this section. A recognized or certified collective bargaining agent shall be treated automatically as a designated representative without regard to written employee authorization.

"Director" means the Director, National Institute for Occupational Safety and Health, U.S. Department of Health and Human Services, or designee.

"Distributor" means a business, other than a chemical manufacturer or importer, which supplies hazardous chemicals to other distributors or to employers.

"Employee" means a worker who may be exposed to hazardous chemicals under normal operating conditions or in foreseeable emergencies. Workers such as office workers or bank tellers who encounter hazardous chemicals only in non-routine, isolated instances are not covered.

"Employer" means a person engaged in a business where chemicals are either used, distributed or are produced for use or distribution, including a contractor or subcontractor.

"Explosive" means a chemical that causes a sudden, almost instantaneous release of pressure, gas, and heat when subjected to sudden shock, pressure, or high temperature.

"Exposure" or "exposed" means that an employee is subjected to a hazardous chemical in the course of employment through any route of entry (inhalation, ingestion, skin contact or absorption, etc.) and includes potential (*e.g.* accidental or possible) exposure.

"Flammable" means a chemical that falls into one of the following categories:

(i) "Aerosol, flammable" means an aerosol that when tested by the method described in 16 CFR 1500.45, yields a flame projection exceeding 18 inches at full valve opening, or a flashback (a flame extending back to the valve) at any degree of valve opening;
(ii) "Gas, flammable" means:

(A) A gas that, at ambient temperature and pressure, forms a flammable mixture with air at a concentration of thirteen (13) percent by volume or less; or
(B) A gas that, at ambient temperature and pressure, forms a range of flammable mixtures with air wider than twelve (12) percent by volume, regardless of the lower limit;

(iii) "Liquid, flammable" means any liquid having a flashpoint below 100 °F (37.8 °C), except any mixture having components with flashpoints of 100 °F (37.8 °C) or higher, the total of which make up 99 percent or more of the total volume of the mixture;
(iv) "Solid, flammable" means a solid, other than a blasting agent or explosive as defined in § 190.109(a), that is liable to cause fire through friction, absorption of moisture, spontaneous chemical change, or retained heat from manufacturing or processing, or which can be ignited readily and when ignited burns so vigorously and persistently as to create a serious hazard. A chemical shall be considered to be a

flammable solid if, when tested by the method described in 16 CFR 1500.44, it ignites and burns with a self-sustained flame at a rate greater than one-tenth of an inch per second along its major axis.

"Flashpoint" means the minimum temperature at which a liquid gives off a vapor in sufficient concentration to ignite when tested as follows:

(i) Tagliabue Closed Tester (*See* American National Standard Method of Test for Flash Point by Tag Closed Tester, Z11.24–1979 (ASTM D 56–79)) for liquids with a viscosity of less than 45 Saybolt University Seconds (SUS) at 100 °F (37.8 °C), that do not contain suspended solids and do not have a tendency to form a surface film under test; or
(ii) Pensky-Martens Closed Tester (*See* American National Standard Method of Test for Flash Point by Pensky-Martens Closed Tester, Z11.7–1979 (ASTM D 93–79)) for liquids with a viscosity equal to or greater than 45 SUS at 100 °F (37.8 °C), or that contain suspended solids, or that have a tendency to form a surface film under test; or
(iii) Setaflash Closed Tester (see American National Standard Method of Test for Flash Point by Setaflash Closed Tester (ASTM D 3278–78)).

Organic peroxides, which undergo autoaccelerating thermal decomposition, are excluded from any of the flashpoint determination methods specified above.

"Foreseeable emergency" means any potential occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment which could result in an uncontrolled release of a hazardous chemical into the workplace.

"Hazardous chemical" means any chemical which is a physical hazard or a health hazard.

"Hazard warning" means any words, pictures, symbols, or combination thereof appearing on a label or other appropriate form of warning which convey the hazard(s) of the chemical(s) in the container(s).

"Health hazard" means a chemical for which there is statistically significant evidence based on at least one study conducted in accordance with established scientific principles that acute or chronic health effects may occur in exposed employees. The term "health hazard" includes chemicals which are carcinogens, toxic or highly toxic agents, reproductive toxins, irritants, corrosives, sensitizers, hepatotoxins, nephrotoxins, neurotoxins, agents which act on the hematopoietic system, and agents which damage the lungs, skin, eyes, or mucous membranes. Appendix A provides further definitions and explanations of the scope of health hazards covered by this

section, and Appendix B describes the criteria to be used to determine whether or not a chemical is to be considered hazardous for purposes of this standard.

"Identity" means any chemical or common name which is indicated on the material safety data sheet (MSDS) for the chemical. The identity used shall permit cross-references to be made among the required list of hazardous chemicals, the label and the MSDS.

"Immediate use" means that the hazardous chemical will be under the control of and used only by the person who transfers it from a labeled container and only within the work shift in which it is transferred.

"Importer" means the first business with employees within the Customs Territory of the United States which receives hazardous chemicals produced in other countries for the purpose of supplying them to distributors or employers within the United States.

"Label" means any written, printed, or graphic material, displayed on or affixed to containers of hazardous chemicals.

"Material safety data sheet (MSDS)" means written or printed material concerning a hazardous chemical which is prepared in accordance with paragraph (g) of this section.

"Mixture" means any combination of two or more chemicals if the combination is not, in whole or in part, the result of a chemical reaction.

"Organic peroxide" means an organic compound that contains the bivalent -O-O- structure and which may be considered to be a structural derivative of hydrogen peroxide where one or both of the hydrogen atoms has been replaced by an organic radical.

"Oxidizer" means a chemical other than a blasting agent or explosive as defined in § 1910.109(a), that initiates or promotes combustion in other materials, thereby causing fire either of itself or through the release of oxygen or other gases.

"Physical hazard" means a chemical for which there is scientifically valid evidence that it is a combustible liquid, a compressed gas, explosive, flammable, an organic peroxide, an oxidizer, pyrophoric, unstable (reactive) or water-reactive.

"Produce" means to manufacture, process, formulate, or repackage.

"Pyrophoric" means a chemical that will ignite spontaneously in air at a temperature of 130 °F (54.4 °C) or below.

