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Hazard Communication Seminar, Day 1

	ACTIVITY	SECTION
8:30	Welcome and Opening Comments	1
	Introduction to Hazard Communication	
	Statement of goals, purpose and design of this seminar. Introduction of participants in an opening participatory exercise. Participants course needs are addressed.	
	BREAK	
	How to Conduct a Workplace HazComm Inventory	2
	Step by step suggestions on how to inventory for and acquire information on suspected hazardous materials; how to properly determine which materials are hazardous and how to maintain the inventory.	
	BREAK	
	What is a Material Safety Data Sheet	3
	An explanation/review of MSDS – the primary element of a HazComm program. Terminology found on an MSDS will be discussed.	
	LUNCH	
	What is a Label	4
	A brief discussion of labeling and labeling requirements. Different labeling systems are addressed.	
	BREAK	
	Exercise	5
	Demonstrate understanding of MSDS and labeling systems by finding pre-determined information on an MSDS and making a label	
	BREAK	
	Hazard Communication Training	7
	Information and training requirements of the standard. Collect assignments, overview of today's content.	
4:30	Knowledge Assessment and Assignment	6
	According to individual needs, participants are asked to sketch out a written HazComm program for their company, or assess and revise, if needed, their existing written programs.	

Hazard Communication Seminar, Day 2

	ACTIVITY	SECTION
8:30	Writing a Hazard Communication Program	8
	Step by step procedure for writing a company HazComm program to comply with the HazComm standard.	
	Review of the Federal HazComm Standard	9
	Review the current standard involving the requirements and accountability of employers to their employees and federal government	
	Hazard Communication Training Exercise	7
	Hazard Communication Resources	10
	Services available by the Division of Safety & Hygiene and other sources	
12:30	Wrap up	

HAZARD COMMUNICATION SEMINAR

OBJECTIVES

Upon completion of this seminar, participants will be able to:

- Conduct a thorough workplace inventory and maintain it on a day-to-day basis.
- Use some of the most common terminology found on a Material Safety Data Sheet when reading and analyzing an MSDS
- Demonstrate the ability to assess the hazards of a material and conduct appropriate training
- Write or revise a written program to meet Hazard Communication specifications using a sample program as guide
- Choose and prepare an “In-House” labeling system that meets the intent of the standard in a group exercise

This seminar reflects the most current information available to the Division of Safety & Hygiene concerning the Hazard Communication standard. You must keep yourself current.

Hazard Communication

Follow up Activities

- Conducted a thorough workplace inventory and maintained it on a day-to-day basis.
- Wrote or revised our written Hazcom program, using the sample written program (Tab 8 of the Hazard Communications manual) and the Critical Elements Checklist (Tab 6 of the Hazard Communications manual) as a guide.
- Implemented an in-house labeling system that meets the intent of the Hazcom standard.
- Presented a one hour safety presentation on Hazcom.

Activity Plan

	Activity	Other people involved	Target Deadline
☐			
☐			
☐			
☐			
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Resources Available from the Division of Safety & Hygiene (DSH) Libraries

(800) 644-6292 (614) 466-7388

library@bwc.state.oh.us

www.ohiobwc.com

Safety training:

- Safety talks, outlines and scripts - DSH Safety leader's discussion guide, Training Center's One-hour safety presentations, reference books, web resources
- Videos – hundreds of safety and health topics
- Books and articles on training techniques

Machine and equipment safety:

- Safety standards (ANSI, NFPA, CGA)
- Books and articles on power presses, material handling equipment, lockout/tagout, etc.

Sample written programs:

- DSH program profiles and sample written programs
- Reference books
- Internet resources

Illness and injury statistics:

- Statistics from the U.S. Bureau of Labor Statistics
- National Safety Council's *Injury Facts*
- National Institute of Occupational Safety & Health (NIOSH) studies

Hazard communication and chemical safety:

- Chemical safety information
- Material safety data sheets (MSDSs)
- Sample written programs
- Videos
- Internet resources

Safety standards

- American National Standards Institute (ANSI) standards (including standards for construction, machinery and equipment, personal protective equipment)
- National Fire Protection Association (NFPA) fire codes (including the Life Safety Code and the National Electrical Code)
- Compressed Gas Association (CGA) standards

Other topics of interest (books, articles, magazines, videos and standards):

- Confined spaces
- Electrical safety
- Job safety analysis
- New employee orientation
- Powered industrial trucks
- Respiratory protection
- Safety culture
- Scaffolds

Directories and lists of vendors of safety equipment

Occupational Safety & Health Administration (OSHA) regulations

Manual of Uniform Traffic Control Devices (MUTCD)

Recommendations of useful Internet sites

BWC publications

**INTERNET WEB SITES
FOR
OCCUPATIONAL SAFETY & HEALTH INFORMATION
April 2005**

GENERAL

NATIONAL SAFETY COUNCIL (NSC)

<http://www.nsc.org/>

The NSC has a user friendly web site for innovative and current information on home, farm and community, on the road and workplace safety and as well statistical data and charts.

NORTH DAKOTA WORKFORCE SAFETY & INSURANCE

<http://www.workforcesafety.com/>

For workplace safety, North Dakota's WSI site puts forth their "safe operating procedures" page where they give information on accident and near miss reports, substance abuse, material handling and storage, walking and working surfaces, and safety program development and orientation.

OCCUPATIONAL & INDUSTRIAL SAFETY RESOURCES

<http://www.khake.com/page59.html>

Maintained by a Vocational Information Center, this web site provides links to occupational and industrial safety with lists of directories, national centers, hotlines and help lines as well as specific area coverage such as emergency, disaster and natural hazards, and tool, machine and equipment safety options.

OKLAHOMA STATE UNIVERSITY

<http://www.pp.okstate.edu/ehs/>

The Department of Environmental Health & Safety at OSU offers an online safety resource library that is constantly being updated with topics from A-Z including specific areas of safety such as fire, construction, HAZCOM and training. Go to the "Links Library" option.

SAFETY DIRECTORY

<http://www.safetydirectory.com/>

Safety Directory.com is an Internet gateway to occupational health & safety sites. This web site is indexed with information on industry specific topics, training, illness and injury, as well as safety publications and resources.

FEDERAL GOVERNMENT

CENTERS FOR DISEASE CONTROL & PREVENTION (CDC)

<http://www.cdc.gov/>

The CDC is always a good resource for current medical issues throughout the United States. Health topics from A-Z give an in-depth look at most communicable diseases as well as topics such as safe driving, violence, and air pollution, and workplace safety and health topics.

FEDERAL EMERGENCY MANAGEMENT ASSOCIATION (FEMA)

<http://www.fema.gov/>

For up-to-date information on active disasters and emergencies nationwide access this web site first. Publications include options for emergency preparedness and prevention, response and recovery, disaster fact sheets, and public awareness information.

NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY & HEALTH (NIOSH)

<http://www.cdc.gov/niosh/homepage.html>

NIOSH's web site provides current information on many services as well as safety research, including ergonomics programs, respirators, and mining safety. At the chemical page you will find databases and other helpful resources, information on personal protective equipment, as well as government agency web sites of interest.

OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION (OSHA)

<http://www.osha.gov>

OSHA'S official web site includes media releases, online publications, statistics, standards & directives, "Technical Links," training center courses, "hot topics," and "what's new" as well a very useful A-Z index page.

INTERNATIONAL RESOURCES

HEALTH & SAFETY EXECUTIVE (HSE)

<http://www.hse.gov.uk/>

The United Kingdom has an international safety web site with a good deal to offer on occupational safety & health. Drop down boxes offer A-Z industry information, health and safety topics, tools, research, as well as publications and statistics.

ERGNET

<http://www.sunderland.ac.uk/~ts0qli/ergnet.htm>

The University of Sunderland in the UK is an international web site directory of "places for ergonomics and human factors". Featuring lists of sources such as societies, organizations, government bodies, institutes, centers and laboratories, this site also gives links to journals, a research database and other general ergonomic sites.

OHIO

OHIO EPA (OEPA)

<http://www.epa.state.oh.us>

At the official web site for Ohio's Environmental Protection Agency; use the "Topic Index" to find regulations and information on permits, hazardous waste, pollution prevention, wastewater, wetlands, and much more.

OHIO STATE LIBRARY/OHIOLINK

<http://winslo.state.oh.us>

At **OhioLink**, a statewide library and information network, you can search the State Library of Ohio's collection for the BWC's Division of Safety & Hygiene library books as well as other Ohio College and university library collections. Also available at this web site are searchable versions of Ohio Administrative laws and rules, electronic databases, and other Ohio library directories.

SPECIFIC (BY SUBJECT)

CONSTRUCTION

<http://www.cdc.gov/elcosh/index.html>

CDC's **eLCOSH** is a comprehensive library of construction-related safety information presented in both English and Spanish with items listed under trade, hazard, job site, and others. Also see: The Construction Industry Safety Council, a Center to Protect Workers' Rights resource center at <http://www.buildsafe.org/RSC.htm> for OSHA publications in PDF and hazard alerts.

ERGONOMICS

<http://www.ergoweb.com>

ERGOWEB provides current information on ergonomics and human factor science. Offered are: research, case studies, reference material and a forum for questions, answers and discussion.

LABORATORY SAFETY

<http://safety.science.tamu.edu/>

Texas A&M University College of Science is an optional choice for safety in the laboratory information. From hazard identification to waste disposal this web site offers thorough coverage of laboratory safe practices.

MATERIAL SAFETY SHEETS

<http://www.ilpi.com/msds/index.html>

This web site offers many solutions for finding MSDS (100 free sites) as well as chemical manufacturers and suppliers, pesticides including fertilizers, government sites, and other miscellaneous locations for chemical data. Also check any toxicological effects at <http://www.atsdr.cdc.gov/toxprofiles/> and health and safety information on household chemical ingredients at <http://householdproducts.nlm.nih.gov/>.

MOTOR CARRIER SAFETY PROGRAMS

<http://www.fmcsa.dot.gov/safetyprogs/saftprogs.htm>

The Federal Motor Carrier Safety Administration (FMCSA), an administration within the U.S. Department of Transportation, regulates and supports the Nation's interstate commercial carrier industry. The FMCSA web page offers several safety programs in PDF format such as brake safety, fatigue, HAZMAT safety, speed management, sharing the road safely, and other insurance and licensing information.

RADIATION

<http://www.physics.isu.edu/radinf/>

The Radiation Information Network offers a web site that is in-depth with information on radiation topics and issues. In addition to what's new in the field and general information there are regulatory, organizational and society links as well as research and educational resources available to access.

SAFETY STATISTICS

<http://stats.bls.gov/>

Occupational health and safety statistics by industry and occupation can be researched for injuries, illnesses, and fatality data at this web site starting with the "Overview of BLS Statistics on Worker Safety and Health" page.

SAFETY BRIEFINGS, MANUALS, PRODUCTS & PROGRAMS

OSHA POWERPOINT SAFETY PRESENTATIONS

<http://esf.uvm.edu/siript/powerpt.html>

An extensive safety PowerPoint presentation library is available at this web site featuring A-Z topics such as accident investigations, bomb threats, chemical spills, construction, electrical, hand tools, emergency response, fire safety, forklifts, JSA, laser, OSHA compliance, PPE, razor knife safety, safe lifting, and many more.

SAFETY PUBLICATIONS & VIDEO RESOURCES

<http://www.cbs.state.or.us/external/osha/standards/pub.htm>

A valuable resource for safety resources, the Oregon State's Department of Consumer and Business Publications web site is packed with downloadable information. Areas covered are agriculture, asbestos abatement, occupational exposures, HAZCOM, HAZMAT, HAZWOPER, safety practices, writing manuals and programs, tools of the trade, workers' compensation and ergonomics.

Ohio Bureau of Workers' Compensation, Div. of Safety & Hygiene Library
30 W. Spring St., L-3, Columbus, OH 43215-2256
(800) 644-6292, press option 2 - 2
(614) 466-7388/ (614) 644-9634 (fax)
E-Mail: library@bwc.state.oh.us

Resources for Hazard Communication

Web Sites:

- Agency for Toxic Substances and Diseases Registry (ATSDR): <http://www.atsdr.cdc.gov/>
- Global Information Network on Chemicals: <http://www.nihs.go.jp/GINC/index.html>
- IARC Monographs Programme on the Evaluation of Carcinogenic Risks to Humans: <http://193.51.164.11/>
- Hazardous Materials Identification System (HMIS): <http://www.paint.org/hmis/index.cfm>
- National Fire Protection Association (NFPA): www.nfpa.org
- National Institute for Occupational Safety & Health's page on Chemical Safety: <http://www.cdc.gov/niosh/topics/chemical-safety/>
- National Library of Medicine's Household Products database: <http://householdproducts.nlm.nih.gov/>
- National Toxicology Program's Tenth Report on Carcinogens: <http://ehp.niehs.nih.gov/roc/toc10.html>
- OR-OSHA (Oregon) Online Training: Hazard Communication Program: <http://www.cbs.state.or.us/external/osh/educate/training/pages/205outline.html>
- OSHA's web page on Hazard Communication: <http://www.osha.gov/SLTC/hazardcommunications/index.html>
- Oklahoma State University's Online Safety Library on Hazard Communication: <http://www.pp.okstate.edu/ehs/links/hazcom.htm>
- Where to Find Material Safety Data Sheets on the Internet: <http://www.ilpi.com/msds/>

All of the following materials are available through the BWC Division of Safety & Hygiene Libraries. Call 800-644-6292 or e-mail library@bwc.state.oh.us.

Books:

- *Hazard Communication: A Compliance Kit*. OSHA, 1999.
- Lewis, Richard J., Sr., *Sax's Dangerous Properties of Industrial Materials*, 10th ed. Wiley, 2000.
- *NIOSH Pocket Guide to Chemical Hazards*. National Institute for Occupational Safety and Health, 2003. Available on the Internet: <http://www.cdc.gov/niosh/npg/npg.html>.
- *North American Emergency Response Guidebook*, U.S. Dept. of Transportation, current edition. Available on the Internet: searchable, and in Spanish: <http://hazmat.dot.gov/guidebook.htm>.

Standards:

- ANSI Z129.1, *Hazardous Industrial Chemicals Precautionary Labeling*. American National Standards Institute, 2000.
- ANSI Z400.1, *Hazardous Industrial Chemicals - Material Safety Data Sheets – Preparation*. American National Standards Institute, 1998.

Videos:

- *Chemical Handling Safety: Corrosives*. 2003, 17 minutes, No. 690062.
- *Chemical Handling Safety: Flammables*. 2003, 17 minutes, No. 690061.
- *Chemical Handling Safety: The Basics*. 2003, 17 minutes, No. 690060.
- *Chemical Handling Safety: Solvents*. 2003, 16 minutes, No. 690063.
- *Common Toxicology Terms of an MSDS*. 1995, 10 minutes, No. 620226.
- *Hazardous Materials Labels*. 2002, 22 minutes, No. 690049.
- *MSDS: Information You Can Use*. 1994, 19 minutes, No. 620182.
- *Ten Steps to Chemical Safety*. 1998, 10 minutes, No. 620130.
- *Understanding Hazard Communication*. 1994, 10 minutes, No. 620181 English; No. 620192 Spanish.
- *What's Wrong with This Picture? Hazard Communication Employee Training*. 1996, 17 minutes, No. 620233.

Saving You Time and Research

Requests for copies of OSHA standards, information on starting a safety committee, a video on accident investigation techniques -- these are some of the thousands of inquiries BWC's Division of Safety & Hygiene (DSH) libraries receive each year.

DSH has two libraries to serve you:

- The central library in the William Green Building in downtown Columbus;
- The resource center and video library located at the Ohio Center for Occupational Safety and Health (OCOSH) in Pickerington.

Both libraries are open 8 a.m. to 4:45 p.m., Monday through Friday. Your need for information does not require a visit to the library. You can phone, fax, or e-mail your requests and receive a quick response.

The central library provides free information services on the topics of occupational safety and health, workers' compensation and rehabilitation.

The OCOSH resource center provides similar services for those who visit OCOSH for meetings and training center classes.

The video library offers an extensive collection of videotapes to supplement your organization's safety and health training program. It is a convenient and popular source for Ohio employers to borrow quality occupational safety- and health-related training aids.

Visit our Web site at **www.ohiobwc.com**.

Central library
30 W. Spring St., Third Floor
Columbus OH 43215-2256
1-800-OHIOBWC
(614) 466-7388
(614) 644-9634 (fax)
library@bwc.state.oh.us

OCOSH resource center
13430 Yarmouth Drive
Pickerington OH 43147
1-800-OHIOBWC
Resource center (614) 728-6464
Video library (614) 644-0018

INTRODUCTION

1. Name?
2. What is your position with the company? How long?
3. How long have you been with the company?
4. What type of product of service does your company provide?
5. How many employees are there in your company?
6. Why are you the designated Haz Com person?
7. How far along are you (or the company) with the Haz Com compliance?
8. Specifically what do you hope to gain by attending this seminar?

The Importance Of Haz Com

- **Emergency Spill Response**
- **First Aid**
- **EPA**
- **Community Right To Know**
- **Ventilation**
- **Personal Protective Equipment**

The Importance Of Haz Com

- **Respirators**
- **Confined Space Entry**
- **Process Safety Management**
- **Specific Chemical Standards**
- **Fire Prevention & Flammable Storage**
- **Exposure Assessments**

Most-Often-Cited OSHA Violations FY 2003 General Industry

<u>Rank</u>	<u>Standard</u>	<u>Subject</u>	<u>Violations</u>	<u>Penalties</u>
1	1910.1200(e)(1)	Written Program	2139	530,678
5	1910.1200(h)(1)	Chemical Haz Training	879	170,753
8	1910.1200(h)	Chemical Haz Info	759	100,956
11	1910.1200(g)(1)	MSDS	710	39,741

OSHA PENALTIES

Willful, Repeat	\$ 70,000
Serious	\$ 7,000
Failure to Abate	\$210,000
Failure to Report Fatality	\$ 5,000
Failure to Post Citation	\$ 3,000
Failure to Post OSHA Poster	\$ 1,000
OSHA Recordkeeping 300 Log	\$ 1,000
Failure to Post 300 Summary	\$ 1,000

HOW TO CONDUCT A WORKPLACE INVENTORY

I. Identify Materials by Department

- A. Walk through to identify materials department by department
- B. You or a team member conduct materials inventory
- C. Supervisor conducts materials inventory.
- D. Consult purchasing for a materials list.
- E. Consult industrial hygiene surveys.
- F. Consider building materials – asbestos, silica, etc.
- G. Consider PCBs in transformers.
- H. Consider by-products and intermediates given off by operations.
- I. Look for employee owned or purchased materials.

II. Note Operations Performed Department by Department

- A. Pull job descriptions – They give clues to materials used or generated.
- B. Note specific department operations that generate hazards.
- C. Note office and janitorial supplies that generate hazards.
- D. Note the contents of stationary containers and how they are accessed or used.
- E. Note piping – What does it transport?
- F. Note confined entry programs and hazards encountered.
- G. Note other non-routine exposures and hazards involved.
- H. Products needing further processing.

III. Labeling – Check Department by Department

- A. Check containers, except those used for immediate use, for labeling requirements.
- B. Check piping – Diagram and determine how permanent piping will be labeled. Consider labels at access points to piping, vats, dip tanks, storage tanks, etc.
- C. Check stationary containers (vats, dip tanks, storage tanks) for signs, placards, etc., containing identification of substances, warning, etc.

HOW TO CONDUCT A WORKPLACE INVENTORY (CONSTRUCTION)

- I. Identify Materials Both On-Site and In Storage**
 - A. Conduct inventory of building materials and products and supplies.
 - B. Supervisor conducts inventory.
 - C. Consult purchasing for a hazardous materials list.
 - D. Consult industrial hygienist or industrial hygiene accident surveys.
 - E. Include hazardous materials or conditions created in confined space entry.
 - F. Include hazardous materials created by non-routine tasks.
 - G. Consider by-products and intermediates given off by operations.
 - H. Look for employee purchased materials.
- II. Be Aware of Daily Operations Performed by Other Contractors**
 - A. Note daily operations of others which give clues to hazardous materials used or generated effecting your people.
 - B. Note office and janitorial supplies that generate hazards.
 - C. Note stationary containers as to how they are accessed or used.
 - D. Note piping – Does it transport hazardous materials or possibly contain hazardous gases?
- III. Labeling**
 - A. Check hazardous materials, containers, except those used for immediate use, for labeling requirements.
 - B. Check piping – Diagram and determine how previously installed and active piping will be labeled or placarded. Verify labels at access points.
 - C. Check stationary containers (vats, dip tanks, portable or fixed storage tanks) for signs, placards, etc., containing identification of substances, warning, etc.

Employee Owned
Chemical or Hazardous Material Request

Employee _____ Date _____

Supervisor _____ Department _____

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I am requesting permission to bring the following hazardous material or chemical into the workplace for necessary use on my job.

Reason requested \_\_\_\_\_

\_\_\_\_\_

Hazardous Material Name \_\_\_\_\_

Manufacturer \_\_\_\_\_

Address \_\_\_\_\_

Town \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

I understand that tobacco, cosmetics, food and prescribed or over-the-counter drugs for my personal use are exempt from this request.

I also understand that if I am found in possession of an unauthorized hazardous material or chemical while at work, I am subject to disciplinary procedures.