"Responsible party" means someone who can provide additional information on the hazardous chemical and appropriate emergency procedures, if necessary.

"Specific chemical identity" means the chemical name, Chemical Abstracts Service (CAS) Registry Number, or any other information that reveals the precise chemical designation of the substance.

"Trade secret" means any confidential formula, pattern, process, device, information or compilation of information that is used in an employer's business, and that gives the employer an opportunity to obtain an advantage over competitors who do not know or use it. Appendix D sets out the criteria to be used in evaluating trade secrets.

"Unstable (reactive)" means a chemical which in the pure state, or as produced or transported, will vigorously polymerize, decompose, condense, or will become self-reactive under conditions of shocks, pressure or temperature.

"Use" means to package, handle, react, or transfer.

"Water-reactive" means a chemical that reacts with water to release a gas that is either flammable or presents a health hazard.

"Work area" means a room or defined space in a workplace where hazardous chemicals are produced or used, and where employees are present.

"Workplace" means an establishment, job site, or project, at one geographical location containing one or more work areas.

(d) *Hazard determination.* (1) Chemical manufacturers and importers shall evaluate chemicals produced in their workplaces or imported by them to determine if they are hazardous. Employers are not required to evaluate chemicals unless they choose not to rely on the evaluation performed by the chemical manufacturer or importer for the chemical to satisfy this requirement.

(2) Chemical manufacturers, importers or employers evaluating chemicals shall identify and consider the available scientific evidence concerning such hazards. For health hazards, evidence which is statistically significant and which is based on at least one positive study conducted in accordance with established scientific principles is considered to be sufficient to establish a hazardous effect if the results of the study meet the definitions of health hazards in this section. Appendix A shall be consulted

for the scope of health hazards covered, and Appendix B shall be consulted for the criteria to be followed with respect to the completeness of the evaluation, and the data to be reported.

(3) The chemical manufacturer, importer or employer evaluating chemicals shall treat the following sources as establishing that the chemicals listed in them are hazardous:

(i) 29 CFR Part 1910, Subpart Z Toxic and Hazardous Substances. Occupational Safety and Health Administration (OSHA); or,
(ii) *Threshold Limit Values for Chemical Substances and Physical Agents in the Work Environment*, American Conference of Governmental Industrial Hygienists (ACGIH) (latest edition).

The chemical manufacturer, importer, or employer is still responsible for evaluating the hazards associated with the chemicals in these source lists in accordance with the requirements of this standard.

(4) Chemical manufacturers, importers and employers evaluating chemicals shall treat the following sources as establishing that a chemical is a carcinogen or potential carcinogen for hazard communication purposes:

(i) National Toxicology Program (NTP), *Annual Report on Carcinogens* (latest edition);
(ii) International Agency for Research on Cancer (IARC) *Monographs* (latest editions); or
(iii) 29 CFR Part 1910, Subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration.

**Note.**—*The Registry of Toxic Effects of Chemical Substances* published by the National institute for Occupational Safety and Health indicates whether a chemical has been found by NTP or IARC to be a potential carcinogen.

(5) The chemical manufacturer, importer or employer shall determine the hazards of mixtures of chemicals as follows:

(i) If a mixture has been tested as a whole to determine its hazards, the results of such testing shall be used to determine whether the mixture is hazardous;
(ii) If a mixture has not been tested as a whole to determine whether the mixture is a health hazard, the mixture shall be assumed to present the same health hazards as do the components which comprise one percent (by weight or volume) or greater of the mixture, except that the mixture shall be assumed to present a carcinogenic hazard if it contains a component in concentrations of 0.1 percent or greater which is considered

to be a carcinogen under paragraph (d)(4) of this section;
(iii) If a mixture has not been tested as a whole to determine whether the mixture is a physical hazard, the chemical manufacturer, importer, or employer may use whatever scientifically valid data is available to evaluate the physical hazard potential of the mixture; and,
(iv) If the chemical manufacturer, importer, or employer has evidence to indicate that a component present in the mixture in concentrations of less than one percent (or in the case of carcinogens, less than 0.1 percent) could be released in concentrations which would exceed an established OSHA permissible exposure limit or ACGIH Threshold Limit Value, or could present a health hazard to employees in those concentrations, the mixture shall be assumed to present the same hazard.

(6) Chemical manufacturers, importers, or employers evaluating chemicals shall describe in writing the procedures they use to determine the hazards of the chemical they evaluate. The written procedures are to be made available, upon request, to employees, their designated representatives, the Assistant Secretary and the Director. The written description may be incorporated into the written hazard communication program required under paragraph (e) of this section.

(e) *Written hazard communication program.* (1) Employers shall develop, implement, and maintain at the workplace, a written hazard communication program for their workplaces which at least describes how the criteria specified in paragraphs (f), (g), and (h) of this section for labels and other forms of warning. material safety data sheets, and employee information and training will be met and which also includes the following:

(i) A list of the hazardous chemicals known to be present using an identity that is referenced on the appropriate material safety data sheet (the list may be compiled for the workplace as a whole or for individual work areas); and,
(ii) The methods the employer will use to inform employees of the hazards of non-routine tasks (for example, the cleaning of reactor vessels), and the hazards associated with chemicals contained in unlabeled pipes in their work areas.

(2) *Multi-employer workplaces.* Employers who produce, use, or store hazardous chemicals at a workplace in such a way that the employees of other employer(s) may be exposed (for example, employees of a construction contractor working on-site) shall additionally ensure that the hazard communication program developed and implemented under this paragraph (e) include the following:

(i) The methods the employer will use to provide the other employer(s) with a copy of the material safety data sheet, or to make it available at a central location in the workplace, for each hazardous chemical the other employer(s) employees may be

exposed to while working;
(ii) The methods the employer will use to inform the other employer(s) of any precautionary measures that need to be taken to protect employees during the workplace's normal operating conditions and in foreseeable emergencies; and,
(iii) The methods the employer will use to inform the other employer(s) of the labeling system used in the workplace.

(3) The employer may rely on an existing hazard communication program to comply with these requirements, provided that it meets the criteria established in this paragraph (e).

(4) The employer shall make the written hazard communication program available, upon request, to employees, their designated representatives, the Assistant Secretary and the Director, in accordance with the requirements of 29 CFR 1910.20(e).

(f) *Labels and other forms of warning.* (1) The chemical manufacturer, importer, or distributor shall ensure that each container of hazardous chemicals leaving the workplace is labeled, tagged or marked with the following information:

(i) Identity of the hazardous chemical(s);
(ii) Appropriate hazard warnings; and
(iii) Name and address of the chemical manufacturer, importer or other responsible party.

(2) For solid metal (such as a steel beam or a metal casting) that is not exempted as an article due to its downstream use, the required label may be transmitted to the customer at the time of the initial shipment, and need not be included with subsequent shipments to the same employer unless the information on the label changes. The label may be transmitted with the initial shipment itself, or with the material safety data sheet that is to be provided prior to or at the time of the first shipment. This exception to requiring labels on every container of hazardous chemicals is only for the solid metal itself and does not apply to hazardous chemicals used in conjunction with, or known to be present with, the metal and to which employees handling the metal may be exposed (for example, cutting fluids or lubricants).

(3) Chemical manufacturers, importers, or distributors shall ensure that each container of hazardous chemicals leaving the workplace is labeled, tagged, or marked in accordance with this section in a manner which does not conflict with the requirements of the Hazardous Materials Transportation Act (49 U.S.C. 1601 *et seq.*) and regulations issued under that Act by the Department of Transportation.

(4) If the hazardous chemical is regulated by OSHA in a substance-specific health standard, the chemical manufacturer, importer, distributor or employer shall ensure that the labels or other forms of warning used are in accordance with the requirements of that standard.

(5) Except as provided in paragraphs (f)(6) and (f)(7) the employer shall ensure that each container of hazardous chemicals in the workplace is labeled, tagged or marked with the following information:

(i) Identity of the hazardous chemical(s) contained therein; and
(ii) Appropriate hazard warnings.

(6) The employer may use signs, placards, process sheets, batch tickets, operating procedures, or other such written materials in lieu of affixing labels to individual stationary process containers, as long as the alternative method identifies the containers to which it is applicable and conveys the information required by paragraph (f)(5) of this section to be on a label. The written materials shall be readily accessible to the employees in their work area throughout each work shift.

(7) The employer is not required to label portable containers into which hazardous chemicals are transferred from labeled containers, and which are intended only for the immediate use of the employee who performs the transfer.

(8) The employer shall not remove or deface existing labels on incoming containers of hazardous chemicals, unless the container is immediately marked with the required information.

(9) The employer shall ensure that labels or other forms of warning are legible, in English, and prominently displayed on the container, or readily available in the work area throughout each work shift. Employers having employees who speak other languages may add the information in their language to the material presented, as long as the information is presented in English as well.

(10) The chemical manufacturer, importer, distributor or employer need not affix new labels to comply with this section if existing labels already convey the required information.

(g) *Material safety data sheets.* (1) Chemical manufacturers and importers shall obtain or develop a material safety data sheet for each hazardous chemical they produce or import. Employers shall have a material safety data sheet for each hazardous chemical which they use.

(2) Each material safety data sheet shall be in English and shall contain at least the following information:

(i) The identity used on the label, and, except as provided for in paragraph (i) of this section on trade secrets:

(A) If the hazardous chemical is a single substance, its chemical and common name(s);
(B) If the hazardous chemical is a mixture which has been tested as a whole to determine its hazards, the chemical and common name(s) of the ingredients which contribute to these known hazards, and the common name(s) of the mixture itself; or,
(C) If the hazardous chemical is a mixture which has not been tested as a whole:
(1) The chemical and common name(s) of all ingredients which have been determined to be health hazards, and which comprise 1% or greater of the composition, except that chemicals identified as carcinogens under paragraph (d)(4) of this section shall be listed if the concentrations are 0.1% or greater; and,
(2) The chemical and common name(s) of all ingredients which have been determined to be health hazards, and which comprise less than 1% (0.1% for carcinogens) of the mixture, if there is evidence that the ingredient(s) could be released from the mixture in concentrations which would exceed an established OSHA permissible exposure limit or ACGIH Threshold Limit Value, or could present a health hazard to employees; and,
(3) The chemical and common name(s) of all ingredients which have been determined to present a physical hazard when present in the mixture;

(ii) Physical and chemical characteristics of the hazardous chemical (such as vapor pressure, flash point);
(iii) The physical hazards of the hazardous chemical, including the potential for fire, explosion, and reactivity;
(iv) The health hazards of the hazardous chemical, including signs and symptoms of exposure, and any medical conditions which are generally recognized as being aggravated by exposure to the chemical;
(v) The primary route(s) of entry;
(vi) The OSHA permissible exposure limit, ACGIH Threshold Limit Value, and any other exposure limit used or recommended by the chemical manufacturer, importer, or employer preparing the material safety data sheet, where available;
(vii) Whether the hazardous chemical is listed in the National Toxicology Program (NTP) *Annual Report on Carcinogens* (latest edition) or has been found to be a potential carcinogen in the International Agency for Research on Cancer (IARC) *Monographs* (latest editions), or by OSHA;
(viii) Any generally applicable precautions for safe handling and use which are known to the chemical manufacturer, importer or employer preparing the material safety data

sheet, including appropriate hygienic practices, protective measures during repair and maintenance of contaminated equipment, and procedures for clean-up of spills and leaks;
(ix) Any generally applicable control measures which are known to the chemical manufacturer, importer or employer preparing the material safety data sheet, such as appropriate engineering controls, work practices, or personal protective equipment;
(x) Emergency and first aid procedures;
(xi) The date of preparation of the material safety data sheet or the last change to it; and,
(xii) The name, address and telephone number of the chemical manufacturer, importer, employer or other responsible party preparing or distributing the material safety data sheet who can provide additional information on the hazardous chemical and appropriate emergency procedures, if necessary.

(3) If no relevant information is found for any given category on the material safety data sheet, the chemical manufacturer, importer or employer preparing the material safety data sheet shall mark it to indicate that no applicable information was found.