Signed \_\_\_\_\_ Date \_\_\_\_\_

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Approved _____ Denied _____ Reason _____

Authorized Signature _____ Date _____

HAZARDOUS MATERIALS INVENTORY

DEPT	PRODUCT NAME	HAZARDOUS MATERIALS OR BY PRODUCTS	MANUFACTURER	LABEL	CURRENT MSDS	MAX. ANTICIPATED QUANTITY ON HAND

Sorted by Product Name

MSDS Number	Product Name	Manufacturer	Department Used	Classification	Status
00000032	140 (TM) Foam Control	Drew Industrial	5024	De-Foamer	Active
00000033	200 Foam Control	Drew Industrial	5024	De-Foamer	Active
00000028	608 Isocyanate	Chemque, Inc.	7070	Gasket Material Part B	Active
00000027	608 Ployol	Chemque, Inc.	7070	Gasket Material Part A	Active
00000002	Acetylene	DeLille Oxygen Company	5020, 5030	Welding Gas	Active
00000001	Add-It	Texo Corporation		Phosphoric Acid	Active
00000005	Amerfloc 10	Drew Industrial	5024	Coagulant	Active
00000008	Amersep 5320	Drew Industrial	5024	Ferric Sulfate	Active
00000009	Amersite Corrosion Inhibitor	Drew Industrial	5020	Corrosion Inhibitor	Active
00000010	Amertrol 1100	Drew Industrial	5024	Boiler Treatment	Active
00000011	Anthracite	Filter Media, Inc.	5024	Autovac Precoat	Active
00000012	Argon	Airco	7020	Welding Gas	Active
00000014	BJ – 10 Sodium Sulfite	Chardon Laboratories, Inc	5020	Boiler Treatment	Active
00000038	Black Marker	Sanford Corporation		Marking Pen	Active
00000013	Brake Fluid	NAPA – United Parts	5030	Brake fluid	Active
00000016	Brikcast XCM	General Refractories	5020	Castable Refractory	Active
00000018	Brilliance Floor Finish	Canberra Corporation	7090	Floor Wax	Active
00000019	Bubble Breaker 3056A	Witco	5024	De-Foamer	Active
00000023	Caustic Soda 20%	Ashland Chemical	7020, 7030	Caustic Soda	Active
00000024	Caustic Soda 50%	Ashland Chemical	7020, 7030	Caustic Soda	Active
00000035	Celatom Fw-10,80	Eagle-Picher Minerals	5024	Autovac Precoat	Active
00000026	Chargepac(r) 12	Drew Industrial	5024	Coagulant	Active
00000029	Color Guard	Permatex Industrial	5024	Rubber Coating	Active
00000039	Color Marker	Sanford Corporation		Marking Pen	Active
00000037	DA-21	Chardon Laboratories	5020	Boiler Treatment	Active
00000040	Dibasic Ester 1	Ashland Chemical	7070	Gasket Material Part A	Active
00000004	Dilute Hydrochloric Acid	Calgon Vestal Laboratories	5024	Lab Chemical	Active
00000031	Gray Hammertone Paint	Custom-Pak Products	7060	Aerosol Paint	Active
00000003	Inhibited Acid (6-75-741)	Ashland Chemical	5024	Acid	Active
00000006	Moly Gear Lube	American Lubricants	5030	Gear Lube	Active
00000007	MP 7 Precipitant	Drew Industrial	5024	Precipitant	Active
00000025	Perma-Steel Shot	National Metal Abrasive, Inc.	7010, 7020	Steel Shot	Active
00000022	pH 10.00 Calibrating Buffer	Analytical Products, Inc.	5024	Lab Chemical	Active
00000020	pH 4.00 Calibrating Buffer	Analytical Products, Inc.	5024	Lab Chemical	Active
00000021	pH 7.00 Calibrating Buffer	Analytical Products, Inc.	5024	Lab Chemical	Active
00000036	PresSet 3030	Franklin International	7070	Gasket Material	Active
00000034	RL-22	Chardon Laboratories, Inc.	5020	Boiler Treatment	Active
00000015	Roof Adhesive	Brewer Company	5030	Roof Adhesive	Active
00000017	Super Brikram Mix G	General Refractories	5020	Plastic Refractory	Active
00000030	S-235 Purging Solvent	Chemque Canada, LTD	7070	Line Flush	Active

Sorted by Manufacturer Name

MSDS Number	Product Name	Manufacturer	Department Used	Classification	Status
00000012	Argon	Airco	7020	Welding Gas	Active
00000006	Moly Gear Lube	American Lubricants	5030	Gear Lube	Active
00000022	pH 10.00 Calibrating Buffer	Analytical Products, Inc.	5024	Lab Chemical	Active
00000020	pH 4.00 Calibrating Buffer	Analytical Products, Inc.	5024	Lab Chemical	Active
00000021	pH 7.00 Calibrating Buffer	Analytical Products, Inc.	5024	Lab Chemical	Active
00000023	Caustic Soda 20%	Ashland Chemical	7020, 7030	Caustic Soda	Active
00000024	Caustic Soda 50%	Ashland Chemical	7020, 7030	Caustic Soda	Active
00000040	Dibasic Ester 1	Ashland Chemical	7070	Gasket Material Part A	Active
00000003	Inhibited Acid (6-75-741)	Ashland Chemical	5024	Acid	Active
00000015	Roof Adhesive	Brewer Company	5030	Roof Adhesive	Active
00000004	Dilute Hydrochloric Acid	Calgon Vestal Laboratories	5024	Lab Chemical	Active
00000018	Brilliance Floor Finish	Canberra Corporation	7090	Floor Wax	Active
00000037	DA-21	Chardon Laboratories	5020	Boiler Treatment	Active
00000014	BJ – 10 Sodium Sulfite	Chardon Laboratories, Inc	5020	Boiler Treatment	Active
00000034	RL-22	Chardon Laboratories, Inc.	5020	Boiler Treatment	Active
00000030	S-235 Purging Solvent	Chemque Canada, LTD	7070	Line Flush	Active
00000028	608 Isocyanate	Chemque, Inc.	7070	Gasket Material Part B	Active
00000027	608 Ployol	Chemque, Inc.	7070	Gasket Material Part A	Active
00000031	Gray Hammertone Paint	Custom-Pak Products	7060	Aerosol Paint	Active
00000002	Acetylene	DeLille Oxygen Company	5020, 5030	Welding Gas	Active
00000032	140 (TM) Foam Control	Drew Industrial	5024	De-Foamer	Active
00000033	200 Foam Control	Drew Industrial	5024	De-Foamer	Active
00000005	Amerfloc 10	Drew Industrial	5024	Coagulant	Active
00000008	Amersep 5320	Drew Industrial	5024	Ferric Sulfate	Active
00000009	Amersite Corrosion Inhibitor	Drew Industrial	5020	Corrosion Inhibitor	Active
00000010	Amertrol 1100	Drew Industrial	5024	Boiler Treatment	Active
00000026	Chargepac(r) 12	Drew Industrial	5024	Coagulant	Active
00000007	MP 7 Precipitant	Drew Industrial	5024	Precipitant	Active
00000035	Celatom Fw-10,80	Eagle-Picher Minerals	5024	Autovac Precoat	Active
00000011	Anthracite	Filter Media, Inc.	5024	Autovac Precoat	Active
00000036	PresSet 3030	Franklin International	7070	Gasket Material	Active
00000016	Brikcast XCM	General Refractories	5020	Castable Refractory	Active
00000017	Super Brikram Mix G	General Refractories	5020	Plastic Refractory	Active
00000013	Brake Fluid	NAPA – United Parts	5030	Brake fluid	Active
00000025	Perma-Steel Shot	National Metal Abrasive, Inc.	7010, 7020	Steel Shot	Active
00000029	Color Guard	Permatex Industrial	5024	Rubber Coating	Active
00000038	Black Marker	Sanford Corporation		Marking Pen	Active
00000039	Color Marker	Sanford Corporation		Marking Pen	Active
00000001	Add-It	Texo Corporation		Phosphoric Acid	Active
00000019	Bubble Breaker 3056A	Witco	5024	De-Foamer	Active

Sorted by MSDS Name

MSDS Number	Product Name	Manufacturer	Department Used	Classification	Status
00000001	Add-It	Texo Corporation		Phosphoric Acid	Active
00000002	Acetylene	DeLille Oxygen Company	5020, 5030	Welding Gas	Active
00000003	Inhibited Acid (6-75-741)	Ashland Chemical	5024	Acid	Active
00000004	Dilute Hydrochloric Acid	Calgon Vestal Laboratories	5024	Lab Chemical	Active
00000005	Amerfloc 10	Drew Industrial	5024	Coagulant	Active
00000006	Moly Gear Lube	American Lubricants	5030	Gear Lube	Active
00000007	MP 7 Precipitant	Drew Industrial	5024	Precipitant	Active
00000008	Amersep 5320	Drew Industrial	5024	Ferric Sulfate	Active
00000009	Amersite Corrosion Inhibitor	Drew Industrial	5020	Corrosion Inhibitor	Active
00000010	Amertrol 1100	Drew Industrial	5024	Boiler Treatment	Active
00000011	Anthracite	Filter Media, Inc.	5024	Autovac Precoat	Active
00000012	Argon	Airco	7020	Welding Gas	Active
00000013	Brake Fluid	NAPA – United Parts	5030	Brake fluid	Active
00000014	BJ – 10 Sodium Sulfite	Chardon Laboratories, Inc	5020	Boiler Treatment	Active
00000015	Roof Adhesive	Brewer Company	5030	Roof Adhesive	Active
00000016	Brikcast XCM	General Refractories	5020	Castable Refractory	Active
00000017	Super Brikram Mix G	General Refractories	5020	Plastic Refractory	Active
00000018	Brilliance Floor Finish	Canberra Corporation	7090	Floor Wax	Active
00000019	Bubble Breaker 3056A	Witco	5024	De-Foamer	Active
00000020	pH 4.00 Calibrating Buffer	Analytical Products, Inc.	5024	Lab Chemical	Active
00000021	pH 7.00 Calibrating Buffer	Analytical Products, Inc.	5024	Lab Chemical	Active
00000022	pH 10.00 Calibrating Buffer	Analytical Products, Inc.	5024	Lab Chemical	Active
00000023	Caustic Soda 20%	Ashland Chemical	7020, 7030	Caustic Soda	Active
00000024	Caustic Soda 50%	Ashland Chemical	7020, 7030	Caustic Soda	Active
00000025	Perma-Steel Shot	National Metal Abrasive, Inc.	7010, 7020	Steel Shot	Active
00000026	Chargepac(r) 12	Drew Industrial	5024	Coagulant	Active
00000027	608 Ployol	Chemque, Inc.	7070	Gasket Material Part A	Active
00000028	608 Isocyanate	Chemque, Inc.	7070	Gasket Material Part B	Active
00000029	Color Guard	Permatex Industrial	5024	Rubber Coating	Active
00000030	S-235 Purging Solvent	Chemque Canada, LTD	7070	Line Flush	Active
00000031	Gray Hammertone Paint	Custom-Pak Products	7060	Aerosol Paint	Active
00000032	140 (TM) Foam Control	Drew Industrial	5024	De-Foamer	Active
00000033	200 Foam Control	Drew Industrial	5024	De-Foamer	Active
00000034	RL-22	Chardon Laboratories, Inc.	5020	Boiler Treatment	Active
00000035	Celatom Fw-10,80	Eagle-Picher Minerals	5024	Autovac Precoat	Active
00000036	PresSet 3030	Franklin International	7070	Gasket Material	Active
00000037	DA-21	Chardon Laboratories	5020	Boiler Treatment	Active
00000038	Black Marker	Sanford Corporation		Marking Pen	Active
00000039	Color Marker	Sanford Corporation		Marking Pen	Active
00000040	Dibasic Ester 1	Ashland Chemical	7070	Gasket Material Part A	Active

Material Safety Data Sheet

Section I

Identify (AS Used on Label and List)	Note: Blank spaces are not permitted. If any items are not applicable, or no information is available, the space must be marked to indicate that.
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Manufacturer's Name	Emergency Telephone Number
Address (Number, Street, City, State and ZIP Code)	Telephone Number for Information
	Date Prepared
	Signature of Preparer (optional)

Manufacturer's Information

Section I identifies the chemical and contains important information about the manufacturer. The chemical name used should be the same as that on the chemical's container label. In addition, the manufacturer's name, address, emergency and non-emergency telephone number, date MSDS was prepared, and individual responsible for MSDS appears in this section.

Hazardous Ingredients/Identity Information

Section II

Hazardous Components (Specific Chemical Identity; Common Name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommended	% Optional

Hazardous Materials

Important information about the individual ingredients mixed in the substance is listed here. A hazardous ingredient is one which can produce adverse physical (flammable vapor or gas) or health (short term or long term) effects.

The “OSHA PEL” and “ACGIH TLV” are two common exposure limits. The Occupational Safety and Health Administration’s Permissible Exposure Limit (OSHA PEL) is the amount of exposure which should not be exceeded during the period of a normal eight-hour workshift. The American Conference of Governmental Industrial Hygienists’ Threshold Limit Value (ACGIH TLV) is the amount of exposure which should not be exceeded during the period of a normal forty-hour work week.

Physical/Chemical Characteristics

Section III

Boiling Point		Specific Gravity (H ₂ O = 1)	
Vapor Pressure (mm Hg.)		Melting Point	
Vapor Density (AIR = 1)		Evaporation Rate (Butyl Acetate 1)	
Solubility in Water			
Appearance and Odor			

Physical/Chemical Characteristics

This section contains information about the substance's behavior when used under certain conditions such as exposing a substance to water, pressure, varying temperatures, or other conditions. Terms commonly found in this section include:

Boiling Point: the temperature at which the chemical will boil. The lower the boiling point and/or pressure, the more readily a liquid will become airborne.

Vapor Density: the relation of density to air. If vapor density is greater than 1, the substance will sink. If the vapor density is less than 1, then the substance will rise.

Solubility in Water: the amount of substance which can be dissolved in water. **Specific Gravity:** the ratio of the density of the substance to the density of water when the values measured are the same.

Fire and Explosion Hazard Data

Section IV

Flash Point (Method Used)	Flammable Limits	LEL	UEL
Extinguishing Media			
Special Fire Fighting Procedures			
Unusual Fire and Explosion Hazards			

Fire and Explosion Hazard Data

This section contains information concerning potential fire hazards and methods for controlling fires if they occur. Terms commonly found in this section include:

Flash Point: Refers to the temperature in degrees Fahrenheit (°F) at which a liquid will give off enough vapor to ignite.

Flammable or Explosive Limits: Refers to the range of gas or vapor concentrations (percent by volume in air) which will burn or explode if an ignition source is present. LEL means lower explosive limit, and UEL means the upper explosive limit.

Extinguishing Media: The firefighting media suitable for use on the burning material. The standard firefighting agents are water, fog, foam, alcohol foam, CO₂, and dry chemical.

Special Firefighting Procedures: If water is unsuitable, it lists the firefighting media to be used. It also lists any necessary personal protective equipment.

Reactivity Data

Section V

Stability	Stable		Conditions to Avoid
	Unstable		
Incompatibility (Materials to Avoid)			
Hazardous Decomposition or Byproducts			
Hazardous Polymerization	May Occur		Conditions to Avoid
	Will Not Occur		

Reactivity Data

This section will alert you to reactions that may occur when the chemical is in storage, or when exposed to another substance. It identifies the byproduct chemicals that may be produced under certain conditions. Terms commonly found in this section include:

Stability: Indicates whether the substance will remain stable or unstable under foreseeable conditions of storage, use or misuse.

Incompatibility: Provide information on common materials which the substances should not come in contact with.

Hazardous Decomposition: Lists the hazardous materials produced by burning, oxidation, or when heating such as welding operations.

Hazardous Polymerization: Indicates whether or not and under what conditions a reaction that releases energy will occur.

Health Hazard Data

Section VI

Route(s) of Entry:	Inhalation?	Skin?	Ingestion?
Health Hazards (Acute and Chronic)			
Carcinogenicity:	NTP	IARC Monographs?	OSHA Regulated?
Signs and Symptoms of Exposure			
Medical Conditions Generally Aggravated by Exposure			
Emergency and First Aid Procedures			

Health Hazard Data

This section contains information on the substance's health effects, the possible ways an individual may come in contact with the substance, and health effects of short term and long term contact.

Also, information is given concerning symptoms of overexposure, medical conditions generally aggravated by exposure, and emergency and first-aid procedure. Commonly found terms are:

Acute Health Effects: Refers to health hazards when exposed to the chemical in large doses over a short period of time.

Chronic Health Effects: Refers to health hazards when exposed to low dosages over a long period of time.

Carcinogenicity: Refers to the substance's potential or known ability to cause cancer as established by the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC), and/or the Occupational Safety and Health Administration (OSHA).

Precautions for Safety Handling and Use

Section VII

Steps to be Taken in Case Material is Released or Spilled
Waste Disposal Method
Precautions to be Taken in Handling and Storing
Other Precautions

Precautions for Safety Handling

This section provides information about cleaning spills, proper disposal methods, and special precautions to be taken when handling, storing or disposing of the chemical.

Control Measures

Section VIII

Respiratory Protection (Specify Type)		
Ventilation	Local Exhaust	Special
	Mechanical (General)	Other
Protective Gloves	Eye Protection	
Other Protective Clothing or Equipment		
Work / Hygienic Practices		

Control Measures

This section contains information concerning personal protective equipment and ventilation needs.

GLOSSARY OF COMMON MSDS TERMS

ABSORPTION: When material is absorbed into the skin.

ACUTE EFFECTS: An adverse effect on a human or animal body, with severe symptoms developing rapidly and coming quickly to a crisis.

ACUTE TOXICITY: The adverse effects resulting from a single dose of exposure to a substance.

ACGIH: American Conference of Governmental Industrial Hygienists.

ASPHYXIATE: A vapor or gas which can cause unconsciousness or death by suffocation (lack of oxygen).

CEILING: The maximum allowable human exposure limit for an airborne substance, not to be exceeded even momentarily.

CARCINOGEN: A substance or agent capable of causing or producing cancer in mammals.

CHRONIC EFFECTS: An adverse effect on a human or animal body, with symptoms which develop slowly over a long period of time or which recur frequently.

CHRONIC TOXICITY: Adverse effects resulting from repeated doses of or exposures to a substance over a relatively prolonged period of time.

COMBUSTIBLE: A liquid having a flash point of 100 degrees Fahrenheit or higher, also solids such as wood and paper.

CORROSIVE: A liquid or solid that has corrosive characteristics and will cause visible destruction to skin or metals.

DOT: US Department of Transportation

EPA: US Environmental Protection Agency.

FLASH POINT: The temperature at which a liquid will give off enough flammable vapor to ignite.

FLAMMABLE: A flammable liquid is a liquid with a flash point below 100 degrees F.

INCOMPATIBLE: Materials which could cause dangerous reactions from direct contact with one another.

INGESTION: The taking of a substance by mouth.

INHALATION: The breathing of a substance.

IRRITANT: A substance which, by contact in sufficient concentration for a sufficient period of time, will cause reaction to the eyes, skin or respiratory system.

LEL: Lower Explosive Limit.

NFPA: National Fire Protection Association.

NIOSH: National Institute for Occupational Safety and Health.

OSHA: Occupational Safety and Health Administration.

OXIDIZER: A substance that yields oxygen readily to stimulate combustion or organic matter.

PEL: Permissible Exposure Limit; a limit set by OSHA setting the quantity of a material that you can safely be exposed to.

PPM: Parts per million; a unit of measurement used when setting the PEL.

REACTIVITY: A description of the tendency of a substance to undergo chemical reaction with the release of energy.

SENSITIZER: A substance which upon first exposure causes little or no reaction, but which on repeated exposure may cause a marked response not necessarily limited to the contact site.

SODIUM: Is a flammable solid.

STEL: Short Term Exposure Limit.

TLV: Threshold Limit Values (TLVs) ® refer to airborne concentrations of substances and represent conditions under which it is believed that nearly all workers may be repeatedly exposed day after day without adverse health effects. American Conference of Governmental Industrial Hygienists (ACGIH).

TWA: Time Weighted Average, usually figured over an 8-hour work day.

UEL: Upper Explosive Limit.

REMEMBER, THERE ARE FOUR ROUTES OF ENTRY INTO THE HUMAN BODY

- ABSORPTION, through the skin,
- INGESTION, taking a substance by mouth,
- INHALATION, breathing in of a substance in the form of gas, vapor, fume, or dust, and
- INJECTION, by puncture or compressed air through the skin.

HAZARDOUS MATERIALS can be defined as any substance which can cause bodily injury to a person through its chemical and/or physical properties.

EMPLOYER'S SAMPLE REQUEST LETTER

Date

Supplier/Manufacturer

Address

City, State Zip

To Whom It May Concern:

OSHA's Hazard Communication Standard requires employers to have Material Safety Data Sheets (MSDS) on all hazardous substances in their workplaces. Additionally, the Standard requires manufacturers of hazardous substances to prepare and provide MSDSs to their purchasers, either directly or through their sellers.

We currently purchase the following products from you:

- 1.
 - 2.
- etc.

Please send a completed MSDS on each of the above products, or a statement that the product is exempt from these regulations.

Sincerely,

DRAFT

Re: Second Request for Material Safety Data Sheet (MSDS)

To Whom It May Concern:

We have not received the MSDS we requested on [insert date] for the following product(s):

OSHA regulations require that you provide your customers with a copy of the MSDS, and that we subsequently make it available to employees. Please provide the MSDS immediately. If we fail to receive it within five (5) days, we will have no choice but to take stronger action, including deleting you company as an approved supplier. A copy of this letter is being forwarded to the regional OSHA office.

Sincerely,

Draft
(Industrial)

Re: Third Request for Material Safety Data Sheet (MSDS)

To Whom It May Concern:

This is our third request for a MSDS for:

To this date we have not received this MSDS, which appears to be a violation of 29CFR1910.1200(g) of OSHA's General Industry code. This section requires that chemical manufacturers, distributors and importers provide "an appropriate material safety data sheet with their initial shipment." Federal law requires that we request this MSDS, and that you provide it to us. Please transmit a copy immediately. Failure to provide it, or notify us if it cannot be provided in the next 72 hours will force us to take the following actions:

- Cease all purchase from your company
- Notify the regional OSHA office

Sincerely,

ASSESSMENT OF THE ACCURACY OF MATERIAL SAFETY DATA SHEETS

Paul W. Kolp^a
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*This study evaluated 150 material safety data sheets (MSDSs) for the accuracy and completeness of five areas of information: (1) chemical identification of hazardous ingredients; (2) reported health effects; (3) suggested first aid procedures; (4) recommended personal protective equipment; and (5) exposure level regulations and guidelines. The material from each MSDS was reviewed by both an industrial hygienist and an occupational physician using standard (secondary) references (that were readily available at the time the MSDS was prepared) and a rating system for each area of information. Eighty-nine percent of the MSDSs provided identifiable chemical names. Thirty-seven percent were found to have accurate health effects data (with chronic health information the most inaccurate). The majority of MSDSs (76%) provided adequate first-aid information. Slightly less than half (47%) were judged to have an accurate rating for personal protective equipment information or a correct listing for applicable occupational exposure limits.**

The U.S. Department of Labor, Occupational Safety and Health Administration (OSHA) "Hazard Communication Standard" ⁽¹⁾ (HCS) was established so that employers and employees would better understand the chemical hazards and risks present in the workplace and take the necessary precautions to protect themselves. Under HCS, employers are required to provide information on hazardous chemicals to their employees through a hazard communication program that includes labels, material safety data sheets (MSDSs), training, and access to written records.

Two prior studies have assessed portions of the content of MSDSs. Lerman and Kipen

* The work was funded by the Office of Program Evaluation, Office of Policy, Occupational Safety and Health Administration, U.S. Department of Labor Contract No. J-9-F-8-0019.

illustrate their concerns and to support their findings. Although they found the MSDSs prepared after 1984 to be far better than the MSDSs prepared before the promulgation of the HCS, they reported that much of the toxicological data provided on MSDSs are incomplete (even for common chemicals such as lead) and, in some cases, the health effects can be misleading.

Another investigator analyzed MSDSs and presented the findings at the Public Health Association's 116th Annual Meeting. ⁽³⁾ The study found a significant number of MSDSs to have incomplete or incorrect information, especially with respect to chronic or toxicity data. Also, a large proportion of MSDSs were in violation of one or more of the OSHA requirements, such as information on health effects, first aid, and personal protective equipment. Although further study of MSDS content was recommended, it was concluded that MSDSs do provide "some" useful information on toxicity for workers.