(4) Where complex mixtures have similar hazards and contents (i.e. the chemical ingredients are essentially the same, but the specific composition varies from mixture to mixture), the chemical manufacturer, importer or employer may prepare one material safety data sheet to apply to all of these similar mixtures.

(5) The chemical manufacturer, importer or employer preparing the material safety data sheet shall ensure that the information recorded accurately reflects the scientific evidence used in making the hazard determination. If the chemical manufacturer, importer or employer preparing the material safety data sheet becomes newly aware of any significant information regarding the hazards of a chemical, or ways to protect against the hazards, this new information shall be added to the material safety data sheet within three months. If the chemical is not currently being produced or imported the chemical manufacturer or importer shall add the information to the material safety data sheet before the chemical is introduced into the workplace again.

(6) Chemical manufacturers or importers shall ensure that distributors and employers are provided an appropriate material safety data sheet with their initial shipment, and with the first shipment after a material safety data sheet is updated. The chemical manufacturer or importer shall either provide material safety data sheets with the shipped containers or send them to the employer prior to or at the time of the shipment. If the material safety data sheet is not provided with a shipment that has been labeled as a hazardous chemical, the employer shall obtain one from the chemical manufacturer, importer, or distributor as soon as possible.

(7) Distributors shall ensure that material safety data sheets, and updated information, are provided to other distributors and employers. Retail distributors which sell hazardous chemicals to commercial customers shall provide a material safety data sheet to such employers upon request, and shall post a sign or otherwise inform them that a material safety data sheet is available. Chemical manufacturers, importers, and distributors need not provide material safety data sheets to retail distributors which have informed them that the retail distributor does not sell the product to commercial customers or open the sealed container to use it in their own workplaces.

(8) The employer shall maintain copies of the required material safety data sheets for each hazardous chemical in the workplace, and shall ensure that they are readily accessible during each work shift to employees when they are in their work area(s).

(9) Where employees must travel between workplaces during a workshift, *i.e.,* their work is carried out at more than one geographical location, the material safety data sheets may be kept at a central location at the primary workplace facility. In this situation, the employer shall ensure that employees can immediately obtain the required information in an emergency.

(10) Material safety data sheets may be kept in any form, including operating procedures, and may be designed to cover groups of hazardous chemicals in a work area where it may be more appropriate to address the hazards of a process rather than individual hazardous chemicals. However, the employer shall ensure that in all cases the required information is provided for each hazardous chemical, and is readily accessible during each work shift to employees when they are in their work areas(s).

(11) Material safety data sheets shall also be made readily available, upon request, to designated representatives and to the Assistant Secretary, in accordance with the requirements of 29 CFR 1910.20 (e). The Director shall also be given access to material safety data sheets in the same manner.

(h) *Employee information and training.* Employers shall provide employees with information and training on hazardous chemicals in their work area at the time of their initial assignment, and whenever a new hazard is introduced into their work area.

(1) *Information.* Employees shall be informed of:

(i) The requirements of this section;
(ii) Any operations in their work area where hazardous chemicals are present; and,
(iii) The location and availability of the written hazard communication program, including the required list(s) of hazardous chemicals, and material safety data sheets required by this section.

(2) *Training.* Employee training shall include at least:

(i) Methods and observations that may be used to detect the presence or release of a hazardous chemical in the work area (such as monitoring conducted by the employer, continuous monitoring devices, visual appearance or odor of hazardous chemicals when being released, etc.);
(ii) The physical and health hazards of the chemicals in the work area;
(iii) The measures employees can take to protect themselves from these hazards, including specific procedures the employer has implemented to protect employees from exposure to hazardous chemicals, such as appropriate work practices, emergency procedures, and personal protective equipment to be used; and,
(iv) The details of the hazard communication program developed by the employer, including an explanation of the labeling system and the material safety data sheet, and how employees can obtain and use the appropriate hazard information.

(i) *Trade secrets.* (1) The chemical manufacturer, importer, or employer may withhold the specific chemical identity, including the chemical name and other specific identification of a hazardous chemical, from the material safety data sheet, provided that:

(i) The claim that the information withheld is a trade secret can be supported;
(ii) Information contained in the material safety data sheet concerning the properties and effects of the hazardous chemical is disclosed;
(iii) The material safety data sheet indicates that the specific chemical identity is being withheld as a trade secret; and,
(iv) The specific chemical identity is made available to health professionals, employees, and designated representatives in accordance with the applicable provisions of this paragraph.

(2) Where a treating physician or nurse determines that a medical emergency exists and the specific chemical identity of a hazardous chemical is necessary for emergency or first-aid treatment, the chemical manufacturer, importer, or employer shall immediately disclose the specific chemical identity of a trade secret chemical to that treating physician or nurse, regardless of the existence of a written statement of need of a confidentiality agreement. The chemical manufacturer, importer, or employer may require a written statement of need and confidentiality agreement, in accordance with the provisions of paragraphs (i)(3) and (4) of this section, as soon as circumstances permit

(3) In non-emergency situations, a chemical manufacturer, importer, or employer shall, upon request, disclose a specific chemical identity, otherwise permitted to be withheld under paragraph (i)(1) of this section, to a health professional

(*i.e.,* physician, industrial hygienist, toxicologist, epidemiologist, or occupational health nurse) providing medical or other occupational health services to exposed employee(s), and to employees or designated representatives, if:

(i) The request is in writing;
(ii) The request describes with reasonable detail one or more of the following occupational health needs for the information:

(A) To assess the hazards of the chemicals to which employees will be exposed;
(B) To conduct or assess sampling of the workplace atmosphere to determine employee exposure levels;
(C) To conduct pre-assignment or periodic medical surveillance of exposed employees;
(D) To provide medical treatment to exposed employees;
(E) To select or assess appropriate personal protective equipment for exposed employees;
(F) To design or assess engineering controls or other protective measures for exposed employees; and,
(G) To conduct studies to determine the health effects of exposure.

(iii) The request explains in detail why the disclosure of the specific chemical identity is essential and that, in lieu thereof, the disclosure of the following information to the health professional, employee, or designated representative, would not satisfy the purposes described in paragraph (i)(3)(ii) of this section:

(A) The properties and effects of the chemical;
(B) Measures for controlling workers' exposure to the chemical;
(C) Methods of monitoring and analyzing worker exposure to the chemical; and,
(D) Methods of diagnosing and treating harmful exposures to the chemical;

(iv) The request includes a description of the procedures to be used to maintain the confidentiality of -the disclosed information; and,
(v) The health professional, and the employer or contractor of the services of the health professional (*i.e.* downstream employer, labor organization, or individual employee), employee, or designated representative, agree in a written confidentiality agreement that the health professional, employee, or designated representative, will not use the trade secret information for any purpose other than the health need(s) asserted and agree not to release the information under any circumstances other than to OSHA, as provided in paragraph (i)(6) of this section, except as authorized by the terms of the agreement or by the chemical manufacturer, importer, or employer.

(4) The confidentiality agreement authorized by paragraph (i)(3)(iv) of this section:

(i) May restrict the use of the information to the health purposes indicated in the written statement of need;
(ii) May provide for appropriate legal remedies in the event of a breach of the agreement, including stipulation of a reasonable pre-estimate of likely damages; and,
(iii) May not include requirements for the posting of a penalty bond.

(5) Nothing in this standard is meant to preclude the parties from pursuing non-contractual remedies to the extent permitted by law.

(6) If the health professional, employee, or designated representative receiving the trade secret information decides that there is a need to disclose it to OSHA, the chemical manufacturer, importer, or employer who provided the information shall be informed by the health professional, employee, or designated representative prior to, or at the same time as such disclosure.

(7) If the chemical manufacturer, importer, or employer denies a written request for disclosure of a specific chemical identity, the denial must:

(i) Be provided to the health professional, employee, or designated representative, within thirty days of the request;
(ii) Be in writing;
(iii) Include evidence to support the claim that the specific chemical identity is a trade secret;
(iv) State the specific reasons why the request is being denied; and,
(v) Explain in detail how alternative information may satisfy the specific medical or occupational health need without revealing the specific chemical identity.

(8) The health professional, employee, or designated representative whose request for information is denied under paragraph (i)(3) of this section may refer the request and the written denial of the request to OSHA for consideration.

(9) When a health professional, employee, or designated representative refers the denial to OSHA under paragraph (i)(8) of this section, OSHA shall consider the evidence to determine if:

(i) The chemical manufacturer, importer, or employer has supported the claim that the specific chemical identity is a trade secret;
(ii) The health professional, employee, or designated representative has supported the claim that there is a medical or occupational health need for the information; and,
(iii) The health professional, employee, or designated representative has demonstrated adequate means to protect the confidentiality.

(10)(i) If OSHA determines that the specific chemical identity requested under paragraph (i)(3) of this section is not a *bona fide* trade secret, or that it is a trade secret, but the requesting health professional employee, or designated representative has a legitimate medical or occupational health need for the information, has executed, a written confidentiality agreement, and has shown adequate means to protect the confidentiality of the information, the chemical manufacturer, importer or employer will be subject to citation by OSHA.

(ii) If a chemical manufacturer, importer, or employer demonstrates to OSHA that the execution of a confidentiality agreement would not provide sufficient protection against the potential harm from the unauthorized disclosure of a trade secret specific chemical identity, the Assistant Secretary may issue such orders or impose such additional limitations or conditions upon the disclosure of the requested chemical information as may be appropriate to assure that the occupational health services are provided without an undue risk of harm to the chemical manufacturer, importer, or employer.

(11) If a citation for a failure to release specific chemical identity information is contested by the chemical manufacturer, importer, or employer, the matter will be adjudicated before the Occupational Safety and Health Review Commission in accordance with the Act's enforcement scheme and the applicable Commission rules of procedure. In accordance with the Commission rules, when a chemical manufacturer, importer, or employer continues to withhold the information during the contest, the Administrative Law Judge may review the citation and supporting documentation *in camera* or issue appropriate orders to protect the confidentiality or such matters.

(12) Notwithstanding the existence of a trade secret claim, a chemical manufacturer, importer, or employer shall, upon request, disclose to the Assistant Secretary any information which this section requires the chemical manufacturer, importer, or employer to make available. Where there is a trade secret claim, such claim shall be made no later than at the time the information is provided to the Assistant Secretary so that suitable determinations of trade secret status can be made and the necessary protections can be implemented.

(13) Nothing in this paragraph shall be construed as requiring the disclosure under any circumstances of process or percentage of mixture information which is a trade secret.

(j) *Effective dates.* (1) Chemical manufacturers, importers, and distributors shall ensure that material safety data sheets are provided with the next shipment of hazardous chemicals to employers after September 23, 1987.

(2) Employers in the non-manufacturing sector shall be in compliance with all provisions of this section by May 23, 1988. (Note: Employers in the manufacturing sector (SIC Codes 20 through 39) are already required to be in compliance with this section.)

**Appendix A to § —— Health Hazard Definitions (Mandatory)**

Although safety hazards related to the physical characteristics of a chemical can be objectively defined in terms of testing requirements (*e.g.* flammability), health hazard definitions are less precise and more subjective. Health hazards may cause measurable changes in the body—such as decreased pulmonary function. These changes are generally indicated by the occurrence of signs and symptoms in the exposed employees—such as shortness of breath, a non-measurable, subjective feeling. Employees exposed to such hazards must be apprised of both the change in body function and the signs and symptoms that may occur to signal that change.

The determination of occupational health hazards is complicated by the fact that many of the effects or signs and symptoms occur commonly in non-occupationally exposed populations, so that effects of exposure are difficult to separate from normally occurring illnesses. Occasionally, a substance causes an effect that is rarely seen in the population at large, such as angiosarcomas caused by vinyl chloride exposure, thus making it easier to ascertain that the occupational exposure was the primary causative factor. More often, however, the effects are common, such as lung cancer. The situation is further complicated by the fact that most chemicals have not been adequately tested to determine their health hazard potential, and data do not exist to substantiate these effects.

There have been many attempts to categorize effects and to define them in various ways. Generally, the terms "acute" and "chronic" are used to delineate between effects on the basis of severity or duration. "Acute" effects usually occur rapidly as a result of short-term exposures, and are of short duration. "Chronic" effects generally occur as a result of long-term exposure, and are of long duration.