The present study evaluates 150 MSDSs to assess the accuracy of information presented on the chemical identification of hazardous ingredients, health effects, first aid, personal protective equipment, and exposure limits. The two components evaluated were correctness and completeness (or sufficiency) of the information provided. A separate study was performed to determine the comprehensibility of MSDSs ⁽⁴⁾

APPROACH

The evaluation of each MSDS was performed jointly by a board-certified occupational physician and a certified industrial hygienist who is also a toxicologist. The method employed was a semi-quantitative approach using the information from secondary literature sources that were readily available at the time each MSDS was issued (references for specific MSDS topics are identified in Table I).

Selection of MSDSs

In an effort to obtain MSDSs from a variety of preparers, three large databases were identified: (1) the state of Maryland repository of toxic chemical information (which has approximately 20,000 MSDSs on file submitted as part of the requirements under the Superfund Amendments and Reauthorization Act, Title III); (2) the Johns Hopkins University Applied Physics Laboratory, which has about 6,000 MSDSs on file in their Safety Office; and (3) the OSHA National Office (which receives MSDSs as a result of responses to proposed rulemaking notices). Of the 150 MSDSs selected, 138 (92%) were taken from 2 major sources, half from the state of Maryland and half from Johns Hopkins. The remaining 12 (8%) were chosen from the OSHA population of MSDSs.

MSDSs were selected randomly from each source, using the following procedures: from the state of Maryland, each tray holding the sheets was opened and one MSDS was retrieved (and copied) in intervals of about every 200 sheets; with the Johns Hopkins and OSHA sheets (which were much smaller data sets), MSDSs were selected intervals of about 50 sheets. The only exception to the above approach was that only MSDSs with a 1986 or more recent preparation date were selected for analysis (i.e., after the HCS was promulgated for all

employers). Of the 150 MSDSs used in this evaluation, 108 (72%) were prepared during 1986 or 1987, and 42 (28%) were prepared after 1987.

Methods for Evaluating MSDSs

The accuracy of each MSDS was limited to five specific areas of information (i.e., those areas believed to be of the most crucial importance to the health of employees potentially exposed to the substances): chemical identification of hazardous ingredients; reported health effects; necessary first-aid procedures; appropriate personal protective equipment; and regulations and guidelines on workplace exposure levels. Subcategories of information were examined for all but the first of the areas listed above to derive an overall accuracy rating for the specific informational area. Each subcategory rated of accuracy was based on the correctness of the information provided as well as the significance of any missing information for that subcategory. The overall accuracy rating for each informational area was derived by combining the various subcategory ratings into one overall rating.

Chemical Identification

OSHA ⁽¹⁾ requires that the preparer of an MSDS name and list all hazardous ingredients in a product. In the case of mixtures, this listing is required for any hazardous ingredient composing at least 1% of the mixture (0.1% if the component is a carcinogen). For “trade secrets” the preparer of an MSDS can withhold the chemical identity from the MSDS. ⁽¹⁾

The determination of a specific chemical name for the ingredients on an MSDS was made by examining the ingredients section of the MSDS and determining whether a true chemical name was provided for each specific hazardous component listed. In most instances the name listed under hazardous ingredients could be identified as a specific chemical name by experience (e.g., xylene, methyl alcohol, toluene, sulfuric acid). In those isolated cases where the reviewer had questions, various sources were consulted ⁽⁵⁻⁷⁾ to determine if the name provided was for an individual chemical and not for a family or group of chemicals. The overall rating for the chemical identification category was determined based solely on an identifiable listing of a chemical name (as opposed to a trade or product name or some other nonspecific chemical name).

For chemical identification information in an MSDS, three accuracy rating codes were used:

- A “complete” designation representing that a true chemical name(s) was (were) provided for the ingredient(s);
- An “unknown” designation indicated that no specific chemical name was provided (e.g., only a trade secret or other nonspecific chemical name was furnished), and;
- A “partially complete” designation for the case of some mixtures indicating that some of the ingredients were identified but others were listed as trade secrets, shown as a chemical family or class (e.g., fatty amine), or given some other nonspecific chemical name.

The evaluation of the information in the other four categories for each MSDS primarily was made only for those ingredients specifically identified in this section of the MSDS. Without the identification of a specific chemical name, no evaluation could be performed of the accuracy of the material presented, since without knowing what chemical(s) was/were being addressed by the MSDS, it would be impossible to evaluate whether or not the information presented was correct. No determination was made of the accuracy or precision of the reported chemical identity and percentage composition using any type of analytical testing.

Health effects

The HCS requires information on specific health effects.⁽¹⁾ This includes primary route(s) of exposure, all signs and symptoms of exposure (acute and chronic), and any medical conditions generally recognized as being aggravated by exposure to the chemicals. The information provided on the MSDS for each individual chemical (as well as for mixtures, when such data existed) was evaluated for three health effects subcategories: (1) route(s) of entry identified; (2) acute and chronic symptoms/effects discussed; and (3) acute and chronic target organs identified.

The first procedure was to assess the information presented in the three subcategories listed above (for each individual chemical and listed mixtures, where applicable) in comparison to information in secondary literature sources.⁽⁸⁻²⁰⁾ The intent was to evaluate individual MSDSs based on the literature available at the time the MSDS was prepared. Three rating codes (accurate, inaccurate, and partially accurate) were used to evaluate the overall accuracy of the three subcategories in each MSDS. Following this evaluation, all MSDSs found to contain overall accurate health effects data were further examined for accuracy using the OSHA Computerized Information System (OCIS) files Chemical/MSDS Resources.⁽²¹⁾ The Hazardous Substance file in OCIS was principally used in this analysis. The file is maintained and updated by the National Library of Medicine and contains more recent information than many of the secondary reference sources.

In addition to the information in the secondary literature review, three sources were used to determine if a hazardous ingredient should be identified as a carcinogen.⁽²²⁻²⁴⁾ This analysis was performed by comparing the information listed on each MSDS with information in these three sources at the time the MSDS was prepared, and information currently listed in these three sources. The three sources used for carcinogens are referenced by OSHA.⁽¹⁾

First Aid

MSDSs are required by the HCS to provide information on first-aid procedures.⁽¹⁾ The first-aid information provided on each MSDS was examined in relation to the identified chemical constituents. A board-certified occupational physician performed this analysis based on information from the various references^(13,19,25-27) and determined if the first-aid material provided in the MSDS was correct and complete. A rating was made for four subcategories of first-aid information: eyes, skin, inhalation, and ingestion. Within each subcategory, the following determinations were made: first-aid information was provided, and it was both correct and complete (i.e., “accurate” rating); first-aid information was either not furnished or some type of misleading information was given (i.e., “inaccurate” rating); or first-aid information was

provided, but it was not found to be totally complete to respond to the potential exposure situation (i.e., “partially accurate”).

Personal Protective Equipment

Appropriate personal protective equipment (PPE) is determined by the specific exposure potential, and the HCS requires that an MSDS state the generally applicable PPE. (1) The PPE information given on the MSDS was reviewed in relation to the identified hazardous chemical constituents listed on the MSDS. A toxicologist/certified industrial hygienist performed this analysis based on material from various references. ^(9-11,25,28)

An overall rating was derived for MSDS PPE information based on whether the information was totally correct (“accurate rate”); an “inaccurate” rating if two or more of the four subcategories (respirators, gloves, protective glasses/face shields, or other required PPE) were found to be inaccurate, or when one subcategory was inaccurate, and at least one other subcategory was only partially accurate; and a “partially accurate” designation was used if, for instance, the MSDS recommended that PPE should be used but did not describe the specific type.

Exposure Limits

The two most commonly used sources for occupational exposure limits are the American Conference of Governmental Industrial Hygienists (ACGIH) threshold limit values (TLV®s) and the OSHA permissible exposure limits (PELs). The HCS requires that the PEL and TLV be provided if applicable. ⁽¹⁾ Further, the standard requires that other exposure limits, as recommended by the producer, be provided. All the MSDSs were evaluated based on exposure limit information furnished or not furnished for identified chemical constituents in comparison to applicable TLVs and PELs for chemical constituents. ^(24,29) An “accurate” rating was assigned to the MSDS if all relevant TLV or PEL values were correctly noted (e.g., time-weighted averages, short-term exposure limits, skin notations, ceiling values) or none existed. An “inaccurate” rating was given if no TLV or PEL values were provided (and they did exist), or if an incorrect value was given. A “partially accurate” rating was given if some but not all of the appropriate values were given (e.g., no short-term exposure limit, no skin notation, and/or the omission of values for one of the chemicals in a mixture). This analysis was performed based on the time of the MSDS preparation.

RESULTS AND DISCUSSION

Table II provides a summary of the findings. The information for each topic indicates the proportion of the individual MSDSs (where N=134) characterized as “accurate,” “inaccurate,” or “partially accurate.” As such, there is no intent to make statistical comparisons between topic areas. Also, no guidelines have been furnished by OSHA (or any occupational health group) of what is acceptable short of 100% accuracy in the MSDS contents by topic area. If, for example, the literature contained the results of an appropriate independent analysis of what constituted an “accurate” set of MSDSs, then this could represent a control group of MSDSs against which the

results of this study could be compared. In lieu of such a control group or knowledge that less than 100% accuracy is acceptable, the need for sophisticated statistical analyses (e.g., using means, coefficients of variations, confidence intervals) is negated. This is best exemplified by taking a particular topic area. In Table II, "Health Effects" is shown to have been accurately described in 37% (or 50) of the 134 applicable MSDSs. Inversely, 63% (or 84) of the 134 MSDSs did not achieve the goal of 100% accuracy with regard to "Health Effects." The use of further statistical analysis beyond these straightforward results are neither intended nor warranted.

Chemical Identification of Ingredients

Of the five areas examined, the one most consistently found to be complete was the chemical identification information category. Of the 150 MSDSs evaluated, the majority (125, or 83%) provided specific chemical names for all of the listed ingredients. Approximately 11% (or 16 of the 150 MSDSs) were found to be of unknown chemical composition; and 6% (or 9 of the 150 MSDSs) furnished some specific chemical names, but listed one or more components as trade secrets or some other nonspecific name. Only the 134 MSDSs with identifiable chemical names were fully evaluated.

The majority of the MSDSs reviewed were for mixtures (99 of the 134, or about 73%) as compared to single substance MSDSs. Of the 99 mixture MSDSs, 31 gave 100% of the chemical composition by volume or by weight.

Over 89% of the MSDSs with identifiable chemical names (i.e., the 134 MSDSs) provided CAS numbers, and 81% provided CAS numbers for all chemicals listed by name. For the 16 MSDSs identified as having an unknown chemical composition, none provided chemical names or CAS numbers. The following information was provided in the hazardous ingredients information section of these 16 MSDSs: 8 listed either "not applicable" or "no hazardous ingredients;" 5 listed "trade secrets;" and 3 provided nonspecific chemical names (e.g., fatty amine, treated naphthionic distillates, and polymer).

Of the eight MSDSs stating "not applicable" or "no hazardous ingredients," all but two provided some type of adverse health effects (e.g., skin or eye irritation, dermatitis), and all but one gave first-aid information and recommended PPE. One of these MSDSs cited a TLV of 500 ppm. All five of the MSDSs cited as containing trade secrets provided a description of health effects, suggested first-aid procedures, and recommended PPE. The other three MSDSs listing nonspecific chemical names provided partial information for health effects, first aid and PPE.

Health Effects

The health effects section of each MSDS was the most difficult to evaluate due to the volume and complexity of reference material. MSDS information on the route of entry had a greater proportion of "accurate" ratings than did MSDS information on either symptoms/effects or target organs. Commonly, the MSDS contained route of entry information showing inhalation, dermal, and oral categories with a "yes" or "no" entered in these categories. These data were compared to the various references and evaluated. With regard to symptoms/effects and target organs information, the "acute" category was more often found accurate than was the "chronic" category. For example, irritation associated with skin or eye contact was seldom

omitted if associated with the specific chemical, whereas chronic data were less often discussed. As would be expected, if either the acute or the chronic symptoms and effects were not addressed by the MSDS, then the chronic or acute target organs also were omitted. As a result, the acute and chronic subcategories usually had identical ratings under both the symptoms/effects and target organs information categories.

The health effects furnished on all MSDSs was much less detailed than found in the various reference documents. This finding was expected, because health effects information is only a portion of an MSDS, which is often only two or three pages in total length, whereas the various health effects references often furnish many pages of information for just one chemical substance. Also, the reference material is presented for the scientific community, whereas an MSDS is prepared for a variety of populations, including the general working population. In evaluating the health effects material, an acceptable summary (in the opinion of the reviewers) was considered accurate for the required information.

Of the 134 MSDSs with identifiable chemical components, 49 (37%) were found to have accurate health effects data based on the secondary literature at the time the MSDS was prepared. In addition, about 47% of the MSDSs, or 63 of the 134 evaluated, were found inaccurate; and approximately 16% of the MSDSs, or 22 of the 134, were judged partially accurate.

OSHA Computerized Information System Review

After evaluation using secondary reference texts, the 49 MSDSs with an overall health effects rating of "accurate" were further evaluated using OCIS. OCIS provides access to more current literature findings than the other sources used in the analysis, so MSDSs could be evaluated more thoroughly. Of the 49 MSDSs with a rating of "accurate," no additional information was found in OCIS for 37 (76%). For the remaining 12 MSDSs, the overall health accuracy rating for health effects would have been changed from "accurate" to a "partially correct" rating (based on the information provided in OCIS). The information found in OCIS did not contradict the material on the specific MSDS: it just provided additional symptoms or effects (and the associated target organs) that were not reported on the MSDS. Of the 12 MSDSs that would change, 11 were prepared in 1986 or 1987.

Carcinogenicity Review

In addition to information from the secondary literature, each of the 134 MSDSs was compared to three up-to-date reference sources for listings of carcinogens.⁽²²⁻²⁴⁾ Based on these sources, 28 MSDSs contained identifiable carcinogens (or 21% of the total 134 evaluated). Of these 28, 21 had carcinogenic components that should have been identified at the time the MSDS was prepared. Of these 21 MSDSs, 16 (or 76%) actually indicated that the substance contained a carcinogenic material (i.e., 5 of the MSDSs did not properly identify a carcinogenic component). The remaining seven MSDSs contained substances that were identified as carcinogens in the references after each MSDS was prepared.

First Aid

Potential occupational exposures generally require first-aid procedures for treating the eyes, skin, effects of ingestion and/of effects from inhalation of the specific substance. It was commonly found that MSDSs had standard descriptions for each of these categories of concern. For example, it was usually stated that one should flush the eyes with water for at least 15 minutes following any direct exposure of the eyes to the chemical substance, or that exposed skin should be thoroughly washed with water following any direct contact with the substance. For inhalation exposures, it was routinely reported that the individual should be removed from the exposure and provided fresh air or oxygen. In the case of ingestion, information was often shown on whether vomiting should or should not be induced, and other actions to be taken.

Each MSDS was examined and, considering the potential exposure, evaluated for the accuracy of the first-aid information. If information was reported (e.g., flushing the skin with water) even though such exposure was unlikely, the information was still judged accurate. Only incorrect information (e.g., stating to induce vomiting when this would be inappropriate) or the lack of needed information were judged inaccurate.

The majority of the MSDSs (102, or 76%) were found to provide accurate first-aid information. Only 8% (or 11 of the MSDSs) were judged to have inaccurate information. In most of these cases, this result was due to lack of needed information rather than incorrect material on the MSDS. Sixteen percent (or 21 of the MSDSs) had partially complete information. This was usually caused by the omission of material or the presentation of limited information (e.g., to flush the eyes without stating the substance to use for flushing). Little difference was observed in comparing the results from MSDSs prepared in 1986-1987 to the MSDSs prepared in 1988 or later. Of those prepared in 1986-1987, 74% (70 of 94) were judged to be accurate as opposed to those prepared in 1988 or later, where 80% were judged to be accurate (or 32 of 40).

Personal Protective Equipment

The primary type of PPE used in occupational settings are gloves, protective eyewear or face shields, and respiratory protection. Each of these categories was evaluated along with an "other" category that included recommendations on ventilation (local and general) and other types of PPE (coveralls, aprons, etc.) Gloves, eyewear, and respirator information in MSDSs were considered accurate only when specific types of (appropriate) equipment were recommended. For example, if an organic chemical solvent was reported, and it was suggested that "gloves be used," a "partially accurate" rating was assigned. However, if a specific glove that was an appropriate type for the chemical or chemical mixture was recommended (e.g., neoprene glove) in the MSDS, the rating was judged to be accurate. For eyewear, statements such as chemical goggles or safety glasses were judged accurate.

As with first-aid information, PPE was often suggested when it was doubtful that it would actually be needed. Sometimes the MSDSs qualified the recommendation by stating "in case of an overexposure use..." but in other cases they suggested wearing PPE without additional details. Unless the information was technically correct, such as the wrong type of respirator or improper glove-type was recommended, such information was deemed accurate.

Slightly less than half of the MSDSs (47%) evaluated were given an “accurate” rating for PPE information, while 22% were given an “inaccurate” rating for this category. This was most often due to the lack of needed information rather than to incorrectly provided material. About 31% were judged “partially accurate” with respect to this type of information. Information on the PPE improves from about 43% of the 1986-1987 MSDSs being accurate to 58% accurate for those prepared after 1987.

Exposure Limits

Seventy-five percent (101 of 134) of the MSDSs listed chemical components with established TLVs or PELs. Of the remaining 33 MSDSs, no TLVs or PELs existed for the listed chemical constituents. Nearly half (47%, or 63 of 134 MSDSs) were found to have a correct listing for all applicable TLV or PEL values (i.e., this included exposure limit designations such as skin, ceiling values, short-term exposure limits, time-weighted averages) or no TLV or PEL existed at the time of MSDS preparation.

Sixteen percent of the MSDSs (22 of 134) were determined to have inaccurate information on TLV and PEL values. Nearly all of these provided no values on the MSDS, though in some cases incorrect values were shown. The remaining 37% were observed to have some correct exposure values with others not reported or reported incorrectly, resulting in a “partially accurate” rating. For many of the MSDSs that were given a “partially accurate” rating, a TLV or PEL was reported, but the appropriate short-term exposure level or skin notation was omitted. The accuracy of information on exposure limits improves from about 42% of the 1986-1987 MSDSs being accurate to 60% for those prepared after 1987.

Overall Findings

Based on the foregoing findings for the specific informational areas, only 11% of the MSDSs were found to be accurate in all four informational areas of health effects, first aid, PPE, and exposure limits. Most MSDSs (51%) were at least partially accurate in all four informational areas.

CONCLUSIONS

MSDSs were never intended to serve as a primary literature surrogate for assessing and treating occupational exposures to hazardous substances. For this reason, they should not be held to the level of detail existing in the scientific literature. However, the material presented in the MSDSs should be correct and provide adequate information on the product so that individuals will be aware of the hazards and know what precautions to take.

The foregoing results of the assessment of 150 MSDSs show that:

- Specific chemical names (for hazardous ingredients) are usually provided on MSDSs and serve as an initial point to evaluate the hazards associated with any substances.

- The health effects data on MSDSs frequently are incomplete and the chronic data are more often incorrect (or less complete) than acute data.
- The first-aid and PPE information in MSDSs often appears to be presented more as a mechanism to cover all potential consequences than as a useful tool for the product user.

Generally MSDSs furnish worker, health providers, and their concerned parties with a starting point for obtaining information on the hazards related to chemical substances, but the information presented in MSDSs can (and should) be improved. This finding is especially true for the health effects information.