The acute effects referred to most frequently are those defined by the American National Standards Institute (ANSI) standard for Precautionary Labeling of Hazardous Industrial Chemicals (Z129.1–1982)—irritation, corrosivity, sensitization and lethal dose. Although these are important health effects, they do not adequately cover the considerable range of acute affects which may occur as a result of occupational exposure, such as, for example, narcosis.

Similarly, the term chronic effect is often used to cover only carcinogenicity, teratogenicity, and mutagenicity. These effects are obviously a concern in the

workplace, but again, do not adequately cover the area of chronic effects, excluding, for example, blood dyscrasias (such as enemia), chronic bronchitis and liver atrophy.

The goal of defining precisely, in measurable terms, every possible health effect that may occur in the workplace as a result of chemical exposures cannot realistically be accomplished. This does not negate the need for employees to be informed of such effects and protected from them. Appendix B, which is also mandatory, outlines the principles and procedures of hazardous assessment.

For purposes of this section, any chemicals which meet any of the following definitions, as determined by the criteria set forth in Appendix B are health hazards:

1. *Carcinogen:* A chemical is considered to be a carcinogen if:

(a) It has been evaluated by the International Agency for Research on Cancer (IARC), and found to be a carcinogen or potential carcinogen; or
(b) It is listed as a carcinogen or potential carcinogen in the *Annual Report on Carcinogens* published by the National Toxicology Program (NTP) (latest edition); or,
(c) It is regulated by OSHA as a carcinogen.

2. *Corrosive:* A chemical that causes visible destruction of, or irreversible alterations in, living tissue by chemical action at the site of contact. For example, a chemical is considered to be corrosive if, when tested on the intact skin of albino rabbits by the method described by the U.S. Department of Transportation in Appendix A to 49 CFR Part 173, it destroys or changes irreversibly the structure of the tissue at the site of contact following an exposure period of four hours. This term shall not refer to action on inanimate surfaces.

3. *Highly toxic:* A chemical falling within any of the following categories:

(a) A chemical that has a median lethal dose ($LD_{50}$) of 50 milligrams or less per kilogram of body weight when administered orally to albino rats weighing between 200 and 300 grams each.
(b) A chemical that has a median lethal does ($LD_{50}$) of 200 milligrams or less per kilogram of body weight when administered by continuous contact for 24 hours (or less if death occurs within 24 hours) with the bare skin of albino rabbits weighing between two and three kilograms each.
(c) A chemical that has a median lethal concentration ($LC_{50}$) in air of 200 parts per million by volume or less of gas or vapor, or 2 milligrams per liter or less of mist, fume, or dust, when administered by continuous inhalation for one hour (or less if

death occurs within one hour) to albino rats weighing between 200 and 300 grams each.

4. *Irritant:* A chemical, which is not corrosive, but which causes a reversible inflammatory effect on living tissue by chemical action at the site of contact. A chemical is a skin irritant if, when tested on the intact skin of albino rabbits by the methods of 16 CFR 1500.41 for four hours exposure or by other appropriate techniques, it results in an empirical score of five or more. A chemical is an eye irritant if so determined under the procedure listed in 26 CFR 1500.42 or other appropriate techniques.

5. *Sensitizer:* A chemical that causes a substantial proportion of exposed people or animals to develop an allergic reaction in normal tissue after repeated exposure to the chemical.

6. *Toxic.* A chemical falling within any of the following categories:

(a) A chemical that has a median lethal dose ($LD_{50}$) of mote than 50 milligrams per kilogram but not more than 500 milligrams per kilogram of body weight when administered orally to albino rats weighing between 200 and 300 grams each.
(b) A chemical that has a median lethal dose ($LD_{50}$) of more than 200 milligrams per kilogram but not more than 1,000 milligrams per kilogram of body weight when administered by continuous contact for 24 hours (or less if death occurs within 24 hours) with the bare skin of albino rabbits weighing between two and three kilograms each.
(c) A chemical that has a median lethal concentration ($LC_{50}$) in air of more than 200 parts per million but not more than 2,000 parts per million by volume of gas or vapor, or more than two milligrams per liter but not more than 20 milligram per liter of mist, fume, or dust, when administered by continuous inhalation for one hour (or less if death occurs within one hour) to albino rats weighing between 200 and 300 grams each.

7. *Target organ effects.* The following is a target organ categorization of effects which may occur, including examples of signs and symptoms and chemicals which have been found to cause such effects. These examples are presented to illustrate the range and diversity of effects and hazards found in the workplace, and the broad scope employers must consider in this area, but are not intended to be all-inclusive.

a. Hepatotoxins: Chemicals which produce liver damage
   Signs & Symptoms: Jaundice; liver enlargement
   Chemicals: Carbon tetrachloride; nitrosamines

b. Nephrotoxins: Chemicals which produce kidney damage
   Signs & Symptoms: Edema; proteinuria
   Chemicals: Halogenated hydrocarbons; uranium
c. Neurotoxins: Chemicals which produce their primary toxic effects on the nervous system
   Signs & Symptoms: Narcosis; behavioral changes; decrease in motor functions
   Chemicals: Mercury; carbon disulfide
d. Agents which act on the blood or hematopoietic system: Decrease hemoglobin function; deprive the body tissues of oxygen
   Signs & Symptoms: Cyanosis; loss of consciousness
   Chemicals: Carbon monoxide; cyanides
e. Agents which damage the lung: Chemicals which irritate or damage the pulmonary tissue
   Signs & Symptoms: Cough; tightness in chest; shortness of breath
   Chemicals: Silica; asbestos
f. Reproductive toxins: Chemicals which affect the reproductive capabilities including chromosomal damage (mutations) and effects on fetuses (teratogenesis)
   Signs & Symptoms: Birth defects; sterility
   Chemicals: Lead; DBCP
g. Cutaneous hazards: Chemicals which affect the dermal layer of the body
   Signs & Symptoms: Defatting of the skin; rashes; irritation
   Chemicals: Ketones; chlorinated compounds
h. Eye hazards: Chemicals which affect the eye or visual capacity
   Signs & Symptoms: Conjunctivitis; corneal damage
   Chemicals: Organic solvents; acids

**Appendix B to § ——, Hazard Determination (Mandatory)**

The quality of a hazard communication program is largely dependent upon the adequacy and accuracy of the hazard determination. The hazard determination requirement of this standard is performance-oriented. Chemical manufacturers, importers, and employers evaluating chemicals are not required to follow any specific methods for determining hazards, but they must be able to demonstrate that they have adequately ascertained the hazards of the chemicals produced or imported in accordance with the criteria set forth in this Appendix.

Hazard evaluation is a process which relies heavily on the professional judgment of the evaluator, particularly in the area of chronic hazards. The performance-orientation of the hazard determination does not diminish the duty of the chemical manufacturer, importer or employer to conduct a thorough evaluation, examining all relevant data and producing a scientifically defensible evaluation. For purposes of this standard, the

following criteria shall be used in making hazard determinations that meet the requirements of this standard.

1. *Carcinogenicity.* As described in paragraph (d)(4) and Appendix A of this section, a determination by the National Toxicology Program, the International Agency for Research on Cancer, or OSHA that a chemical is a carcinogen or potential carcinogen will be considered conclusive evidence for purposes of this section.

2. *Human data:* Where available, epidemiological studies and case reports of adverse health effects shall be considered in the evaluation.

3. *Animal data:* Human evidence of health effects in exposed populations is generally not available for the majority of chemicals produced or used in the workplace. Therefore, the available results of toxicological testing in animal populations shall be used to predict the health effects that may be experienced by exposed workers. In particular, the definitions of certain acute hazards refer to specific animal testing results (see Appendix A).

4. *Adequacy and reporting of data.* The results of any studies which are designed and conducted according to established scientific principles, and which report statistically significant conclusions regarding the health effects of a chemical, shall be a sufficient basis for a hazard determination and reported on any material safety data sheet. The chemical manufacturer, importer, or employer may also report the results of other scientifically valid studies which tend to refute the findings of hazard.

**Appendix C to § —— Information Sources (Advisory)**

The following is a list of available data sources which the chemical manufacturer, importer, distributor, or employer may wish to consult to evaluate the hazards of chemicals they produce or import:

—Any information in their own company files, such as toxicity testing results or illness experience of company employees.

—Any information obtained from the supplier of the chemical, such as material safety data sheets or product safety bulletins.

—Any pertinent information obtained from the following source list (latest editions should be used):

*Condensed Chemical Dictionary*
Van Nostrand Reinhold Co., 135 West 50th Street, New York, NY 10020.

*The Merck Index: An Encyclopedia of Chemicals and Drugs*
Merck and Company, Inc., 126 E. Lincoln Ave. Rahway, NJ 07065.

*IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man*
Geneva: World Health Organization, International Agency for Research on Cancer, 1972–Present. (Multivolume work.) Summaries are available in supplement volumes. 49 Sheridan Street, Albany, NY 12210.

*Industrial Hygiene and Toxicology, by F.A. Patty*
John Wiley & Sons. Inc., New York, NY (Multivolume work).

*Clinical Toxicology of Commercial Products*
Gleason, Gosselin, and Hodge

*Casarett and Doull's Toxicology; The Basic Science of Poisons*
Doull, Klaassen, and Amdur, Macmillan Publishing Co., Inc., New York, NY.

*Industrial Toxicology, by Alice Hamilton and Harriet L. Hardy*
Publishing Sciences Group, Inc., Acton, MA.

*Toxicology of the Eye, by W. Morton Grant*
Charles C. Thomas, 301–327 East Lawrence Avenue, Springfield, IL.

*Recognition of Health Hazards in Industry*
William A. Burgess, John Wiley and Sons, 605 Third Avenue, New York, NY 10158.

*Chemical Hazards of the Workplace*

Nick H. Proctor and James P. Hughes, J.P. Lipincott Company, 6 Winchester Terrace, New York, NY 10022

*Handbook of Chemistry and Physics*

Chemical Rubber Company, 18901 Cranwood Parkway, Cleveland, OH 44128.

*Threshold Limit Values for Chemical Substances and Physical Agents in the Work Environment and Biological Indices with Intended Changes*
American Conference of Governmental Industrial I Hygienists (ACGIH), 6500 Glenway Avenue, Bldg. D–5 Cincinnati, OH 45211.

Information on the physical hazards of chemicals may be found in publications of the National Fire Protection Association, Boston, MA.

**Note.**—The following documents may be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC, 20402.

*Occupational Health Guidelines*
NIOSH/OSHA (NIOSH Pub. No. 81–123)

*NIOSH Pocket Guide to Chemical Hazards*
NIOSH Pub. No. 85–114

*Registry of Toxic Effects of Chemical Substances*
NIOSH Pub. No. 80–102

Miscellaneous Documents published by the National Institute for Occupational Safety and Health:

Criteria documents.
Special Hazard Reviews.
Occupational Hazard Assessments.
Current Intelligence Bulletins.

*OSHA's General Industry Standards (29 CFR Part 1910)*

*NTP Annual Report on Carcinogens and Summary of the Annual Report on Carcinogens.*
National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, VA 22161; (703) 487–4650.

BIBLIOGRAPHIC DATA BASES

| Service provider | File name |
|---|---|
| Bibliographic Retrieval Services (BRS),<br>1200 Route 7,<br>Latham, NY 12110. | Biosis Previews<br>CA Search<br>Medlars<br>NTIS<br>Hazardline<br>American Chemical Society Journal<br>Excerpta Medica<br>IRCS Medical Science Journal<br>Pre-Med<br>Intl Pharmaceutical Abstracts<br>Paper Chem |