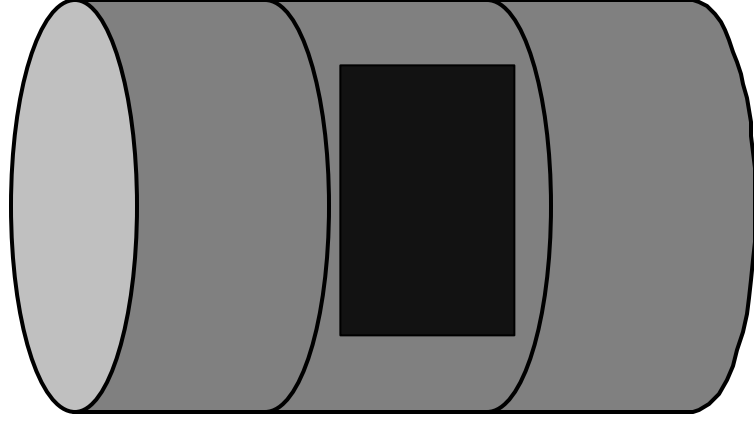
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Labeling

- **Purpose**
- **What information is required**
- **Accessible/Legible/in English**
- **Types; Mfg.'s, HMIS, NFPA**
- **Someone responsible**
- **Alternate Methods 4-1**



Manufacturers Label

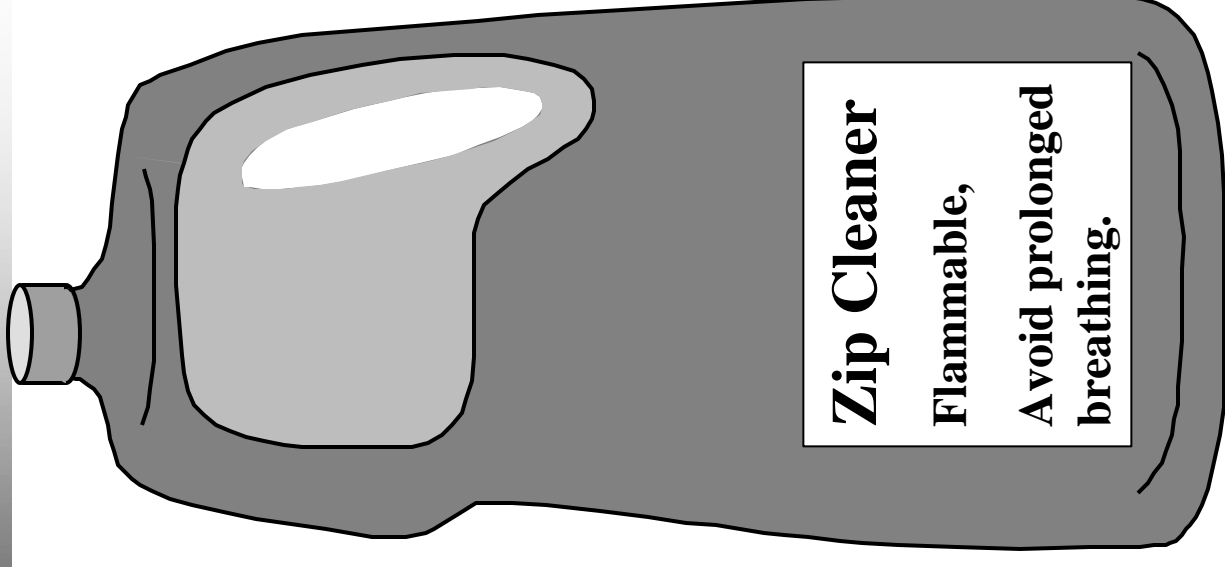
- **Mfg.'s Name/Address**
- **Product Name**
- **Physical Warnings**
- **Health Hazard Warnings**
Including Target Organs



Zip Cleaner
XYZ Company
PO Box 1
Anytown, OH
**Flammable,
Avoid Prolong
Breathing**

In House Label

- **Product Name**
 - **Physical Hazards**
 - **Health Hazard Warnings**
- Including Target Organs**



HMIS LABEL

Health	<input type="text"/>	(blue)
Flammability	<input type="text"/>	(red)
Reactivity	<input type="text"/>	(yellow)
Personal Protective Equipment	<input type="text"/>	(white)

Chemical Name: _____

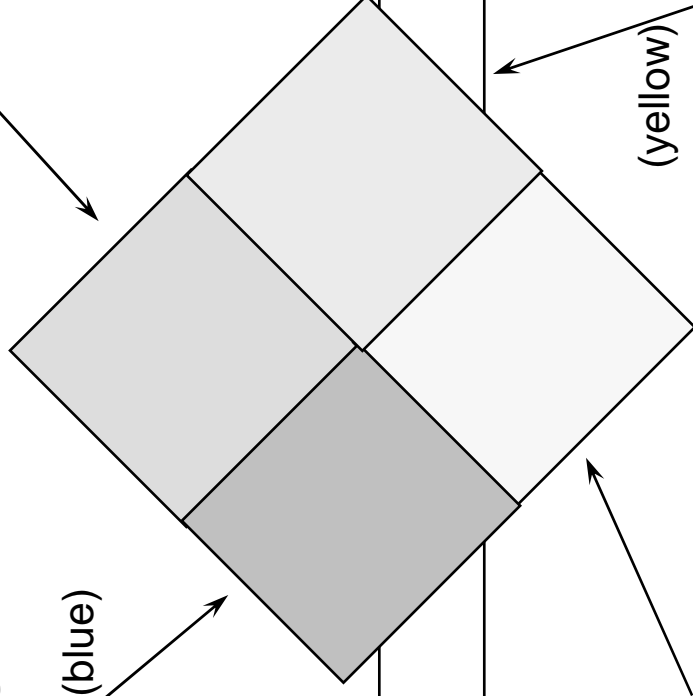
Chemical Name

Health Hazard

- 4-Deadly
- 3-Extremely Hazardous
- 2-Hazardous (blue)
- 1-Slightly Hazardous
- 0-Normal material

Fire Hazard

- Flash Points
- 4-Below 73° F
 - 3-Below 100° F
 - 2-Below 200° F
 - 1-Above 200° F
 - 0-Will not burn



Specific Hazard

Oxidizer OX
Use NO WATER -W
(white)

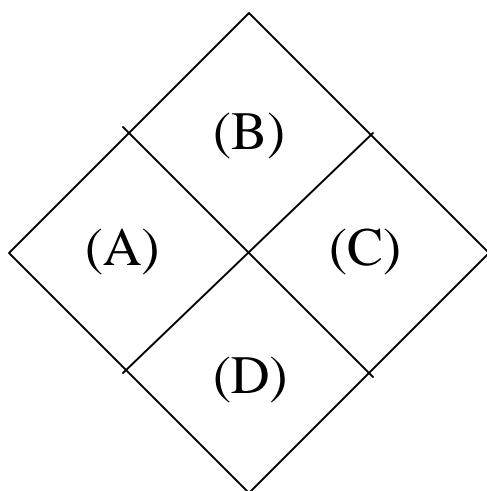
Reactivity

- 4-May detonate
- 3-Shock and heat may detonate
- 2-Violent chemical change
- 1-Unstable if heated
- 0-Stable

NFPA Label

NFPA Fire Diamond, Fire Hazard Code

The fire diamond has four classes of entries by position:



Position A – Health Hazard (Blue)

- 0 = Ordinary Combustible Hazards in a Fire
- 1 = Slightly Hazardous
- 2 = Hazardous
- 3 = Extremely Dangerous
- 4 = Deadly

Position B – Flammability (Red)

- 0 = Will Not Burn
- 1 = Will Ignite if Preheated
- 2 = Will Ignite if Moderately Heated
- 3 = Will Ignite at Most Ambient Conditions
- 4 = Burns Readily at Ambient Conditions

Position C – Reactivity (Yellow)

- 0 = Stable and Not Reactive with Water
- 1 = Unstable if Heated
- 2 = Violent Chemical Change May Occur
- 3 = Shock and Heat May Detonate It
- 4 = May Detonate

Position D – Specific Hazard (White)

- OX = Oxidizer
- W = Use No Water

HMIS The Hazardous Materials Identification System

The National Paint and Coatings Association (NPCA) developed the HMIS to provide employees with a quick identification of the hazards associated with workplace materials. The HMIS designations that the label or MSDS author assigns are meant for use in your overall safety training and communication program.

For complete information about HMIS, get the *HMIS Implementation Manual*, \$26.00; distributed by Labelmaster, 5724 N. Pulaski Rd., Chicago, IL 60646; (312) 478-0900. Technical questions are answered by Labelmaster.

HMIS addresses four topics. For the first three, health, reactivity, and flammability, a number from 0 to 4 is assigned based on the increasing degree of hazard. The fourth designation, PPE, is for the personal protective equipment that employees need.

On Genium MSDSs we list the HMIS as:

HMIS
H 1
F 2
R 3
PPE †
† Sec. 8.

The following is from the *HMIS Implementation Manual*

I. HEALTH HAZARD RATING

0	MINIMAL HAZARD	No significant risk to health
1	SLIGHT HAZARD	Irritation or minor reversible injury possible
2	MODERATE HAZARD	Temporary or minor injury may occur
3	SERIOUS HAZARD	Major injury likely unless prompt action is taken and medical treatment is given
4	SEVERE HAZARD	Life-threatening, major or permanent damage may result from single or repeated exposures

Note: Use of an asterisk (*) or other designation indicates that there may be chronic health effects present. See safety file on product.

II. FLAMMABILITY HAZARD RATING

0	MINIMAL HAZARD	Materials that are normally stable and will not burn unless heated
1	SLIGHT HAZARD	Materials that must be preheated before ignition will occur. Flammable liquids in this category have flash points (the lowest temperature at which ignition occurs) at or above 200 °F (NFPA Class IIIB)
2	MODERATE HAZARD	Material that must be moderately heated before ignition will occur, including flammable liquids with flash points at or above 100 °F and below 200 °F (NFPA Class II & Class IIIA)
3	SERIOUS HAZARD	Materials capable of ignition under almost all normal temperature conditions, including flammable liquids with flash points below 73 °F and boiling points above 100 °F as well as liquids with flash points between 73 °F and 100 °F (NFPA Class IB & IC)
4	SEVERE HAZARD	Very flammable gases or very volatile flammable liquids with flash points below 73 °F and boiling points below 100 °F (NFPA Class IA)

III. REACTIVITY HAZARD RATING

0	MINIMAL HAZARD	Materials that are normally stable, even under fire conditions, and will react with water
1	SLIGHT HAZARD	Materials that are normally stable but can become unstable at high temperatures and pressures. These materials may react with water but they will not release energy violently
2	MODERATE HAZARD	Material that, in themselves, are normally unstable and that readily undergo violent chemical change but will not detonate. These materials may also react violently with water
3	SERIOUS HAZARD	Materials that are capable of detonation or explosive reaction by which require a strong initiating source or which must be heated under confinement before initiation; or materials that react explosively with water
4	SEVERE HAZARD	Materials that are readily capable of detonation or explosive decomposition at normal temperatures and pressures

IV. CHRONIC EFFECTS INFORMATION

Chronic health effects are not rated because of the complex issues involved and the lack of standardized classifications and tests. However, based on the information provided by the

supplier, chronic effects may be indicated by (1) use of an asterisk (*) or other designation after the health hazard rating corresponding to other information that may be available; or (2) written warnings in the upper white section of the NPCA HMIS label.

V. PERSONAL PROTECTIVE EQUIPMENT

Information provided by the supplier will be used by the paint manufacturers to determine the proper personal protective equipment.⁴

Find the answers to the following questions by referring to the Material Safety Data Sheet and/or the NIOSH pocket. (Note: You may not find all this information on every MSDS.)

1. What is the **product name**? _____

2. Who is the **manufacturer** of this product and what is their **phone number**? _____

3. What is/are the **common name and chemical name** of the product or components of the product? _____

4. What is the **physical description** of the product? (solid/liquid/gas, color, odor)

5. List some **physical properties** of the product. (Boiling point, vapor pressure, flash point, specific gravity, solubility in water)

6. Are there any **hazardous decomposition products** associated with the use of this product?

7. Is the product **reactive**? If so, with what does it react and how does it react?

8. What are the **health hazards** associated with the use of this product?

9. What **PELs or TLVs** are assigned to the product as **TWAs, STELs, or Ceilings**?

10. What are the possible **routes of entry** into the body?

11. What are the prescribed **first aid measures** for body contact, inhalation, or ingestion?

12. What **personal protective equipment** is recommended for this product and under what conditions?

13. What are the **target organs** associated with exposure or contact with this product? Is the product a **carcinogen**?

Use the National Safety Council pamphlets in the front pocket of your manual to answer the following questions.

1. (General Concepts) What are the four **routes of entry** of chemicals into the body?

2. (Solvents) What will most **chlorinated solvents not do** that many non-chlorinated solvents will do?

3. (Solvents) What are the **two classes of solvents**? _____
4. (Acids and Bases) Most bases feel _____. Names of bases usually end with the word _____. (Such as sodium _____, potassium _____)
5. (Toxic Metals) What is a metal **fume** and how is it formed? Are they generally more or less hazardous to health than dusts of the same metal? _____

6. (Toxic Metals) Are excess metals eliminated from the body quickly or slowly? _____

Use the MSDS Dictionary to answer the following:

7. According to OSHA, a material is considered **hazardous if:** (p. 5)
 - a. _____
 - b. _____
 - c. _____
8. What is a working definition of **Administrative Controls**? _____

9. Is an Evaporation Rate of 5.6 (acetone's evaporation rate) considered slow, medium, or fast?

10. In order to be considered a mutagen, a chemical must induce a change in the _____ or _____ of a cell. (Teratogens cause malformations of the developing embryo or fetus, and these malformations are not passed on to future generations.)

**HAZARD COMMUNICATION SEMINAR
KNOWLEDGE ASSESSMENT**

1. Name the Federal Agency which enacted the Hazard Communication Standards (1910.1200 – 1926.59 – 1910.1450).

2. Who is this standard designed to protect?

3. In preparing to meet the conditions of the standard, a workplace inventory must be conducted. What is to be inventoried?

4. What is the purpose of an MSDS?

5. When is training required?

6. An employee must have direct access to the MSDS that deals with materials that he/she works with. True or False? Explain either answer

7. List the labeling requirement under this standard for all hazardous materials coming into your workplace.

8. When would an MSDS and employee training be required for potentially hazardous consumer product purchase from a local grocery store, e.g. toilet bowl cleaner?

9. An outside contractor will be working in your facility – what are your responsibilities to this contractor concerning Hazard Communication?

10. The Federal Hazard Communication Standard requires a written plan of action. Name the essential sections or parts of the plan required by law.

11. Name those individuals who have the right to access your written plan and/or MSDS.

12. Is there a specific question of problem you need to address? If so, what is it?

**HAZARD COMMUNICATION SEMINAR
KNOWLEDGE ASSESSMENT**

1. Name the Federal Agency which enacted the Hazard Communication Standards (1910.1200 – 1926.59 – 1910.1450).

OSHA

2. Who is this standard designed to protect?

Employees/workers

3. In preparing to meet the conditions of the standard, a workplace inventory must be conducted. What is to be inventoried?

Products used in a process/by-products – All chemicals/substances/hazardous materials

4. What is the purpose of an MSDS?

To provide critical information needed to work with hazardous materials safely

5. When is training required?

At the time of initial assignment – When a new hazard is introduced into the workplace – Employee transferred to another department – When training is found to be ineffective

6. An employee must have direct access to the MSDS that deals with materials that he/she works with. True or False? Explain either answer

TRUE – Must be available to every shift – No locked areas – No situation where permission is required

7. List the labeling requirement under this standard for all hazardous materials coming into your workplace.

Name of the substance

Appropriate hazard warnings to include target organs

Name and address of Manufacturer

8. When would an MSDS and employee training be required for potentially hazardous consumer product purchase from a local grocery store, e.g. toilet bowl cleaner?

When used more frequently than in an average home

9. An outside contractor will be working in your facility – what are your responsibilities to this contractor concerning Hazard Communication?

Provide information that will allow training on any substances that they could be potentially exposed to

10. The Federal Hazard Communication Standard requires a written plan of action. Name the essential sections or parts of the plan required by law.

Labeling

MSDS

List of Hazardous Materials

Information and Training

Hazardous Non-Routine Tasks

Piping Systems

Informing Contractors

11. Name those individuals who have the right to access your written plan and/or MSDS.

Employee – Employee's designated representative (lawyer, labor union, spouse, medical personnel) – Assistant Secretary and Director or designee

12. Is there a specific question or problem you need to address? If so, what is it?

WRITTEN HAZARD COMMUNICATION PROGRAM
CRITICAL ELEMENTS CHECKLIST

DO YOU HAVE A:	YES	NO
Statement of Purpose Section?		
1. Stating why the company wants to comply with the standard (good faith).	_____	_____
2. Stating location and accessibility of the plan to employees.	_____	_____
3. Stating other – company history, philosophy, commitment statements, etc. (optional)	_____	_____
Labeling Section?		
1. Stating person(s) responsible for ensuring labeling in-plant containers and correct label contents.	_____	_____
2. Stating person(s) responsible for ensuring correct labeling of shipped containers (if applicable).	_____	_____
3. Stating labeling system(s) used and their description(s).	_____	_____
4. Stating alternative labeling of in-plant containers (if applicable).	_____	_____
5. Stating procedures to review/update label information.	_____	_____
Material Safety Data Sheet Section?		
1. Stating person(s) responsible for obtaining and maintaining MSDS records.	_____	_____
2. Stating the supply needed and how and where employees, their representatives and OSHA can readily access MSDSs	_____	_____
3. Stating the procedure and documentation when MSDSs are not received.	_____	_____
4. Stating the procedure for updating MSDSs.	_____	_____
5. Stating alternative(s) to MSDSs in the workplace (if applicable).	_____	_____
Information and Training Section?		
1. Stating person(s) responsible for training.	_____	_____
2. Stating training formats used.	_____	_____

- 3. Stating the elements of training per 1910.1200. _____
- 4. Stating the procedure to train new, transferred, or employees from long leaves, and procedure to inform all affected employees when data changes. _____

List of Hazardous Chemicals and Hazards of Non-Routine Tasks Section?

- 1. Stating the hazards, basic training called for and frequency of training. _____
- 2. Stating person(s) responsible for training. _____

On-Site Contractors Section?

- 1. Stating how hazardous materials information concerning the company environment will be communicated to contractors. _____
- 2. Stating how contractor hazardous materials information will be communicated to company employees. _____
- 3. Stating person(s) responsible for ensuring 1 and 2 above are achieved. _____

HAZARD COMMUNICATION
INSTRUCTOR CHECKLIST FOR WRITTEN PROGRAM

I. Written Hazard Communication Program

A. Container Labeling

- | | | |
|--|---|---|
| 1. Person responsible for checking containers for labels when received | Y | N |
| 2. Person responsible for labeling repackaged hazardous materials. | Y | N |
| 3. Procedure for reviewing, updating or replacing labels. | Y | N |

Comments:

B. Material Safety Data Sheet Section

- | | | |
|---|---|---|
| 1. Person responsible for obtaining / maintaining MSDS records. | Y | N |
| 2. How the MSDS will be made available to employees/contractors | Y | N |
| 3. A procedure to follow when an MSDS is not received with the first shipment of a hazardous substance. | Y | N |
| 4. A procedure to review and update information on updated MSDSs. | Y | N |

Comments:

C. Training Section

- | | | |
|---|---|---|
| 1. Person responsible for conducting and coordinating training. | Y | N |
| 2. The training format to be used. | Y | N |
| 3. The elements included in the training program. | Y | N |
| a. What the standard requires | Y | N |
| b. The hazards involved in non-routine tasks | Y | N |
| c. Location and availability of written hazard communication program. | Y | N |
| d. Ways to detect the presence or release of hazardous substances in the employees work area. | Y | N |
| e. Physical & health hazards of potential chemical exposures. | Y | N |

- | | | |
|---|---|---|
| f. Protective measures. | Y | N |
| g. Explanation of the company hazard communication program | Y | N |
| 4. Procedure to train new or current employees when a new chemical hazard is introduced. | Y | N |
| 5. Explanation of how employees will be informed of the hazards in unlabeled pipe systems.. | Y | N |
| 6. Method to document employee training with type and date. | Y | N |

Comments:

D. List of Hazardous Chemicals

- | | | |
|---|---|---|
| 1. Person responsible for updating/deleting substances. | Y | N |
|---|---|---|

Comments:

E. Piping Systems

- | | | |
|--|---|---|
| 1. Procedures for employees if pipes leak, break, etc. | Y | N |
|--|---|---|

Comments:

F. Non-Routine Tasks

- | | | |
|-------------------------------------|---|---|
| 1. Person responsible for training. | Y | N |
| 2. Elements of training. | Y | N |

Comments:

G. Other Contractors

- | | | |
|---|---|---|
| 1. Person responsible for trading information with other contractors on site. | Y | N |
| 2. Person responsible for MSDSs on multi-employer sites. | Y | N |

Comments:

HAZARD COMMUNICATION

Training

Employers shall provide employees with information and training on hazardous chemicals at;

- **The time of initial assignment.**
 - **Whenever a new hazard is introduced.**
 - **When transferring.**
 - **When returning from extended leave.**
-

GENERAL TRAINING CONTENT

- **Details of Haz Com Program/Policy**
 - **Training Procedures**
 - **Labeling**
 - **MSDS's**
 - **Terminology**
-

SPECIFIC TRAINING CONTENT

- **Characteristics of Chemicals**
 - **Physical Properties**
 - **Work Practices to follow**
 - **Emergencies**
 - **Personal Protective Equipment**
 - **Seldom Done---Non Routine Task**
 - **Industrial Hygiene Monitoring**
-

When You're Training

How Much Do You Remember?

- 75% - sense of sight
 - 13% - sense of hearing
 - 6% - sense of touch
 - 3% - sense of smell
 - 3% - sense of taste
-

**SAMPLE HAZARD COMMUNICATION
TRAINING CERTIFICATION**

**I have received Hazard Communication Training as described in
the Hazard Communication Program. The training was
conducted on _____.
(Date)**

Employee Signature

Social Security Number

Work Area

**I hereby certify that the above name employee has been provided
with Hazard Communication Training on _____.
(Date)**

HAZARD COMMUNICATION

Written Program

- **Policy Statement**
 - **Labeling**
 - **MSDS**
 - **Employee Training**
 - **List Of Hazardous Materials**
 - **Non-Routine Tasks**
 - **Piping Systems**
 - **Informing Contractors**
-

SAMPLE
WRITTEN HAZARD COMMUNICATION PROGRAM

Policy Statement

The following written hazard communication program has been established for the Ourtown Lumber Mill, Inc.

It is the policy of Ourtown Lumber Mill, Inc., to actively provide for the well being of our employees by willingly adhering to the requirements of the Hazard Communication Standard 1910.1200 and other applicable city, state, and federal requirements.

All supervisors and employees of Ourtown Lumber Mill, Inc., will be evaluated yearly on their safety performance in reference to the Hazard Communication Standard and general safety record. The written Hazard Communication program and relevant Material Safety Data Sheets will be available in each section foreman's office for review by all employees, their representative, OSHA, and contractors or employees of other companies doing work in and around our facility. John Smith, Safety Director, will be responsible for this program.

1. **Container Labeling**

Ourtown Lumber has adopted the NFPA labeling system. All employees will be given training in understanding the NFPA system.

The shipping and receiving foreman will verify that all containers will have labels that:

1. Identify contents
2. Are clearly legible
3. Note appropriate hazard warnings
4. List the name and address of the manufacturer

No materials will be released for use until the above data is verified. The foreman of each department will ensure that the labels remain legible.

2. **Material Safety Data Sheets**

- Copies of the MSDSs for all hazardous substances to which section employees may be exposed will be kept in the section foreman's office and the plant office and will be available during all shifts. MSDSs are also available to contractors or employees of other companies doing work in and around the facility.
- MSDSs will be available for review to all employees during each work shift. Copies will be available upon request.
- It will be the responsibility of the Safety Director to maintain, update, and distribute Material Safety Data Sheets.
- Manufacturers or distributors failing to provide MSDSs will be considered as failing to meet contractual requirement. This statement shall appear on purchase orders or offers to bid. The Purchasing Director shall monitor this.

- No new product of a hazardous nature will be accepted in the workplace without a MSDS on file or accompanying the shipment.
- Material Safety Data Sheets are required prior to any hazardous materials being brought into our facility by other employers and their employees, including employee owned and sample material.

3. **Employee Training Information**

Before starting to work, each new employee will be given safety training and a hazardous materials handbook which will have information on:

- Hazards of the materials in their work area;
- How to lessen or prevent exposure to these hazardous substances;
- What the company has done to lessen or prevent workers' exposure to these hazards; and
- Procedures to follow if they are exposed.

After receiving training, each employee will sign a form stating that they received both the safety training and the written materials outlined above. Each foreman will follow-up the training by verbally questioning, at random, each employee's knowledge of the hazardous materials with which they work. Lack of knowledge will prompt an individual review or the need for further training.

Before any new hazardous material is introduced into the worksite, affected employees will be given sufficient information to ensure their safety. The section foreman will be responsible for seeing that a MSDS for the new material is available.

Monthly safety meetings will be held and hazardous materials used in the shop will be discussed. Attendance is mandatory for all employees. The safety director will be responsible for determining the subjects and the content of the meetings. The meetings will be conducted by the section foreman.

Notices will be posted on the employee bulletin boards that provided an explanation of our container labeling system and the location of the written hazard communication program.

The 24-hour emergency facility to be used by the company is XYZ Hospital, 1345 ABC St., Ourtown (1-555-7777). Each foreman is responsible for acquiring and directing transportation for the injured worker and if possible provide an appropriate MSDS to the medical personnel.

4. **Hazardous Non-routine Tasks**

Prior to starting work on such a task, each employee will be given information by a supervisor concerning the hazards to which they will be exposed.

This information will include:

- Specific hazardous substances;
- Protective/safety measures the employee can take; and

- Measures that the company has taken to lessen the hazards.

It is company policy that no employee will begin work on any non-routine task without first receiving a safety briefing from the section foreman or supervisor. We will monitor to ensure that all non-routine tasks are identified and appropriate safety procedures are developed.

5. **Unlabeled Pipes**

Activities are often performed by section employees in areas where substances are run through unlabeled pipes. Prior to beginning work in these areas, the employee shall contact the section foreman for information regarding the materials in the pipes, potential hazards and safety precautions which should be taken. The section foreman has a copy of the blueprint for the plant piping system which identifies the location of all pipes and their contents.

6. **Informing Contractors**

It is the responsibility of the Purchasing Department to provide contractors and their employees with the following information:

- Hazardous materials to which they may be exposed while on the job site, and related MSDSs;
- Measures other employers may take to lessen the possibility of an exposure to their employees (measures such as PPE and SOP);
- Steps the company has taken to lessen the risks (engineering);
- MSDSs for all hazardous materials are on file in the plant office and each section foreman has a copy of each one; and
- Procedures to follow if they are exposed.

The Purchasing Department will coordinate with the section foreman to ensure that contractor's employees are given access to MSDSs and given this information prior to entering the work site.

It will be company policy to have the Purchasing Department require Material Safety Data Sheets prior to any contractor bringing hazardous materials into the plant. Purchasing will alert foremen of the hazardous materials entering the plant. Foremen will train affected employees from the Material Safety Data Sheet made available by Purchasing.

It will also be company policy that no hazardous material be introduced into our workplace by vendors, salespeople, frequenters or our employees without a MSDS to forewarn users of this material. Foremen will enforce this policy.

7. **List of Hazardous Materials**

The following is a list of Hazardous Materials used by this company. Further information on each hazardous chemical noted can be obtained by reviewing Material Safety Data Sheets in the foreman's office.

Hazardous Materials Inventory

Tin Solder	Lead-Based Paint	Acetylene Gas
Silver Solder	Galvanized Steel	
Chromium Steel	Metal Cleaner (degreaser)	

The Safety Director is responsible for maintaining and updating this list of hazardous materials in this written plan.

SAMPLE
WRITTEN HAZARD COMMUNICATION PROGRAM

Policy Statement

The following written hazard communication program has been established for the XYZ Construction Company.

It is the policy of XYZ Construction Company to actively provide for the well being of our employees by willingly adhering to the requirements of the Hazard Communication Standard 1926.59 and other applicable city, state, and federal requirements.

This written Hazard Communication program and relevant Material Safety Data Sheets will be available at each job site for review by all personnel at that job site, their representative and OSHA.

1. **Container Labeling**

XYZ Construction Company will accept the labels provided by product manufacturers. All employees will be given training in understanding the various labeling systems prior to starting work on a site.

XYZ Construction Company shall designate an employee for each site to verify that all containers received will have labels that:

1. Identify contents
2. Are clearly legible
3. Note appropriate hazard warnings
4. List the name and address of the manufacturer

No containers will be released for use until the above data is verified. XYZ Construction Company's Superintendent, Manager or Supervisor will ensure that the labels remain legible.

2. **Material Safety Data Sheets**

- The master copy of all MSDSs will be housed at XYZ's main offices.
- Copies of MSDSs for all hazardous substances employees may be exposed to will be kept in XYZ's job site office and will be made available to all contractors, sub-contractors or employees doing work in and around site.
- MSDSs will be available for review to all employees during each work shift. Copies will be available upon request.
- It will be the responsibility of the Site Superintendent, Manager, or Superintendent to maintain, update, and distribute Material Safety Data Sheets.
- Product manufacturers or distributors failing to provide MSDSs will be considered as failing to meet contractual requirement. This statement shall appear on purchase orders or offers to bid. The XYZ Purchasing Agent shall monitor this.

- No new product of a hazardous nature will be accepted in the workplace without a MSDS on file, including samples or employee owned materials.
- Material Safety Data Sheets are required prior to any hazardous materials being brought into our facility by other contractors and their employees, that will present a hazard to our employees.

3. **Employee Training Information**

Before starting to work, each employee will be given safety training and information concerning:

- Hazards of the materials in their work area;
- How to lessen or prevent exposure to these hazards;
- What the contractor has done to lessen or prevent workers' exposure to these hazards; and
- Procedures to follow if they are exposed.

After receiving training, each employee will sign a form stating that they received the safety training outlined above. Each foreman will follow-up the training by verbally questioning, at random, employee's knowledge of the hazardous materials with which they work. Lack of knowledge will prompt an individual employee review or the need for further training.

Before any **new** hazardous material is introduced into the worksite, affected employees will be given sufficient information to ensure their safety. The employee's supervisor will be responsible for seeing that MSDSs on any new material are available.

Regular safety meetings will be held and hazardous materials used will be discussed. Attendance is mandatory for all employees. The safety supervisor will be responsible for determining the subjects and the content of these meetings. The meetings will be conducted by the job foreman or superintendent.

The 24-hour emergency facility to be used by the company is ABC Hospital, 1345 XYZ St., Ourtown (1-555-7777). Each foreman is responsible for acquiring and directing transportation for the injured worker and if possible provide an appropriate MSDS to the medical personnel.

4. **Hazardous Non-routine Tasks**

Prior to starting work on such a task, each employee will be given information by the job foreman concerning the hazards to which they will be exposed.

This information will include:

- Specific hazardous substances;
- Protective/safety measures the employee can take; and
- Measures that the company has taken to lessen the hazards.

It is company policy that no employee will begin work on any non-routine task without first receiving a safety briefing from the job foreman. We will monitor to ensure that all

non-routine tasks are identified and appropriate safety procedures are developed. (If possible, list all known hazardous non-routine tasks.)

5. **Piping Systems**

Activities are often performed by employees in areas where substances are run through unlabeled pipes. Prior to beginning work in these areas, the employee shall contact the job foreman for information regarding the materials in the pipes, potential hazards and safety precautions which should be taken. The job foreman has a copy of the blueprint for the job site piping system which identifies the location of all pipes and their contents.

6. **Informing Contractors**

It is the responsibility of XYZ's Foreman or Superintendent to provide other contractors with a list of hazardous substance they may be exposed to while on the job site. This will also include providing them with appropriate MSDSs. This list and MSDSs will be updated as additional materials are brought on-site.

As general contractor, XYZ Construction Company will coordinate with any site job contractor to ensure that all contractors' employees are given access to the MSDSs. XYZ will assure, by contract, that information is shared prior to employees entering the work site.

It will be company policy that all sub-contractors provide Material Safety Data Sheets prior to any bringing hazardous materials on the site. By contract, all contractors will assume responsibility to train their employees from Material Safety Data Sheets.

It will also be company policy that no hazardous material be introduced onto the work site by vendors, salespeople, frequenters or our employees without a MSDS. Job foremen will enforce this policy.

7. **List of Hazardous Materials**

The Safety Supervisor is responsible for maintaining and updating this list of hazardous materials in this written plan for each site for XYZ Construction Company.

The following is a list of **Hazardous Chemicals** used by this company. Further information on each hazardous chemical noted can be obtained by reviewing Material Safety Data Sheets in the general contractor's office.

Materials

Tin Solder

Silver Solder

Chromium Steel

Lead-Based Paint

Galvanized Steel

Acetylene Gas

SAMPLE
WRITTEN HAZARD COMMUNICATION PROGRAM

Policy Statement

The following written hazard communication program has been established for the XYZ Construction Company.

It is the policy of XYZ Construction Company to actively provide for the well being of our employees by willingly adhering to the requirements of the Hazard Communication Standard 1926.59 and other applicable city, state, and federal requirements.

This written Hazard Communication program and relevant Material Safety Data Sheets will be available at each job site for review by all personnel at that job site, their representatives and O.S.H.A.

1. **Container Labeling**

XYZ Construction Company will accept the labels provided by product manufacturers. All employees must be given training in understanding of the various labeling systems prior to starting work on a site.

XYZ Construction Company shall designate an employee for each site to verify that all containers received will have labels that:

1. Identify contents
2. Are clearly legible
3. Note appropriate hazard warnings
4. List the name and address of the manufacturer
5. State target organs

No containers will be released for use until the above data is verified. XYZ Construction Company's site Superintendent, Manager or Supervisor will ensure that the labels remain legible.

2. **Material Safety Data Sheets**

- The master copy of all MSDSs will be housed at XYZ's main offices.
- Copies of MSDSs for all hazardous materials employees may be exposed to will be kept in the XYZ job site office and will be made available to all contractors, sub-contractors or employees of other companies doing work in and around site.
- MSDSs will be available for review to all employees during each work shift. Copies will be available upon request.
- It will be the responsibility of the Site Superintendent, Manager, or Superintendent to maintain, update, and distribute Material Safety Data Sheets.

- Product manufacturers or distributors failing to provide MSDSs will be considered as failing to meet contractual requirement. This statement shall appear on purchase orders or offers to bid. The XYZ Purchasing Agent shall monitor this.
- No new product of a hazardous nature will be accepted in the worksite without a MSDS on file, including samples or employee owned materials.
- Material Safety Data Sheets are required prior to any hazardous materials being brought onto the site by other contractors and their employees, that will present a hazard to our employees.

3. **Employee Training Information**

Before starting to work, each employee will be given safety training and information concerning:

- Hazards of the materials in their work area;
- How to lessen or prevent exposure to these hazards;
- What the contractor has done to lessen or prevent workers’ exposure to these hazards; and
- Procedures to follow if they are exposed.

After receiving the training, each employee will sign a form stating that they received the safety training outlined above. Each foreman will follow-up the training by verbally questioning, at random, employee’s knowledge of the hazardous materials with which they work. Lack of knowledge will prompt an individual employee review or the need for further training.

Before any **new** hazardous material is introduced into the worksite, affected employees will be given sufficient information to ensure their safety. The employee’s supervisor will be responsible for seeing that MSDSs on any new material are available.

Regular safety meetings will be held and hazardous materials used will be discussed. Attendance is mandatory for all employees. The safety supervisor will be responsible for determining the subjects and for the content of these meetings. The meetings will be conducted by the job foreman or superintendent.

The 24-hour emergency facility to be used by the company is ABC Hospital, 1345 XYZ St., Ourtown (1-555-7777). Each foreman is responsible for acquiring and directing transportation for the injured worker and if possible provide an appropriate MSDS to the medical personnel.

4. **Hazardous Non-routine Tasks**

Prior to starting work on such a task, each employee will be given information by the job foreman concerning the hazards to which they will be exposed.

This information will include:

- Specific hazardous substances;
- Protective/safetv measures the emplovee can take: and

- Measures that the company has taken to lessen the hazards.

It is company policy that no employee will begin work on any non-routine task without first receiving a safety briefing from the job foreman. We will monitor to ensure that all non-routine tasks are identified and appropriate safety procedures are developed. (If possible, list all known hazardous non-routine tasks.)

5. **Piping Systems**

Activities are often performed by employees in areas where substances are run through unlabeled pipes. Before beginning work in these areas, the employee shall contact the job foreman for information regarding the substances in the pipes, potential hazards and safety precautions which should be taken. The job foreman has a copy of the blueprint for the job site piping system which identifies the location of all pipes and their contents.

6. **Informing Contractors**

It is the responsibility of XYZ's Foreman or Superintendent to provide other contractors with a list of hazardous substances they may be exposed to while on the job site. This will also include providing them with appropriate MSDSs. This list and MSDSs will be updated as additional materials are brought on-site.

As general contractor, XYZ Construction Company will coordinate with any site job contractor to ensure that all contractors' employees are given access to the MSDSs. XYZ will assure, by contract, that information is shared prior to employees entering the work site.

It will be company policy that all sub-contractors provide Material Safety Data Sheets prior to any bringing hazardous materials on the site. By contract, all contractors will assume responsibility to train their employees from Material Safety Data Sheets.

It will also be company policy that no hazardous material be introduced onto the work site by vendors, salespeople, frequenters or our employees without a MSDS. Job foremen will enforce this policy.

7. **List of Hazardous Materials**

The Safety Supervisor is responsible for maintaining and updating this list of hazardous materials in this written plan for each site for XYZ Construction Company.

The following is a list of **Hazardous Chemicals** used by this company. Further information on each hazardous chemical noted can be obtained by reviewing Material Safety Data Sheets in the general contractor's office.

Materials

Tin Solder	Lead-Based Paint
Silver Solder	Galvanized Steel
Chromium Steel	Acetylene Gas



OSHA Regulations (Standards - 29 CFR) Hazard Communication. - 1910.1200

Standard Number: 1910.1200

Standard Title: Hazard Communication.

SubPart Number: Z

SubPart Title: Toxic and Hazardous Substances

Applicable Standard: Applicable Standard:

(a)

"Purpose."

(a)(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.

(a)(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 this subject. Evaluating the potential hazards of chemicals, and communicating 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."

(b)(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. (Employers who do not produce or import chemicals need only focus on those parts of this rule that deal with establishing a workplace program and communicating information to their workers. Appendix E of this section is a general guide for such employers to help them determine their compliance obligations under the rule.)

(b)(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.

(b)(3)

This section applies to laboratories only as follows:

(b)(3)(i)

Employers shall ensure that labels on incoming containers of hazardous chemicals are not removed or defaced;

(b)(3)(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 during each workshift to laboratory employees when they are in their work areas;

(b)(3)(iii)

Employers shall ensure that laboratory employees are provided 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)(2)(iii) of this section; and,

(b)(3)(iv)

Laboratory employers that ship hazardous chemicals are considered to be either a chemical manufacturer or a distributor under this rule, and thus must ensure that any containers of hazardous chemicals leaving the laboratory are labeled in accordance with paragraph (f)(1) of this section, and that a material safety data sheet is provided to distributors and other employers in accordance with paragraphs (g)(6) and (g)(7) of this section.

(b)(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:

(b)(4)(i)

Employers shall ensure that labels on incoming containers of hazardous chemicals are not removed or defaced;

(b)(4)(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 data sheet as soon as possible 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,

(b)(4)(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)(2)(iii) of this section), to the extent necessary to protect them in the event of a spill or leak of a hazardous chemical from a sealed container.

(b)(5)

This section does not require labeling of the following chemicals:

(b)(5)(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;

(b)(5)(ii)

Any chemical substance or mixture as such terms are defined in the Toxic Substances Control Act (15 U.S.C. 2601 et seq.), when subject to the labeling requirements of that Act and labeling regulations issued under that Act by the Environmental Protection Agency;

(b)(5)(iii)

Any food, food additive, color additive, drug, cosmetic, or medical or veterinary device or product, 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.) or the Virus-Serum-Toxin Act of 1913 (21 U.S.C. 151 et seq.), and regulations issued under those Acts, when they are subject to the labeling requirements under those Acts by either the Food and Drug Administration or the Department of Agriculture;

(b)(5)(iv)

Any distilled spirits (beverage alcohols), wine, or malt beverage intended for nonindustrial 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;

(b)(5)(v)

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; and,

(b)(5)(vi)

Agricultural or vegetable seed treated with pesticides and labeled in accordance with the Federal Seed Act (7 U.S.C. 1551 et seq.) and the labeling regulations issued under that Act by the Department of Agriculture.

(b)(6)

This section does not apply to:

(b)(6)(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;

(b)(6)(ii)

Any hazardous substance as such term is defined by the Comprehensive Environmental Response, Compensation and Liability ACT (CERCLA) (42 U.S.C. 9601 et seq.) when the hazardous substance is the focus of remedial or removal action being conducted under CERCLA in accordance with the Environmental Protection Agency regulations.

(b)(6)(iii)

Tobacco or tobacco products;

(b)(6)(iv)

Wood or wood products, including lumber which will not be processed, where the chemical manufacturer or importer can establish that the only hazard they pose to employees is the potential for flammability or combustibility (wood or wood products which have been treated with a hazardous chemical covered by this standard, and wood which may be subsequently sawed or cut, generating dust, are not exempted);

(b)(6)(v)

Articles (as that term is defined in paragraph (c) of this section);

(b)(6)(vi)

Food or alcoholic beverages which are sold, used, or prepared in a retail establishment (such as a grocery store, restaurant, or drinking place), and foods intended for personal consumption by employees while in the workplace;

(b)(6)(vii)

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 (e.g., tablets or pills); drugs which are packaged by the chemical manufacturer for sale to consumers in a retail establishment (e.g., over-the-counter drugs); and drugs intended for personal consumption by employees while in the workplace (e.g., first aid supplies);

(b)(6)(viii)

Cosmetics which are packaged for sale to consumers in a retail establishment, and cosmetics intended for personal consumption by employees while in the workplace;

(b)(6)(ix)

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, where the employer can show that it is used in the workplace for the purpose intended by the chemical manufacturer or importer of the product, and the use results in a duration and frequency of exposure which is not greater than the range of exposures that could reasonably be experienced by consumers when used for the purpose intended;

(b)(6)(x)

Nuisance particulates where the chemical manufacturer or importer can establish that they do not pose any physical or health hazard covered under this section;

(b)(6)(xi)

Ionizing and nonionizing radiation; and,

(b)(6)(xii)

Biological hazards.

(c)

"Definitions."

"Article" means a manufactured item other than a fluid or particle: (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 under normal conditions of use does not release more than very small quantities, e.g.,

minute or trace amounts of a hazardous chemical (as determined under paragraph (d) of this section), and does not pose a physical hazard or health risk to employees.

"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 deg. F (37.8 deg. C), but below 200 deg. F (93.3 deg. C), except any mixture having components with flashpoints of 200 deg. F (93.3 deg. C), or higher, the total volume of which make up 99 percent or more of the total volume of the mixture.

"Commercial account" means an arrangement whereby a retail distributor sells hazardous chemicals to an employer, generally in large quantities over time and/or at costs that are below the regular retail price.

"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 deg. F (21.1 deg. C); or
- (ii) A gas or mixture of gases having, in a container, an absolute pressure exceeding 104 psi at 130 deg. F (54.4 deg. C) regardless of the pressure at 70 deg. F (21.1 deg. C); or
- (iii) A liquid having a vapor pressure exceeding 40 psi at 100 deg. F (37.8 deg. 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 in the course of employment to a chemical that is a physical or health hazard, and includes potential (e.g. accidental or possible) exposure. "Subjected" in terms of health hazards includes any route of entry (e.g. inhalation, ingestion, skin contact or absorption.)

"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 deg. F (37.8 deg. C), except any mixture having components with flashpoints of 100 deg. F (37.8 deg. 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 1910.109(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 Universal Seconds (SUS) at 100 deg. F (37.8 deg. 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 deg. F (37.8 deg. 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 specific physical and health hazard(s), including target organ effects, of the chemical(s) in the container(s). (See the definitions for "physical hazard" and "health hazard" to determine the hazards which must be covered.)

"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, blend, extract, generate, emit, or repackage.

"Pyrophoric" means a chemical that will ignite spontaneously in air at a temperature of 130 deg. F (54.4 deg. 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, emit, extract, generate as a byproduct, 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."

(d)(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.

(d)(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.

(d)(3)

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

(d)(3)(i)

29 CFR part 1910, subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration (OSHA); or,

(d)(3)(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.

(d)(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:

(d)(4)(i)

National Toxicology Program (NTP), "Annual Report on Carcinogens" (latest edition);

(d)(4)(ii)

International Agency for Research on Cancer (IARC) "Monographs" (latest editions); or

(d)(4)(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.

(d)(5)

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

(d)(5)(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;

(d)(5)(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;

(d)(5)(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,

(d)(5)(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 risk to employees in those concentrations, the mixture shall be assumed to present the same hazard.

(d)(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."

(e)(1)

Employers shall develop, implement, and maintain at each workplace, a written hazard communication program 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:

(e)(1)(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,

(e)(1)(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.

(e)(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 programs developed and implemented under this paragraph (e) include the following:

(e)(2)(i)

The methods the employer will use to provide the other employer(s) on-site access to material safety data sheets for each hazardous chemical the other employer(s)' employees may be exposed to while working;

(e)(2)(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,

(e)(2)(iii)

The methods the employer will use to inform the other employer(s) of the labeling system used in the workplace.

(e)(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).

(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 1910.1020 (e).

(e)(5)

Where employees must travel between workplaces during a workshift, i.e., their work is carried out at more than one geographical location, the written hazard communication program may be kept at the primary workplace facility.

(f)

"Labels and other forms of warning."

(f)(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:

(f)(1)(i)

Identity of the hazardous chemical(s);

(f)(1)(ii)

Appropriate hazard warnings; and

(f)(1)(iii)

Name and address of the chemical manufacturer, importer, or other responsible party.

(f)(2)

(f)(2)(i)

For solid metal (such as a steel beam or a metal casting), solid wood, or plastic items that are not exempted as articles due to their downstream use, or shipments of whole grain, 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;

(f)(2)(ii)

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; and,

(f)(2)(iii)

This exception to requiring labels on every container of hazardous chemicals is only for the solid material itself, and does not apply to hazardous chemicals used in conjunction with, or known to be present with, the material and to which employees handling the items in transit may be exposed (for example, cutting fluids or pesticides in grains).

(f)(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. 1801 et seq.) and regulations issued under that Act by the Department of Transportation.

(f)(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.

(f)(5)

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

(f)(5)(i)

Identity of the hazardous chemical(s) contained therein; and,

(f)(5)(ii)

Appropriate hazard warnings, or alternatively, words, pictures, symbols, or combination thereof, which provide at least general information regarding the hazards of the chemicals, and which, in conjunction with the other information immediately available to employees under the hazard communication program, will provide employees with the specific information regarding the physical and health hazards of the hazardous chemical.

(f)(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.

(f)(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. For purposes of this section, drugs which are dispensed by a pharmacy to a health care provider for direct administration to a patient are exempted from labeling.

(f)(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.

(f)(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.

(f)(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.

(f)(11)

Chemical manufacturers, importers, distributors, or employers who become newly aware of any significant information regarding the hazards of a chemical shall revise the labels for the chemical within three months of becoming aware of the new information. Labels on containers of hazardous chemicals shipped after that time shall contain the new information. If the chemical is not currently produced or imported, the chemical manufacturer, importers, distributor, or employer shall add the information to the label before the chemical is shipped or introduced into the workplace again.

(g)

"Material safety data sheets."

(g)(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 in the workplace for each hazardous chemical which they use.

(g)(2)

Each material safety data sheet shall be in English (although the employer may maintain copies in other languages as well), and shall contain at least the following information:

(g)(2)(i)

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

(g)(2)(i)(A)

If the hazardous chemical is a single substance, its chemical and common name(s);

(g)(2)(i)(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,

(g)(2)(i)(C)

If the hazardous chemical is a mixture which has not been tested as a whole:

(g)(2)(i)(C)(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) of this section shall be listed if the concentrations are 0.1% or greater; and,

(g)(2)(i)(C)(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 risk to employees; and,

(g)(2)(i)(C)(3)

The chemical and common name(s) of all ingredients which have been determined to present a physical hazard when present in the mixture;

(g)(2)(ii)

Physical and chemical characteristics of the hazardous chemical (such as vapor pressure, flash point);

(g)(2)(iii)

The physical hazards of the hazardous chemical, including the potential for fire, explosion, and reactivity;

(g)(2)(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;

(g)(2)(v)

The primary route(s) of entry;

(g)(2)(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;

(g)(2)(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;

(g)(2)(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;

(g)(2)(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;

(g)(2)(x)

Emergency and first aid procedures;

(g)(2)(xi)

The date of preparation of the material safety data sheet or the last change to it; and,

(g)(2)(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.