| | |
|---|---|
| Lockheed—DIALOG Information Service, Inc.,<br>3460 Hillview Avenue,<br>Pala Alto, CA 94304. | Biosis Prev. Files<br>CA Search Files<br>CAB Abstracts<br>Chemical Exposure<br>Chemname<br>Chemsis Files<br>Chemzero<br>Embase Files<br>Environmental Bibliographies<br>Enviroline<br>Federal Research in Progress<br>IRL Life Science Collection<br>NTIS<br>Occupational Safety and Health (NIOSH)<br>Paper Chem |
| SDC—Orbit, SDC Information Service,<br>2500 Colorado Avenue,<br>Santa Monica, CA 90406. | CAS Files<br>Chemdex, 2, 3<br>NTIS |
| National Library of Medicine,<br>Department of Health and Human Services,<br>Public Health Service,<br>National Institutes of Health,<br>Bethesda, MD 20209. | Hazardous Substances Data Bank (NSDB)<br>Medicine Files<br>Toxline Files<br>Cancerlit<br>RTECS<br>Chemline |
| Pergamon International Information Corp.,<br>1340 Old Chain Bridge Rd.,<br>McLean, VA 22101. | Laboratory Hazard Bulletin |
| Questel, Inc.,<br>1625 Eye Street, NW., Suite 818,<br>Washington, DC 20006. | CIS/ILO<br>Cancernet |
| Chemical Information System ICI (ICIS),<br>Bureau of National Affairs,<br>1133 15th Street, NW., Suite 300,<br>Washington, DC 20005. | Structure and Nomenclature Search System (SANSS)<br>Acute Toxicity (RTECS)<br>Clinical Toxicology of Commercial Products<br>Oil and Hazardous Materials Technical Assistance Data System |

| | |
|---|---|
| | CCRIS<br>CESARS |
| Occupational Health Services,<br>400 Plaza Drive,<br>Secaucus, NJ 07094. | MSDS<br>Hazardline |

**Appendix D to § —— Definition of "Trade Secret" (Mandatory)**

The following is a reprint of the *Restatement of Torts* section 757, comment *b* (1939):

b. *Definition of trade secret.* A trade secret may consist of any formula, pattern, device or compilation of information which is used in one's business, and which gives him an opportunity to obtain an advantage over competitors who do not know or use it. It may be a formula for a chemical compound, a process of manufacturing, treating or preserving materials, a pattern for a machine or other device, or a list of customers. It differs from other secret information in a business (*see* § 759 of the *Restatement of Torts* which is not included in this Appendix) in that it is not simply information as to single or ephemeral events in the conduct of the business, as, for example, the amount or other terms of a secret bid for a contract or the salary of certain employees, or the security investments made or contemplated, or the date fixed for the announcement of a new policy or for bringing out a new model or the like. A trade secret is a process or device for continuous use in the operations of the business. Generally it relates to the production of goods, as, for example, a machine or formula for the production of an article. It may, however, relate to the sale of goods or to other operations in the business, such as a code for determining discounts, rebates or other concessions in a price list or catalogue, or a list of specialized customers, or a method of bookkeeping or other office management.

*Secrecy.* The subject matter of a trade secret must be secret. Matters of public knowledge or of general knowledge in an industry cannot be appropriated by one as his secret. Matters which are completely disclosed by the goods which one markets cannot be his secret. Substantially, a trade secret is known only in the particular business in which it is used. It is not requisite that only the proprietor of the business know it. He may, without losing his protection, communicate it to employees involved in its use. He may likewise communicate it to others pledged to secrecy. Others may also know of it independently, as, for example, when they have discovered the process or formula by independent invention and are keeping it secret. Nevertheless, a substantial element of secrecy must exist so that except by the use of improper means,

there would be difficulty in acquiring the information. An exact definition of a trade secret is not possible. Some factors to be considered in determining whether given information is one's trade secret are: (1) The extent to which the information is known outside of his business; (2) the extent to which it is known by employees and others involved in his business; (3) the extent of measures taken by him to guard the secrecy of the information; (4) the value of the information to him and his competitors; (5) the amount of effort or money expended by him in developing the information; (6) the ease or difficulty with which the information could be properly acquired or duplicated by others.

*Novelty and prior art.* A trade secret may be a device or process which is patentable; but it need not be that. It may be a device or process which is clearly anticipated in the prior art or one which is merely a mechanical improvement that a good mechanic can make. Novelty and invention are not requisite for a trade secret as they are for patentability. These requirements are essential to patentability because a patent protects against unlicensed use of the patented device or process even by one who discovers it properly through independent research. The patent monopoly is a reward to the inventor. But such is not the case with a trade secret. Its protection is not based on a policy of rewarding or otherwise encouraging the development of secret processes or devices. The protection is merely against breach of faith and reprehensible means of learning another's secret. For this limited protection it is not appropriate to require also the kind of novelty and invention which is a requisite of patentability. The nature of the secret is, however, an important factor in determining the kind of relief that is appropriate against one who is subject to liability under the rule stated in this section. Thus, if the secret consists of a device or process which is a novel invention, one who acquires the secret wrongfully is ordinarily enjoined from further use of it and is required to account for the profits derived from his past use. If, on the other hand, the secret consists of mechanical improvements that a good mechanic can make without resort to the secret, the wrongdoer's liability may be limited to damages, and an injunction against future use of the improvements made with the aid of the secret may be inappropriate.

8. Section 1915–97 would be revised to read as follows:

**§ 1915.97 Health and sanitation.**

The provisions of this section shall apply to ship repairing. shipbuilding and shipbreaking, except where indicated otherwise.

(a) The employer shall provide all necessary controls, and the employees shall be protected by suitable personal protective equipment against the hazards identified

under § 1915.99 of this part and those hazards for which specific precautions are required in Subparts B, C, and D of this part.

(b) The employer shall provide adequate washing facilities for employees engaged in the application of paints or coatings or in other operations where contaminants can, by ingestion or absorption, be detrimental to the health of the employees. The employer shall encourage good personal hygiene practices by informing the employees of the need for removing surface contaminants by thorough washing or hands and face prior to eating or smoking.

(c) The employer shall not permit employees to eat or smoke in areas undergoing surface preparation or preservation or where shipbreaking operations produce atmospheric contaminants.

(d) The employer shall not permit employees engaged in ship repair work on a vessel to work in the immediate vicinity of uncovered garbage and shall ensure that employees working beneath or on the outboard side of a vessel are not subject to contamination by drainage or waste from overboard discharges.

(e) No minor under 18 years of age shall be employed in shipbreaking or related employments.

9. Section 1928.21 would be amended by adding paragraph (a)(5) as follows:

**§ 1928.21 Applicable standards in 29 CFR Part 1910.**

(a) * * *

(5) Hazard communication—§ 1910.1200.

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