(g)(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.

(g)(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.

(g)(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.

(g)(6)

(g)(6)(i)

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;

(g)(6)(ii)

The chemical manufacturer or importer shall either provide material safety data sheets with the shipped containers or send them to the distributor or employer prior to or at the time of the shipment;

(g)(6)(iii)

If the material safety data sheet is not provided with a shipment that has been labeled as a hazardous chemical, the distributor or employer shall obtain one from the chemical manufacturer or importer as soon as possible; and,

(g)(6)(iv)

The chemical manufacturer or importer shall also provide distributors or employers with a material safety data sheet upon request.

(g)(7)

(g)(7)(i)

Distributors shall ensure that material safety data sheets, and updated information, are provided to other distributors and employers with their initial shipment and with the first shipment after a material safety data sheet is updated;

(g)(7)(ii)

The distributor shall either provide material safety data sheets with the shipped containers, or send them to the other distributor or employer prior to or at the time of the shipment;

(g)(7)(iii)

Retail distributors selling hazardous chemicals to employers having a commercial account 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;

(g)(7)(iv)

Wholesale distributors selling hazardous chemicals to employers over-the-counter may also provide material safety data sheets upon the request of the employer at the time of the over-the-counter purchase, and shall post a sign or otherwise inform such employers that a material safety data sheet is available;

(g)(7)(v)

If an employer without a commercial account purchases a hazardous chemical from a retail distributor not required to have material safety data sheets on file (i.e., the retail distributor does not have commercial accounts and does not use the materials), the retail distributor shall provide the employer, upon request, with the name, address, and telephone number of the chemical manufacturer, importer, or distributor from which a material safety data sheet can be obtained;

(g)(7)(vi)

Wholesale distributors shall also provide material safety data sheets to employers or other distributors upon request; and,

(g)(7)(vii)

Chemical manufacturers, importers, and distributors need not provide material safety data sheets to retail distributors that have informed them that the retail distributor does not sell the product to commercial accounts or open the sealed container to use it in their own workplaces.

(g)(8)

The employer shall maintain in the workplace copies of the required material safety data sheets for each hazardous chemical, and shall ensure that they are readily accessible during each work shift to employees when they are in their work area(s). (Electronic access, microfiche, and other alternatives to maintaining paper copies of the material safety data sheets are permitted as long as no barriers to immediate employee access in each workplace are created by such options.)

(g)(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 the primary workplace facility. In this situation, the employer shall ensure that employees can immediately obtain the required information in an emergency.

(g)(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 in their work area(s).

(g)(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 1910.1020(e). The Director shall also be given access to material safety data sheets in the same manner.

(h)

"Employee information and training."

(h)(1)

Employers shall provide employees with effective information and training on hazardous chemicals in their work area at the time of their initial assignment, and whenever a new physical or health hazard the employees have not previously been trained about is introduced into their work area. Information and training may be designed to cover categories of hazards (e.g., flammability, carcinogenicity) or specific chemicals. Chemical-specific information must always be available through labels and material safety data sheets.

(h)(2)

"Information." Employees shall be informed of:

(h)(2)(i)

The requirements of this section;

(h)(2)(ii)

Any operations in their work area where hazardous chemicals are present; and,

(h)(2)(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.

(h)(3)

"Training." Employee training shall include at least:

(h)(3)(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.);

(h)(3)(ii)

The physical and health hazards of the chemicals in the work area;

(h)(3)(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,

(h)(3)(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."

(i)(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)(1)(i)

The claim that the information withheld is a trade secret can be supported;

(i)(1)(ii)

Information contained in the material safety data sheet concerning the properties and effects of the hazardous chemical is disclosed;

(i)(1)(iii)

The material safety data sheet indicates that the specific chemical identity is being withheld as a trade secret; and,

(i)(1)(iv)

The specific chemical identity is made available to health professionals, employees, and designated representatives in accordance with the applicable provisions of this paragraph.

(i)(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 or 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.

(i)(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)(3)(i)

The request is in writing;

(i)(3)(ii)

The request describes with reasonable detail one or more of the following occupational health needs for the information:

(i)(3)(ii)(A)

To assess the hazards of the chemicals to which employees will be exposed;

(i)(3)(ii)(B)

To conduct or assess sampling of the workplace atmosphere to determine employee exposure levels;

(i)(3)(ii)(C)

To conduct pre-assignment or periodic medical surveillance of exposed employees;

(i)(3)(ii)(D)

To provide medical treatment to exposed employees;

(i)(3)(ii)(E)

To select or assess appropriate personal protective equipment for exposed employees;

(i)(3)(ii)(F)

To design or assess engineering controls or other protective measures for exposed employees; and,

(i)(3)(ii)(G)

To conduct studies to determine the health effects of exposure.

(i)(3)(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:

(i)(3)(iii)(A)

The properties and effects of the chemical;

(i)(3)(iii)(B)

Measures for controlling workers' exposure to the chemical;

(i)(3)(iii)(C)

Methods of monitoring and analyzing worker exposure to the chemical; and,

(i)(3)(iii)(D)

Methods of diagnosing and treating harmful exposures to the chemical;

(i)(3)(iv)

The request includes a description of the procedures to be used to maintain the confidentiality of the disclosed information; and,

(i)(3)(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.

(i)(4)

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

(i)(4)(i)

May restrict the use of the information to the health purposes indicated in the written statement of need;

(i)(4)(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,

(i)(4)(iii)

May not include requirements for the posting of a penalty bond.

(i)(5)

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

(i)(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.

(i)(7)

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

(i)(7)(i)

Be provided to the health professional, employee, or designated representative, within thirty days of the request;

(i)(7)(ii)

Be in writing;

(i)(7)(iii)

Include evidence to support the claim that the specific chemical identity is a trade secret;

(i)(7)(iv)

State the specific reasons why the request is being denied; and,

(i)(7)(v)

Explain in detail how alternative information may satisfy the specific medical or occupational health need without revealing the specific chemical identity.

(i)(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.

(i)(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)(9)(i)

The chemical manufacturer, importer, or employer has supported the claim that the specific chemical identity is a trade secret;

(i)(9)(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,

(i)(9)(iii)

The health professional, employee or designated representative has demonstrated adequate means to protect the confidentiality.

(i)(10)

(i)(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.

(i)(10)(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.

(i)(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 of such matters.

(i)(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.

(i)(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." Chemical manufacturers, importers, distributors, and employers shall be in compliance with all provisions of this section by March 11, 1994.

Note: The effective date of the clarification that the exemption of wood and wood products from the Hazard Communication standard in paragraph (b)(6)(iv) only applies to wood and wood products including lumber which will not be processed, where the manufacturer or importer can establish that the only hazard they pose to employees is the potential for flammability or combustibility, and that the exemption does not apply to

wood or wood products which have been treated with a hazardous chemical covered by this standard, and wood which may be subsequently sawed or cut generating dust has been stayed from March 11, 1994 to August 11, 1994.

[59 FR 17479, April 13, 1994; 59 FR 65947, Dec. 22, 1994; 61 FR 5507, Feb. 13, 1996]

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OSHA Regulations (Standards - 29 CFR) Health Hazard Definitions (Mandatory) - 1910.1200 App A

- **Standard Number:** 1910.1200 App A
 - **Standard Title:** Health Hazard Definitions (Mandatory)
 - **SubPart Number:** Z
 - **SubPart Title:** Toxic and Hazardous Substances
 - **Applicable Standard:** Applicable Standard:
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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 (Z129.1-1988) - irritation, corrosivity, sensitization and lethal dose. Although these are important health effects, they do not adequately cover the considerable range of

acute effects 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 anemia), 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 hazard 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. However, this is not intended to be an exclusive categorization scheme. If there are available scientific data that involve other animal species or test methods, they must also be evaluated to determine the applicability of the HCS.

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 dose (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 16 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 more 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 milligrams 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 hemato-poietic 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 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

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OSHA Regulations (Standards - 29 CFR) Hazard Determination (Mandatory) - 1910.1200 App B

- **Standard Number:** 1910.1200 App B
 - **Standard Title:** Hazard determination (Mandatory)
 - **SubPart Number:** Z
 - **SubPart Title:** Toxic and Hazardous Substances
 - **Applicable Standard:** Applicable Standard:
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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) of this section 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. In addition, however, all available scientific data on carcinogenicity must be evaluated in accordance with the provisions of this Appendix and the requirements of the rule.
 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. In vitro studies alone generally do not form the basis for a definitive finding of hazard under the HCS since they have a positive or negative result rather than a statistically significant finding.

The chemical manufacturer, importer, or employer may also report the results of other scientifically valid studies which tend to refute the findings of hazard.

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OSHA Regulations (Standards - 29 CFR) Information Sources (Advisory) - 1910.1200 App C

- **Standard Number:** 1910.1200 App C
 - **Standard Title:** Information sources (Advisory)
 - **SubPart Number:** Z
 - **SubPart Title:** Toxic and Hazardous Substances
 - **Applicable Standard:** Applicable Standard:
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Editorial Note: The Federal Register of March 7, 1996, removed 1910.1200 Appendix C.

[61 FR 9227, March 7, 1996]

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OSHA Regulations (Standards - 29 CFR) Definition of "Trade Secret" (Mandatory) - 1910.1200 App D

- **Standard Number:** 1910.1200 App D
 - **Standard Title:** Definition of "Trade Secret" (Mandatory)
 - **SubPart Number:** Z
 - **SubPart Title:** Toxic and Hazardous Substances
 - **Applicable Standard:** Applicable Standard:
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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 s759 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.

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OSHA Regulations (Standards - 29 CFR) Guidelines for Employer Compliance (Advisory) - 1910.1200 App E

- **Standard Number:** 1910.1200 App E
 - **Standard Title:** Guidelines for Employer Compliance (Advisory)
 - **SubPart Number:** Z
 - **SubPart Title:** Toxic and Hazardous Substances
 - **Applicable Standard:** Applicable Standard:
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The Hazard Communication Standard (HCS) is based on a simple concept - that employees have both a need and a right to know the hazards and identities of the chemicals they are exposed to when working. They also need to know what protective measures are available to prevent adverse effects from occurring. The HCS is designed to provide employees with the information they need.

Knowledge acquired under the HCS will help employers provide safer workplaces for their employees. When employers have information about the chemicals being used, they can take steps to reduce exposures, substitute less hazardous materials, and establish proper work practices. These efforts will help prevent the occurrence of work-related illnesses and injuries caused by chemicals.

The HCS addresses the issues of evaluating and communicating hazards to workers. Evaluation of chemical hazards involves a number of technical concepts, and is a process that requires the professional judgment of experienced experts. That's why the HCS is designed so that employers who simply use chemicals, rather than produce or import them, are not required to evaluate the hazards of those chemicals. Hazard determination is the responsibility of the producers and importers of the materials. Producers and importers of chemicals are then required to provide the hazard information to employers that purchase their products.

Employers that don't produce or import chemicals need only focus on those parts of the rule that deal with establishing a workplace program and communicating information to their workers. This appendix is a general guide for such employers to help them determine what's required under the rule. It does not supplant or substitute for the regulatory provisions, but rather provides a simplified outline of the steps an average employer would follow to meet those requirements.

1. "Becoming Familiar With The Rule."

OSHA has provided a simple summary of the HCS in a pamphlet entitled "Chemical Hazard Communication," OSHA Publication Number 3084. Some employers prefer to begin to become familiar with the rule's requirements by reading this pamphlet. A copy may be obtained from your local OSHA Area Office, or by contacting the OSHA Publications Office at (202) 523-9667.

The standard is long, and some parts of it are technical, but the basic concepts are simple. In fact, the requirements reflect what many employers have been doing for years. You may find that you are already largely in compliance with many of the provisions, and will simply have to modify your existing programs somewhat. If you are operating in an OSHA-approved State Plan State, you must comply with the State's requirements, which may be different than those of the Federal rule. Many of the State Plan States had hazard communication or "right-to-know" laws prior to promulgation of the Federal rule. Employers in State Plan States should contact their State OSHA offices for more information regarding applicable requirements.

The HCS requires information to be prepared and transmitted regarding all hazardous chemicals. The HCS covers both physical hazards (such as flammability), and health hazards (such as irritation, lung damage, and cancer). Most chemicals used in the workplace have some hazard potential, and thus will be covered by the rule.

One difference between this rule and many others adopted by OSHA is that this one is performance-oriented. That means that you have the flexibility to adapt the rule to the needs of your workplace, rather than having to follow specific, rigid requirements. It also means that you have to exercise more judgment to implement an appropriate and effective program.

The standard's design is simple. Chemical manufacturers and importers must evaluate the hazards of the chemicals they produce or import. Using that information, they must then prepare labels for containers, and more detailed technical bulletins called material safety data sheets (MSDS).

Chemical manufacturers, importers, and distributors of hazardous chemicals are all required to provide the appropriate labels and material safety data sheets to the employers to which they ship the chemicals. The information is to be provided automatically. Every container of hazardous chemicals you receive must be labeled, tagged, or marked with the required information. Your suppliers must also send you a properly completed material safety data sheet (MSDS) at the time of the first shipment of the chemical, and with the next shipment after the MSDS is updated with new and significant information about the hazards.

You can rely on the information received from your suppliers. You have no independent duty to analyze the chemical or evaluate the hazards of it.

Employers that "use" hazardous chemicals must have a program to ensure the information is provided to exposed employees. "Use" means to package, handle, react, or transfer. This is an intentionally broad scope, and includes any situation where a chemical is present in such a

way that employees may be exposed under normal conditions of use or in a foreseeable emergency.

The requirements of the rule that deal specifically with the hazard communication program are found in this section in paragraphs (e), written hazard communication program; (f), labels and other forms of warning; (g), material safety data sheets; and (h), employee information and training. The requirements of these paragraphs should be the focus of your attention. Concentrate on becoming familiar with them, using paragraphs (b), scope and application, and (c), definitions, as references when needed to help explain the provisions.

There are two types of work operations where the coverage of the rule is limited. These are laboratories and operations where chemicals are only handled in sealed containers (e.g., a warehouse). The limited provisions for these workplaces can be found in paragraph (b) of this section, scope and application. Basically, employers having these types of work operations need only keep labels on containers as they are received; maintain material safety data sheets that are received, and give employees access to them; and provide information and training for employees. Employers do not have to have written hazard communication programs and lists of chemicals for these types of operations.

The limited coverage of laboratories and sealed container operations addresses the obligation of an employer to the workers in the operations involved, and does not affect the employer's duties as a distributor of chemicals. For example, a distributor may have warehouse operations where employees would be protected under the limited sealed container provisions. In this situation, requirements for obtaining and maintaining MSDSs are limited to providing access to those received with containers while the substance is in the workplace, and requesting MSDSs when employees request access for those not received with the containers. However, as a distributor of hazardous chemicals, that employer will still have responsibilities for providing MSDSs to downstream customers at the time of the first shipment and when the MSDS is updated. Therefore, although they may not be required for the employees in the work operation, the distributor may, nevertheless, have to have MSDSs to satisfy other requirements of the rule.

2. "Identify Responsible Staff"

Hazard communication is going to be a continuing program in your facility. Compliance with the HCS is not a "one shot deal." In order to have a successful program, it will be necessary to assign responsibility for both the initial and ongoing activities that have to be undertaken to comply with the rule. In some cases, these activities may already be part of current job assignments. For example, site supervisors are frequently responsible for on-the-job training sessions. Early identification of the responsible employees, and involvement of them in the development of your plan of action, will result in a more effective program design. Evaluation of the effectiveness of your program will also be enhanced by involvement of affected employees.

For any safety and health program, success depends on commitment at every level of the organization. This is particularly true for hazard communication, where success requires a change in behavior. This will only occur if employers understand the program, and are

committed to its success, and if employees are motivated by the people presenting the information to them.

3. "Identify Hazardous Chemicals in the Workplace."

The standard requires a list of hazardous chemicals in the workplace as part of the written hazard communication program. The list will eventually serve as an inventory of everything for which an MSDS must be maintained. At this point, however, preparing the list will help you complete the rest of the program since it will give you some idea of the scope of the program required for compliance in your facility.

The best way to prepare a comprehensive list is to survey the workplace. Purchasing records may also help, and certainly employers should establish procedures to ensure that in the future purchasing procedures result in MSDSs being received before a material is used in the workplace.

The broadest possible perspective should be taken when doing the survey. Sometimes people think of "chemicals" as being only liquids in containers. The HCS covers chemicals in all physical forms - liquids, solids, gases, vapors, fumes, and mists - whether they are "contained" or not. The hazardous nature of the chemical and the potential for exposure are the factors which determine whether a chemical is covered. If it's not hazardous, it's not covered. If there is no potential for exposure (e.g., the chemical is inextricably bound and cannot be released), the rule does not cover the chemical.

Look around. Identify chemicals in containers, including pipes, but also think about chemicals generated in the work operations. For example, welding fumes, dusts, and exhaust fumes are all sources of chemical exposures. Read labels provided by suppliers for hazard information. Make a list of all chemicals in the workplace that are potentially hazardous. For your own information and planning, you may also want to note on the list the location(s) of the products within the workplace, and an indication of the hazards as found on the label. This will help you as you prepare the rest of your program.

Paragraph (b) of this section, scope and application, includes exemptions for various chemicals or workplace situations. After compiling the complete list of chemicals, you should review paragraph (b) of this section to determine if any of the items can be eliminated from the list because they are exempted materials. For example, food, drugs, and cosmetics brought into the workplace for employee consumption are exempt. So rubbing alcohol in the first aid kit would not be covered.

Once you have compiled as complete a list as possible of the potentially hazardous chemicals in the workplace, the next step is to determine if you have received material safety data sheets for all of them. Check your files against the inventory you have just compiled. If any are missing, contact your supplier and request one. It is a good idea to document these requests, either by copy of a letter or a note regarding telephone conversations. If you have MSDSs for chemicals that are not on your list, figure out why. Maybe you don't use the chemical anymore. Or maybe you missed it in your survey. Some suppliers do provide MSDSs for products that are not hazardous. These do not have to be maintained by you.

You should not allow employees to use any chemicals for which you have not received an MSDS. The MSDS provides information you need to ensure proper protective measures are implemented prior to exposure.

4. "Preparing and Implementing a Hazard Communication Program"

All workplaces where employees are exposed to hazardous chemicals must have a written plan which describes how the standard will be implemented in that facility. Preparation of a plan is not just a paper exercise - all of the elements must be implemented in the workplace in order to be in compliance with the rule. See paragraph (e) of this section for the specific requirements regarding written hazard communication programs. The only work operations which do not have to comply with the written plan requirements are laboratories and work operations where employees only handle chemicals in sealed containers. See paragraph (b) of this section, scope and application, for the specific requirements for these two types of workplaces.

The plan does not have to be lengthy or complicated. It is intended to be a blueprint for implementation of your program - an assurance that all aspects of the requirements have been addressed.

Many trade associations and other professional groups have provided sample programs and other assistance materials to affected employers. These have been very helpful to many employers since they tend to be tailored to the particular industry involved. You may wish to investigate whether your industry trade groups have developed such materials.

Although such general guidance may be helpful, you must remember that the written program has to reflect what you are doing in your workplace. Therefore, if you use a generic program it must be adapted to address the facility it covers. For example, the written plan must list the chemicals present at the site, indicate who is to be responsible for the various aspects of the program in your facility, and indicate where written materials will be made available to employees.

If OSHA inspects your workplace for compliance with the HCS, the OSHA compliance officer will ask to see your written plan at the outset of the inspection. In general, the following items will be considered in evaluating your program.

The written program must describe how the requirements for labels and other forms of warning, material safety data sheets, and employee information and training, are going to be met in your facility. The following discussion provides the type of information compliance officers will be looking for to decide whether these elements of the hazard communication program have been properly addressed:

A. "Labels and Other Forms of Warning"

In-plant containers of hazardous chemicals must be labeled, tagged, or marked with the identity of the material and appropriate hazard warnings. Chemical manufacturers, importers, and distributors are required to ensure that every container of hazardous chemicals they ship is appropriately labeled with such information and with the name and address of the producer

or other responsible party. Employers purchasing chemicals can rely on the labels provided by their suppliers. If the material is subsequently transferred by the employer from a labeled container to another container, the employer will have to label that container unless it is subject to the portable container exemption. See paragraph (f) of this section for specific labeling requirements.

The primary information to be obtained from an OSHA-required label is an identity for the material, and appropriate hazard warnings. The identity is any term which appears on the label, the MSDS, and the list of chemicals, and thus links these three sources of information. The identity used by the supplier may be a common or trade name ("Black Magic Formula"), or a chemical name (1,1,1-trichloroethane). The hazard warning is a brief statement of the hazardous effects of the chemical ("flammable," "causes lung damage"). Labels frequently contain other information, such as precautionary measures ("do not use near open flame"), but this information is provided voluntarily and is not required by the rule. Labels must be legible, and prominently displayed. There are no specific requirements for size or color, or any specified text.

With these requirements in mind, the compliance officer will be looking for the following types of information to ensure that labeling will be properly implemented in your facility:

1. Designation of person(s) responsible for ensuring labeling of in-plant containers;
2. Designation of person(s) responsible for ensuring labeling of any shipped containers;
3. Description of labeling system(s) used;
4. Description of written alternatives to labeling of in-plant containers (if used); and,
5. Procedures to review and update label information when necessary.

Employers that are purchasing and using hazardous chemicals - rather than producing or distributing them - will primarily be concerned with ensuring that every purchased container is labeled. If materials are transferred into other containers, the employer must ensure that these are labeled as well, unless they fall under the portable container exemption (paragraph (f)(7) of this section). In terms of labeling systems, you can simply choose to use the labels provided by your suppliers on the containers. These will generally be verbal text labels, and do not usually include numerical rating systems or symbols that require special training. The most important thing to remember is that this is a continuing duty - all in-plant containers of hazardous chemicals must always be labeled. Therefore, it is important to designate someone to be responsible for ensuring that the labels are maintained as required on the containers in your facility, and that newly purchased materials are checked for labels prior to use.

B. "Material Safety Data Sheets"

Chemical manufacturers and importers are required to obtain or develop a material safety data sheet for each hazardous chemical they produce or import. Distributors are responsible for ensuring that their customers are provided a copy of these MSDSs. Employers must have an MSDS for each hazardous chemical which they use. Employers may rely on the

information received from their suppliers. The specific requirements for material safety data sheets are in paragraph (g) of this section. There is no specified format for the MSDS under the rule, although there are specific information requirements. OSHA has developed a non-mandatory format, OSHA Form 174, which may be used by chemical manufacturers and importers to comply with the rule. The MSDS must be in English. You are entitled to receive from your supplier a data sheet which includes all of the information required under the rule. If you do not receive one automatically, you should request one. If you receive one that is obviously inadequate, with, for example, blank spaces that are not completed, you should request an appropriately completed one. If your request for a data sheet or for a corrected data sheet does not produce the information needed, you should contact your local OSHA Area Office for assistance in obtaining the MSDS.

The role of MSDSs under the rule is to provide detailed information on each hazardous chemical, including its potential hazardous effects, its physical and chemical characteristics, and recommendations for appropriate protective measures. This information should be useful to you as the employer responsible for designing protective programs, as well as to the workers. If you are not familiar with material safety data sheets and with chemical terminology, you may need to learn to use them yourself. A glossary of MSDS terms may be helpful in this regard. Generally speaking, most employers using hazardous chemicals will primarily be concerned with MSDS information regarding hazardous effects and recommended protective measures. Focus on the sections of the MSDS that are applicable to your situation.

MSDSs must be readily accessible to employees when they are in their work areas during their workshifts. This may be accomplished in many different ways. You must decide what is appropriate for your particular workplace. Some employers keep the MSDSs in a binder in a central location (e.g., in the pick-up truck on a construction site). Others, particularly in workplaces with large numbers of chemicals, computerize the information and provide access through terminals. As long as employees can get the information when they need it, any approach may be used. The employees must have access to the MSDSs themselves - simply having a system where the information can be read to them over the phone is only permitted under the mobile worksite provision, paragraph (g)(9) of this section, when employees must travel between workplaces during the shift. In this situation, they have access to the MSDSs prior to leaving the primary worksite, and when they return, so the telephone system is simply an emergency arrangement.

In order to ensure that you have a current MSDS for each chemical in the plant as required, and that employee access is provided, the compliance officers will be looking for the following types of information in your written program:

1. Designation of person(s) responsible for obtaining and maintaining the MSDSs;
2. How such sheets are to be maintained in the workplace (e.g., in notebooks in the work area(s) or in a computer with terminal access), and how employees can obtain access to them when they are in their work area during the work shift;
3. Procedures to follow when the MSDS is not received at the time of the first shipment;

4. For producers, procedures to update the MSDS when new and significant health information is found; and,

5. Description of alternatives to actual data sheets in the workplace, if used.

For employers using hazardous chemicals, the most important aspect of the written program in terms of MSDSs is to ensure that someone is responsible for obtaining and maintaining the MSDSs for every hazardous chemical in the workplace. The list of hazardous chemicals required to be maintained as part of the written program will serve as an inventory. As new chemicals are purchased, the list should be updated. Many companies have found it convenient to include on their purchase orders the name and address of the person designated in their company to receive MSDSs.

C. "Employee Information and Training"

Each employee who may be "exposed" to hazardous chemicals when working must be provided information and trained prior to initial assignment to work with a hazardous chemical, and whenever the hazard changes. "Exposure" or "exposed" under the rule 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." See paragraph (h) of this section for specific requirements. Information and training may be done either by individual chemical, or by categories of hazards (such as flammability or carcinogenicity). If there are only a few chemicals in the workplace, then you may want to discuss each one individually. Where there are large numbers of chemicals, or the chemicals change frequently, you will probably want to train generally based on the hazard categories (e.g., flammable liquids, corrosive materials, carcinogens). Employees will have access to the substance-specific information on the labels and MSDSs.

Information and training is a critical part of the hazard communication program. Information regarding hazards and protective measures are provided to workers through written labels and material safety data sheets. However, through effective information and training, workers will learn to read and understand such information, determine how it can be obtained and used in their own workplaces, and understand the risks of exposure to the chemicals in their workplaces as well as the ways to protect themselves. A properly conducted training program will ensure comprehension and understanding. It is not sufficient to either just read material to the workers, or simply hand them material to read. You want to create a climate where workers feel free to ask questions. This will help you to ensure that the information is understood. You must always remember that the underlying purpose of the HCS is to reduce the incidence of chemical source illnesses and injuries. This will be accomplished by modifying behavior through the provision of hazard information and information about protective measures. If your program works, you and your workers will better understand the chemical hazards within the workplace. The procedures you establish regarding, for example, purchasing, storage, and handling of these chemicals will improve, and thereby reduce the risks posed to employees exposed to the chemical hazards involved. Furthermore, your workers' comprehension will also be increased, and proper work practices will be followed in your workplace.

If you are going to do the training yourself, you will have to understand the material and be prepared to motivate the workers to learn. This is not always an easy task, but the benefits are worth the effort. More information regarding appropriate training can be found in OSHA Publication No. 2254 which contains voluntary training guidelines prepared by OSHA's Training Institute. A copy of this document is available from OSHA's Publications Office at (202) 219-4667. In reviewing your written program with regard to information and training, the following items need to be considered:

1. Designation of person(s) responsible for conducting training;
2. Format of the program to be used (audiovisuals, classroom instruction, etc.);
3. Elements of the training program (should be consistent with the elements in paragraph (h) of this section); and,
4. Procedure to train new employees at the time of their initial assignment to work with a hazardous chemical, and to train employees when a new hazard is introduced into the workplace.

The written program should provide enough details about the employer's plans in this area to assess whether or not a good faith effort is being made to train employees. OSHA does not expect that every worker will be able to recite all of the information about each chemical in the workplace. In general, the most important aspects of training under the HCS are to ensure that employees are aware that they are exposed to hazardous chemicals, that they know how to read and use labels and material safety data sheets, and that, as a consequence of learning this information, they are following the appropriate protective measures established by the employer. OSHA compliance officers will be talking to employees to determine if they have received training, if they know they are exposed to hazardous chemicals, and if they know where to obtain substance-specific information on labels and MSDSs.

The rule does not require employers to maintain records of employee training, but many employers choose to do so. This may help you monitor your own program to ensure that all employees are appropriately trained. If you already have a training program, you may simply have to supplement it with whatever additional information is required under the HCS. For example, construction employers that are already in compliance with the construction training standard (29 CFR 1926.21) will have little extra training to do.

An employer can provide employees information and training through whatever means are found appropriate and protective. Although there would always have to be some training on-site (such as informing employees of the location and availability of the written program and MSDSs), employee training may be satisfied in part by general training about the requirements of the HCS and about chemical hazards on the job which is provided by, for example, trade associations, unions, colleges, and professional schools. In addition, previous training, education and experience of a worker may relieve the employer of some of the burdens of informing and training that worker. Regardless of the method relied upon, however, the employer is always ultimately responsible for ensuring that employees are adequately trained. If the compliance officer finds that the training is deficient, the employer

will be cited for the deficiency regardless of who actually provided the training on behalf of the employer.

D. "Other Requirements"

In addition to these specific items, compliance officers will also be asking the following questions in assessing the adequacy of the program:

Does a list of the hazardous chemicals exist in each work area or at a central location?

Are methods the employer will use to inform employees of the hazards of non-routine tasks outlined?

Are employees informed of the hazards associated with chemicals contained in unlabeled pipes in their work areas?

On multi-employer worksites, has the employer provided other employers with information about labeling systems and precautionary measures where the other employers have employees exposed to the initial employer's chemicals?

Is the written program made available to employees and their designated representatives?

If your program adequately addresses the means of communicating information to employees in your workplace, and provides answers to the basic questions outlined above, it will be found to be in compliance with the rule.

5. "Checklist for Compliance"

The following checklist will help to ensure you are in compliance with the rule:

Obtained a copy of the rule.	_____
Read and understood the requirements.	_____
Assigned responsibility for tasks.	_____
Prepared an inventory of chemicals.	_____
Ensured containers are labeled.	_____
Obtained MSDS for each chemical.	_____
Prepared written program.	_____
Made MSDSs available to workers.	_____
Conducted training of workers.	_____
Established procedures to maintain current program.	_____
Established procedures to evaluate effectiveness.	_____

6. "Further Assistance"

If you have a question regarding compliance with the HCS, you should contact your local OSHA Area Office for assistance. In addition, each OSHA Regional Office has a Hazard Communication Coordinator who can answer your questions. Free consultation services are also available to assist employers, and information regarding these services can be obtained through the Area and Regional offices as well.

The telephone number for the OSHA office closest to you should be listed in your local telephone directory. If you are not able to obtain this information, you may contact OSHA's Office of Information and Consumer Affairs at (202) 219-8151 for further assistance in identifying the appropriate contacts.

[52 FR 31877, Aug. 24, 1987; 52 FR 46080, Dec. 4, 1987; 53 FR 15035, Apr. 27, 1988; 54 FR 6888, Feb. 15, 1989; 54 FR 24334, June 7, 1989; 59 FR 6170, Feb. 9, 1994; 59 FR 17479, April 13, 1994; 59 FR 65947, Dec. 22, 1994; 61 FR 5507, Feb. 13, 1996; 61 FR 9227, March 7, 1996]

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OSHA Regulations (Standards - 29 CFR) Hazard Communication. - 1926.59

- **Standard Number:** 1926.59
 - **Standard Title:** Hazard Communication.
 - **SubPart Number:** D
 - **SubPart Title:** Occupational Health and Environmental Controls
 - **Applicable Standard:** Applicable Standard:
-

Note: The requirements applicable to construction work under this section are identical to those set forth at 1910.1200 of this chapter.

[52 FR 31877, Aug. 24, 1987, as amended at 53 FR 15035, Apr. 27, 1988; 54 FR 24334, June 7, 1989; 59 FR 6170, Feb. 9, 1994; 59 FR 17479, April 13, 1994; 59 FR 65947, Dec. 22, 1994; 61 FR 31427, June 20, 1996]

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- [\[08/01/1990\] OSHA's Hazard Communication Standard.](#)
- [\[07/23/1990\] Regarding the application of the OSHA's Hazard Communication Standard to the labeling of fabricated products.](#)
- [\[07/17/1990\] Hazard Communication Standard](#)
- [\[07/06/1990\] Interpretation on whether "an equivalent electronic information system" could be used in lieu of MSDSs to satisfy the HCS.](#)
- [\[06/27/1990\] "Guidelines for the preparation of warning labels for carbon and graphite electrical products".](#)
- [\[06/14/1990\] OSHA's Hazard Communication Standard.](#)
- [\[06/14/1990\] Concerning the conditions under which material data safety sheets are required.](#)
- [\[06/04/1990\] Provision of computer generated or FAX transmission MSDSs](#)
- [\[05/16/1990\] Regarding labeling requirements under the OSHA's Hazard Communication Standard.](#)
- [\[05/16/1990\] Application of the HCS MSDS requirements to distributors selling hazardous chemicals to consumers and employers.](#)
- [\[04/04/1990\] Letter to Diesel Fuel Manufacturers](#)
- [\[04/03/1990\] Hazard Communication Standard.](#)
- [\[03/20/1990\] HCS on Hazard warnings required on product labels](#)
- [\[03/19/1990\] Recommendations to Increase Availability of SAVES to the Field](#)
- [\[03/13/1990\] 29 CFR 1910.1200 as it applies to beauty salons](#)
- [\[02/28/1990\] Dole v. Steelworkers, Supreme Court decision](#)
- [\[02/14/1990\] Application of the Hazard Communication Standard \(HCS\) to Independent beauty salon Contractors](#)

- [\[02/07/1990\] The transmittal of material safety data sheets \(MSDS\).](#)
- [\[01/29/1990\] OSHA requirements for cleaning chemicals.](#)
- [\[01/24/1990\] The hazard communication standard requirements for food or food additives.](#)
- [\[01/22/1990\] Hazard Communication Standard.](#)
- [\[01/09/1990\] Procedures a demolition and salvage constructor could employ in lieu of providing material safety data sheets for specific metals.](#)
- [\[01/09/1990\] Provision of MSDSs for consumer products used in the workplace](#)
- [\[01/05/1990\] Definition of "article" under the HCS in reference to medical supplies and devices.](#)
- [\[12/28/1989\] Clarification on OSHA's Hazard Communication Standard.](#)
- [\[12/04/1989\] Carcinogen labeling requirements of the Hazard Communication Standard.](#)
- [\[09/01/1989\] Hospital technicians required to attend HCS training and a clarification of coverage of pharmaceuticals under the HCS.](#)
- [\[08/31/1989\] Whether labels and material safety data sheets \(MSDS\) must be provided to downstream manufacturers and processors for orlon or orlon blend yarns.](#)
- [\[08/21/1989\] Enforcement of OSHA's Hazard Communication Standard in the construction industry.](#)
- [\[08/07/1989\] Hazard Communication Standard \(HCS\) Material Safety Data Sheet Requirements for the Construction Industry.](#)
- [\[07/31/1989\] Maintenance of material safety data sheets\(MSDS\) and the written hazard communication program.](#)
- [\[07/31/1989\] Hazard Communication Standard.](#)
- [\[07/28/1989\] Material safety data sheet requirement of the Hazard Communication Standard.](#)
- [\[07/26/1989\] Labeling requirements of the Hazard Communication Standard.](#)
- [\[07/24/1989\] OSHA's Hazard Communication Standard.](#)
- [\[07/20/1989\] Requirements for downstream transmission of material safety data sheets \(MSDSs\).](#)
- [\[07/17/1989\] Hazard Communication Standard \(HCS\) Labeling Requirements for Industrial Thermometers](#)
- [\[07/11/1989\] The hazard warning labels attached to shipments of solder.](#)
- [\[07/11/1989\] Clarification of the label requirements of the OSHA Hazard Communication Standard \(HCS\).](#)
- [\[07/06/1989\] Labeling and material safety data sheet requirements under the Hazard Communication Standard.](#)
- [\[06/20/1989\] Application of the Hazard Communication Standard to prescription drug products.](#)
- [\[06/05/1989\] Interpretation of the HCS as it relates to laboratories and requirements with respect MSDSs.](#)
- [\[05/03/1989\] HCS requirements applicable to oil and gas producers.](#)
- [\[05/02/1989\] Consumer product exemption under the OSHA Hazard Communication Standard \(HCS\).](#)
- [\[05/01/1989\] HCS does not require a particular labeling system's code on the MSDS.](#)

- [\[04/24/1989\] MSDS distribution requirements for chemical manufacturers and importers, distributors and retail distributors.](#)
- [\[03/31/1989\] Applicability of the HCS to office workers and copy machine operators.](#)
- [\[03/17/1989\] Revised Hazard Communication Standard \(HCS\) Instruction, CPL 2-2. 38B CH-1](#)
- [\[03/15/1989\] Application of the HCS to certain products containing crystalline silica.](#)
- [\[03/03/1989\] Distributor's and retailer's responsibilities for providing MSDSs.](#)
- [\[02/17/1989\] Listing of decomposition products on MSDSs where they are present during normal use or only in the event of a fire.](#)
- [\[02/16/1989\] Labelling requirements for chemicals transported to another plant of the same company under the HCS.](#)
- [\[02/15/1989\] Distributor of health care products would be a "distributor" rather than a "retail distributor" under the HCS.](#)
- [\[02/08/1989\] Applicability of the HCS to crystalline silica, when bound in a polymeric compound and silicone rubber elastomers.](#)
- [\[01/23/1989\] Applicability of the HCS to an employer using portland cement.](#)
- [\[01/19/1989\] Letter to Paul W. Davis from Thomas Shepich concerning requirements of the HCS regarding manufacturer provision of MSDSs with first shipments of hazardous chemicals.](#)
- [\[01/13/1989\] Response to request for OSHA endorsement of a distributor's program for downstream transmittal of MSDSs.](#)
- [\[12/22/1988\] Applicability of the HCS to diesel exhaust emissions and diesel fuel.](#)
- [\[12/05/1988\] MSDS distribution responsibilities for chemical manufacturers and importers, distributors and retail distributors.](#)
- [\[12/01/1988\] Hazard determination criteria for corrosive liquids.](#)
- [\[11/17/1988\] Applicability of the Hazard Communication Standard to stevedores in the containerized shipping industry.](#)
- [\[11/10/1988\] Lift trucks or other machines found in the workplace are not containers for labeling requirements of the HCS.](#)
- [\[10/24/1988\] Hazard determination and MSDS requirements under the Hazard Communication Standard \(HCS\).](#)
- [\[09/20/1988\] Crystalline silica considered a carcinogen under the HCS.](#)
- [\[08/17/1988\] Exemption of hazardous waste samples sent to a laboratory for analysis from the Hazard Communication Standard.](#)
- [\[07/18/1988\] Enforcement of the Hazard Communication Standard](#)
- [\[06/30/1988\] Copies of MSDSs and the written hazard communication program must be provided to an employee representative.](#)
- [\[06/27/1988\] Overwarning on Hazard Labels](#)
- [\[06/16/1988\] HCS training for employees contracted to jobs working under the supervision of another employer.](#)
- [\[06/14/1988\] Letter to Lawrence N. Curcio from Thomas Shepich concerning requirements of the HCS on labeling of IARC category 2B carcinogens.](#)
- [\[06/10/1988\] Clarification of Material Safety Data Sheet Requirements Under the Hazard Communication Standard.](#)

- [\[05/16/1988\] Office workers routinely performing short clean up procedures using chemicals covered by the HCS.](#)
- [\[05/12/1988\] Material Safety Data Sheet Requirements Under the Hazard Communication Standard.](#)
- [\[05/11/1988\] Employers are responsible for training new employees on the HCS](#)
- [\[05/11/1988\] Articles such as styrofoam and white-out exempt from HCS requirements in florist shops.](#)
- [\[05/06/1988\] Retraining employees who have been previously trained by another employer.](#)
- [\[04/21/1988\] Material safety data sheets for liquid plant food.](#)
- [\[04/17/1988\] Applicability of the HCS to alpha-alumina](#)
- [\[04/11/1988\] Definition of "distributor" and "retail distributor" as used in paragraph 29 CFR 1910.1200\(g\)\(7\).](#)
- [\[04/10/1988\] The employer must provide the 1910.1200 verbal training in a language that is comprehensible.](#)
- [\[02/24/1988\] Requirements for labels in a language other than English.](#)
- [\[02/16/1988\] Hexavalent chromium in photocopier toners.](#)
- [\[12/11/1987\] Clarification of requirements for 40 hours of training.; Site specific training is required for employees who receive general training.](#)
- [\[12/07/1987\] Coverage of wood dust under the Hazard Communication Standard \(HCS\)](#)
- [\[11/23/1987\] Standards applicable to the process of wrapping meat in plastic.](#)
- [\[11/20/1987\] Applicability of the revised Hazard Communication Standard to the grain industry.](#)
- [\[11/02/1987\] Need to supply a material safety data sheet for oil lubricated compressors.](#)
- [\[10/26/1987\] Labeling and MSDSs for a stump router cutter head which has carbide tips on the cutter teeth.](#)
- [\[10/09/1987\] Clarification of Material Safety Data Sheet Requirements Under the Hazard Communication Standard.](#)
- [\[10/05/1987\] Additional requirements for distributors from the August 24, 1987 expansion of the HCS.](#)
- [\[10/01/1987\] Retention requirements for superseded MSDSs.](#)
- [\[09/17/1987\] Definitions of target organ and hazards of chemicals under the Hazard Communication Standard.](#)
- [\[09/17/1987\] Application of the Hazard Communication Standard to art materials industry.](#)
- [\[09/10/1987\] National Paint and Coatings Association's \(NPCA\) Health Effects Labeling Approach](#)
- [\[08/25/1987\] Presence of chromium in monocomponent photocopier toner is under investigation.](#)
- [\[08/18/1987\] Applicability of the HCS to manufacturers of steel coils.](#)
- [\[08/07/1987\] Cancer warning labels for formaldehyde and products containing formaldehyde.](#)
- [\[06/29/1987\] The HCS's requirement for target organ effects on labels for shipped containers of hazardous chemicals.](#)

- [\[06/24/1987\] IARC listing of boot and shoe manufacturing and repair as an occupation associated with cancer in humans.](#)
- [\[06/11/1987\] HMIS for meeting labeling requirements of the HCS.](#)
- [\[06/01/1987\] Labeling of Lead Chromate Under the Hazard Communication Standard](#)
- [\[05/21/1987\] HMIS use in meeting the in-plant labeling requirements of the HCS.](#)
- [\[05/04/1987\] Evaluation of labeling system which was designed to meet the requirements of the HCS.](#)
- [\[01/20/1987\] Clarification of the terms "appropriate hazard warning" and "mandatory".](#)
- [\[11/25/1986\] Interpretation given in the Federal Register on December 20, 1985 describing mild petroleum hydrotreatment is appropriate.](#)
- [\[11/10/1986\] Requirements for target organ effects on labels under the Hazard Communication standard.](#)
- [\[10/25/1986\] Interpretation on availability of emergency information under the Hazard Communication Standard.](#)
- [\[10/15/1986\] Target organ labeling requirements for shipped containers.](#)
- [\[10/02/1986\] High speed cobalt steel drill bits evaluated as a "article" under the Hazard Communication Standard.](#)
- [\[09/26/1986\] General information related to the Hazard Communication standard.](#)
- [\[09/16/1986\] Hazard Communication Standard as it applies to wholesalers and distributors of hazardous chemicals.](#)
- [\[09/09/1986\] Labeling of Formaldehyde-Containing Products Under the Hazard Communication Standard](#)
- [\[08/18/1986\] Requirements for listing multiple exposure limits on MSDSs under the HCS.](#)
- [\[08/13/1986\] Explanation of HCS labeling requirements to the National Association of Printing Ink Manufacturers.](#)
- [\[08/11/1986\] Labeling requirements for bulk shipments of metallic scrap under the HCS.](#)
- [\[08/11/1986\] Applicability of HCS standard to shipment of truck parts.](#)
- [\[08/05/1986\] Establishing carcinogenicity of sodium and potassium salts of chromate and dichromate.](#)
- [\[07/02/1986\] Requirements under the Hazard Communication standard for visibility of labels on shipments of palletized bags.](#)
- [\[07/02/1986\] Requirements for fingerprint powders containing carbon black under the Hazard Communication Standard.](#)
- [\[06/30/1986\] Application of the HCS to Borax Powered Hand Soap.](#)
- [\[06/17/1986\] Application of the Hazard Communication standard to waste oils.](#)
- [\[05/28/1986\] Indication of Carcinogenicity on Material Safety Data Sheets](#)
- [\[05/23/1986\] Application of the HCS to non-manufacturing scrap dealers who collect waste metal for resale.](#)
- [\[05/19/1986\] Workers performing welding should have access to MSDSs for each type of metal and welding rod used.](#)
- [\[05/06/1986\] Criteria for severe solvent refinement under the Hazard Communication Standard.](#)
- [\[05/01/1986\] Applicability of the Hazard Communication standard to pesticides.](#)

- [\[04/30/1986\] Labeling requirements for containers of polyvinyl chloride; Labeling requirements for containers of polyvinyl chloride; Labeling requirements for containers of polyvinyl chloride.](#)
- [\[04/08/1986\] Requirements of the Hazard Communication Standard as it applies to the metal chips and other scrap material.](#)
- [\[04/08/1986\] MSDS requirements for non-domestic shipments.](#)
- [\[04/07/1986\] Labeling and MSDS requirements for product containing trace quantities of ethylene oxide.; Criterion that must be satisfied in order to assert that a product or operation is exempt for the EtO Standar](#)
- [\[03/21/1986\] Application of the HCS to flavor extracts](#)
- [\[03/20/1986\] Applicability of the HCS to castings.](#)
- [\[03/17/1986\] Application of the Hazard Communication Standard to lift trucks.](#)
- [\[03/12/1986\] Hazard evaluation requirements under the Hazard Communication standard.](#)
- [\[03/11/1986\] MSDS and labeling requirements for copper or aluminum wire or metal products.](#)
- [\[03/04/1986\] Classification of foundry products such as castings in relation to the HCS.](#)
- [\[02/14/1986\] MSDS should be distributed for welding wire containing hazardous chemicals.](#)
- [\[01/31/1986\] Hazard Communication Standard inspections](#)
- [\[01/29/1986\] Interpretation of the Hazard Communication standard as it applies to mixtures.](#)
- [\[01/16/1986\] Application of the Hazard Communication standard to a nuisance particulate.](#)
- [\[01/15/1986\] Coverage of steel, aluminum, and other metals under the Hazard Communication Standard.](#)
- [\[01/13/1986\] Maintaining MSDSs on a computer data base.](#)
- [\[01/03/1986\] Conformation of labeling requirements of the Hazard Communication Standard](#)
- [\[12/10/1985\] Preparing a Material Safety Data Sheet under the trade secret provisions of the Hazard Communication Standard.](#)
- [\[12/02/1985\] Inspection procedures for the Hazard Communication Standard.](#)
- [\[10/04/1985\] Generic MSDSs to cover different products that contain the same chemicals in different proportions.](#)
- [\[09/25/1985\] There is no requirement for employers to respond to requests for material safety data sheets \(MSDS\) for old products.](#)
- [\[09/04/1985\] Twenty-four hour coverage for emergency telephone numbers.](#)
- [\[09/04/1985\] MSDS and label requirements for an antiknock compound containing EDB, EDC, and tetraethyl lead.](#)
- [\[07/17/1985\] Response to a request that foundry castings be classified as articles under the Hazard Communication standard.](#)
- [\[07/09/1985\] MSDS requirements for complex mixtures with similar hazards.](#)
- [\[03/04/1985\] Position on MSDS format for compliance with the Hazard Communication standard.](#)
- [\[09/25/1984\] Requirements for alternate warning methods, delays between filling and labeling a chemical container, and label identification of mixtures under HCS.](#)

- [\[09/14/1984\] Relationship between the hazard communication standard and the Department of Defense's requirement for safeguarding classified information.](#)
- [\[08/01/1984\] MSDS requirements for products that are composed of a mixture of non-interacting chemicals.](#)

Information found June 26, 2000 at

http://www.osha-slc.gov/OshDoc/Interp_Std_toc/Interp_TOC_for_1910_1200.html?Interpretation%28s%29=Interpretation%28s%29

One Hour Safety Presentation

One Hour Safety Presentation

The main goal of the Division of Safety & Hygiene is the reduction of accidents and illnesses in the workplace. Toward this goal, the One Hour Safety presentation is designed to support the delivery of a presentation to co-workers in your workplace to help them understand and promote safer and healthier work environments. It is recommended that you take the DSH Training Center course as a background for using One Hour Safety Presentation to train others at your workplace. Call 1-800-OHIOBWC, option 2, 2, 2 for class dates and locations.

The One Hour Safety Presentation contains:

- Transparency Masters from which films can be made to use on an overhead projector,
- Instructor Notes which gives the instructor suggestions and script notations to use during the presentation, and
- Student Handouts which can be copied for those attending the presentation.

Materials are included for a one-hour presentation on each of these topics:

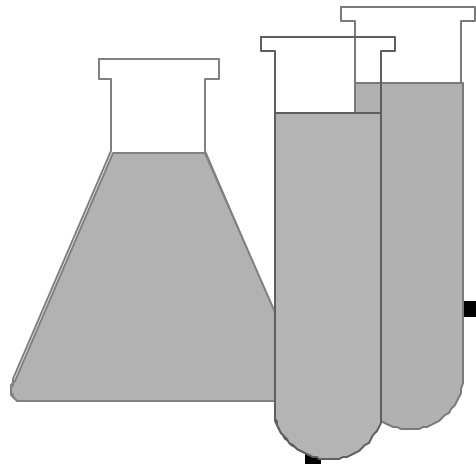
- ✓ Accident Analysis
- ✓ Bloodborne Pathogens
- ✓ Effective Safety Teams
- ✓ Enhancing Safety through a Drug-Free Workplace
- ✓ Ergonomics Basic Principles
- ✓ Ergonomics Developing an Effective Process
- ✓ Hazard Communication
- ✓ Lockout/Tagout and Safety-related Work Practices
- ✓ Machine Guarding Basics
- ✓ Measuring Safety Performance
- ✓ Powered Industrial Trucks Training Program
- ✓ Respiratory Protection
- ✓ Violence in the Workplace

Applications used:

- 1) Text documents (ending in .txt) can be opened with any word processing program.
- 2) Microsoft PowerPoint slides (ending in .ppt) can be opened with the Microsoft PowerPoint program. If you do not have PowerPoint and you do have Windows 95, 98, 2000 or Windows NT operating system, you can view the PowerPoint slides by downloading a free PowerPoint Viewer from the following website:
<http://office.microsoft.com/downloads/default.aspx?Product=PowerPoint&Version=95|97|98|2000|2002&Type=Converter|Viewer>
- 3) Adobe Reader document (ending in .pdf) contains the One Hour Safety Presentation in read-only format. It can be opened when you download Adobe Reader, which is available free of charge at the following website:
<http://www.adobe.com/products/acrobat/readstep2.html>

If you have comments or questions about these materials for One Hour Safety Presentation, please e-mail us: OCOSHTrng@bwc.state.oh.us

Transparency Masters

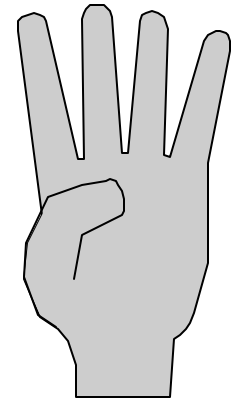


HAZARD COMMUNICATIONS

OSHA 29 CFR 1910.1200



Requirements of the Standard



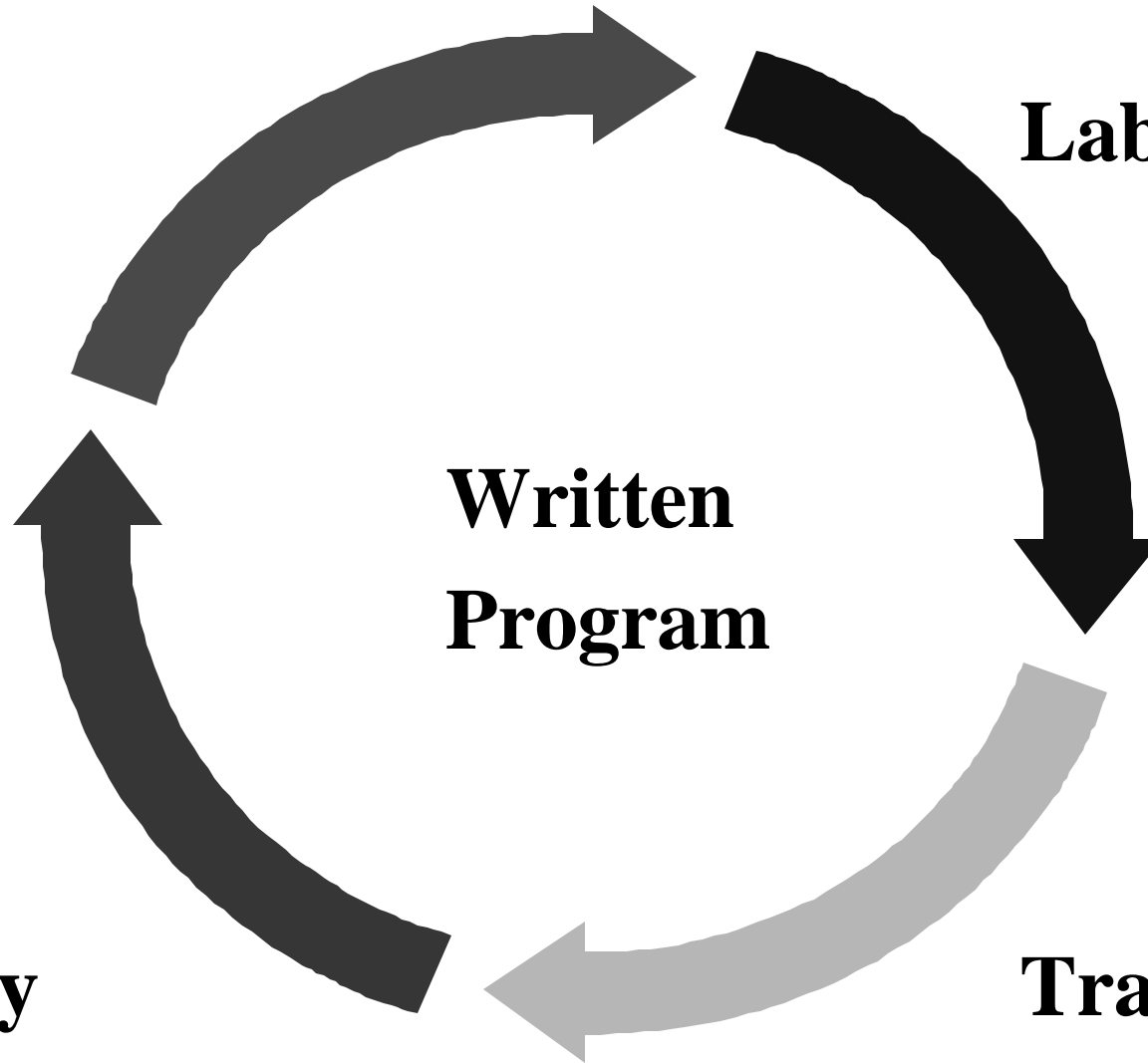
MSDS

Labeling

**Written
Program**

Inventory

Training

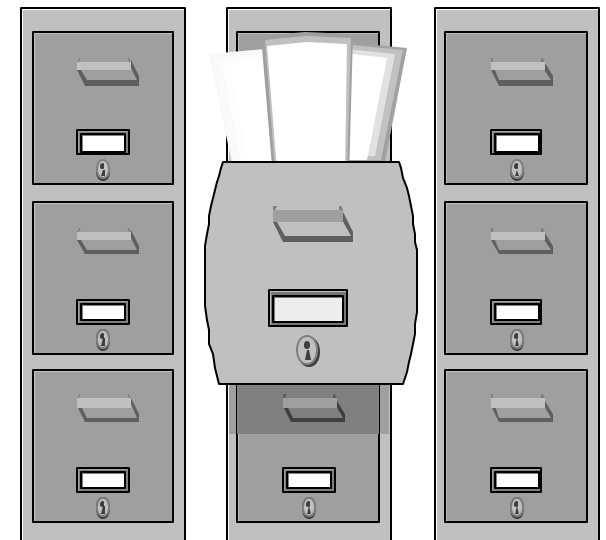


HOW TO CONDUCT A WORKPLACE INVENTORY

- ▼ **Identify Materials By Department.**
- ▼ **Note Operations Performed Dept. By Dept.**
- ▼ **Look at Labeling.**
- ▼ **Identify Material by Processes.**
- ▼ **Look at materials use by other Contractors.**
- ▼ **Look at materials on site and in storage.**
- ▼ **Look in all areas.**

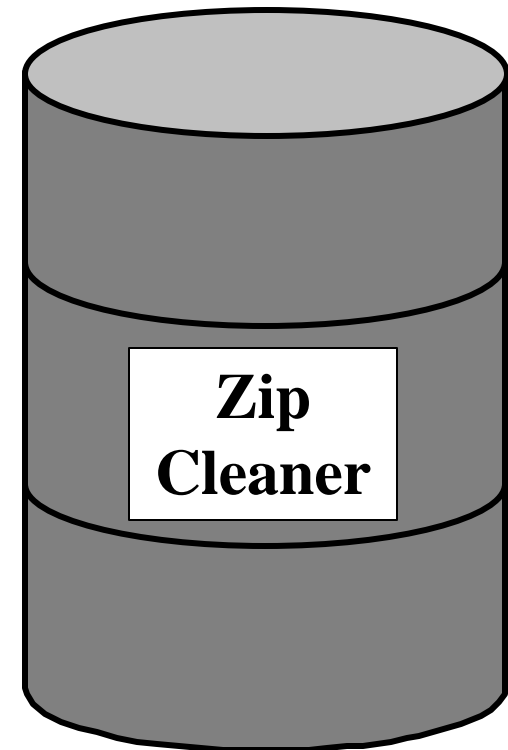
Material Safety Data Sheets (MSDS)

- ▼ Purpose
- ▼ What Information they provide
- ▼ Readily accessible/complete/retain
- ▼ Someone responsible



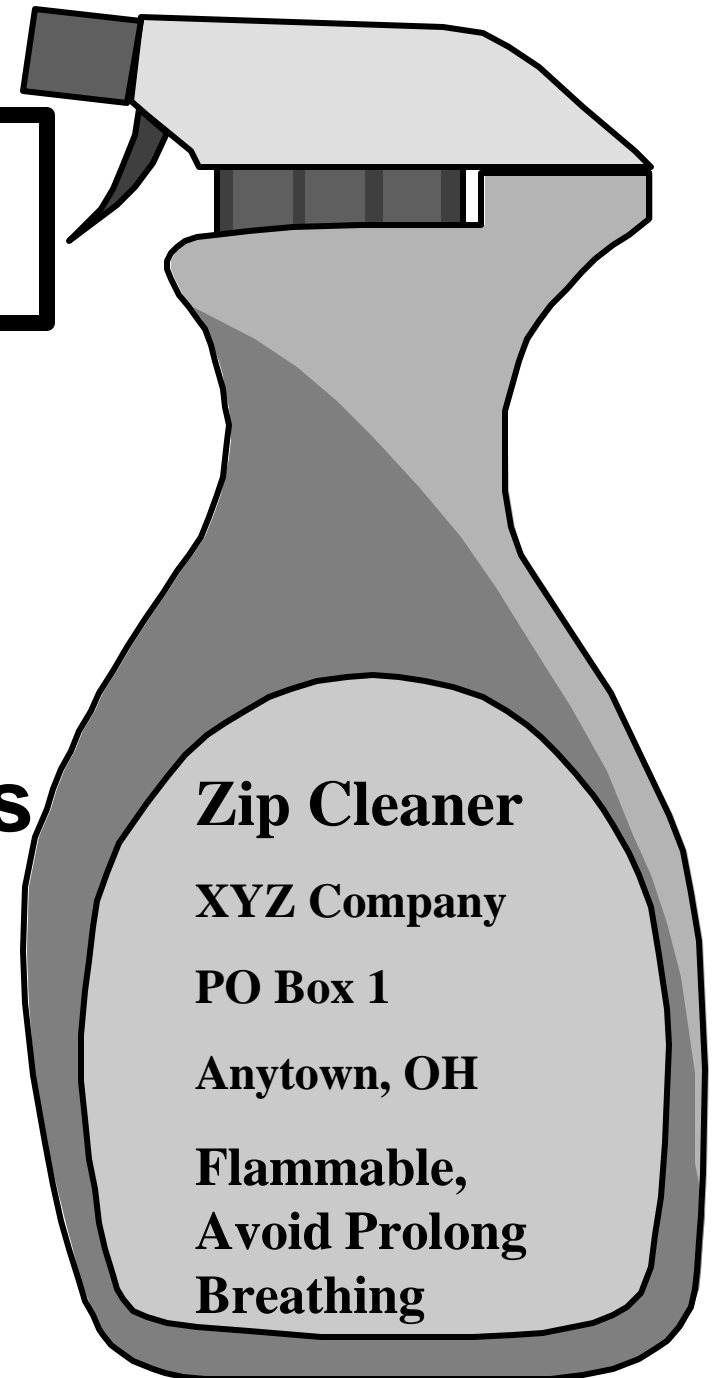
Labeling

- ▼ **Purpose**
- ▼ **What information is required**
- ▼ **Accessible/Legible/in English**
- ▼ **Types; Mfg.'s, HMIS, NFPA**
- ▼ **Someone responsible**



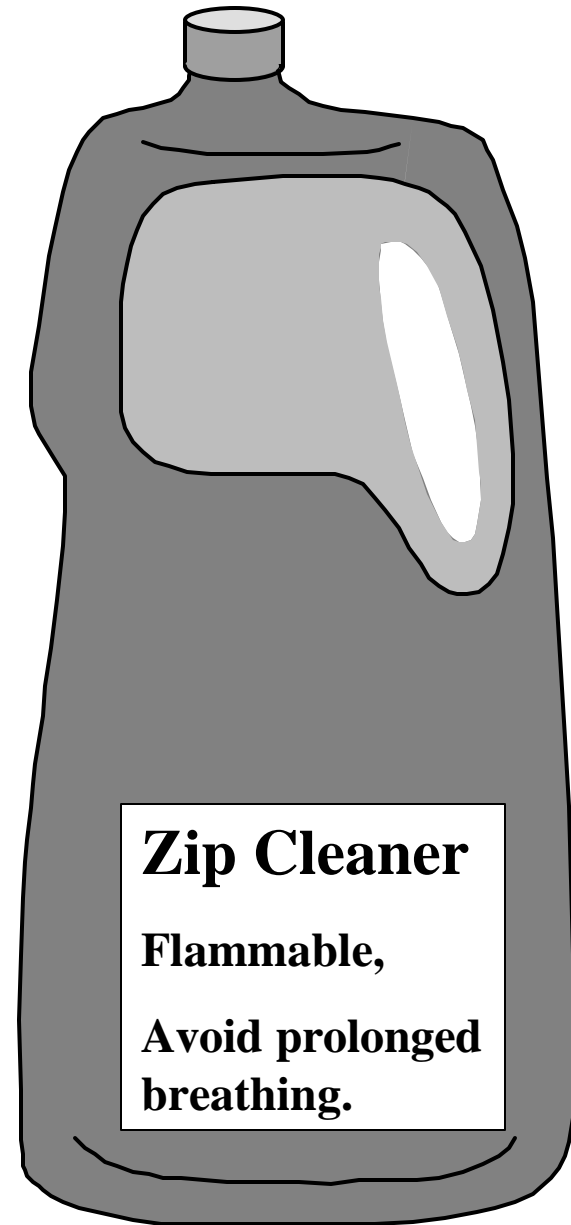
Manufacturers Label

- **Mfg.'s Name/Address**
 - **Product Name**
 - **Physical Warnings**
 - **Health Hazard Warnings**
- Including Target Organs**



In House Label

- **Product Name**
- **Physical Hazards**
- **Health Hazard Warnings**
Including Target Organs



Chemical Name

Health Hazard

- 4-Deadly
- 3-Extremely Hazardous
- 2-Hazardous
- 1-Slightly Hazardous
- 0-Normal material

Fire Hazard

Flash Points

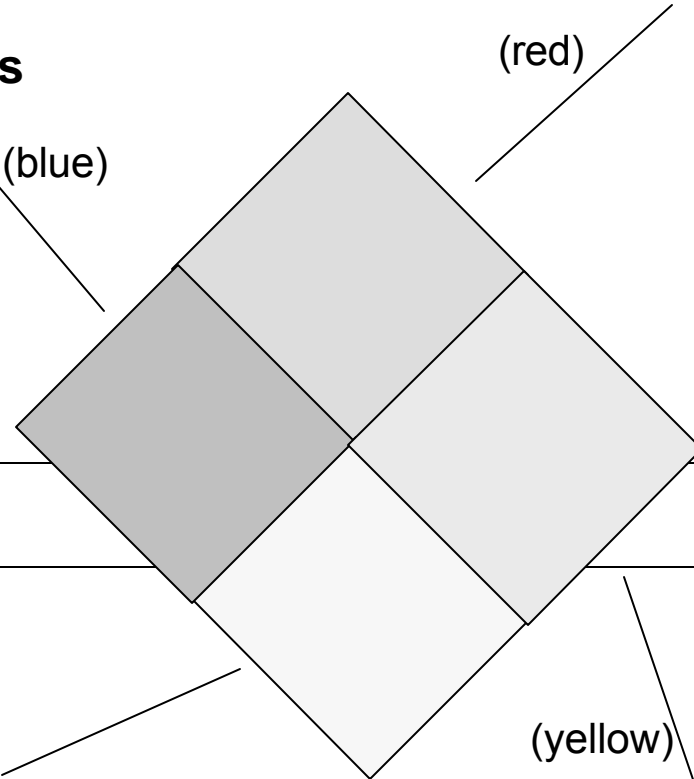
- 4-Below 73° F
- 3-Below 100° F
- 2-Below 200° F
- 1-Above 200° F
- 0-Will not burn

Specific Hazard

- Oxidizer OX
 - Use NO WATER -W
- (white)

Reactivity

- 4-May detonate
- 3-Shock and heat may detonate
- 2-Violent chemical change
- 1-Unstable if heated
- 0-Stable



NFPA Label

HMIS LABEL

Health

(blue)

Flammability

(red)

Reactivity

(yellow)

Personal Protective Equipment

(white)

Chemical Name: _____

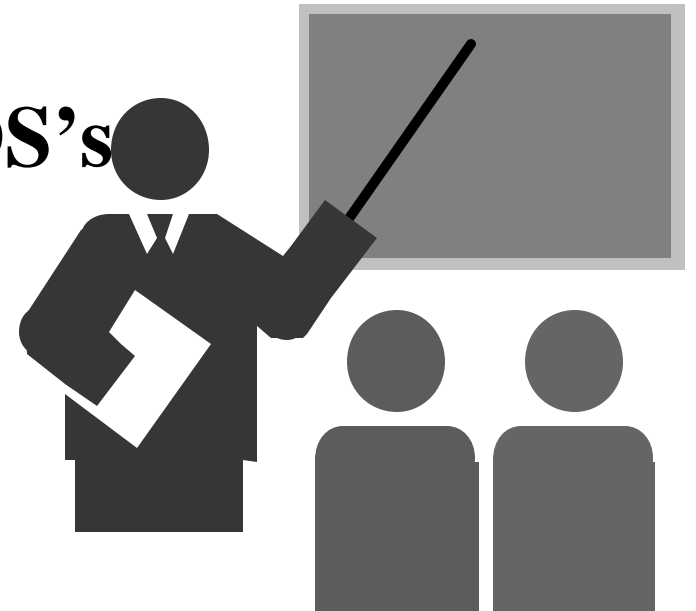
Employee Training

- ▼ **General Training**
- ▼ **Specific Training**



General Training

- ▼ **Hazard Communication Standard**
- ▼ **Employer's Written Program**
- ▼ **Location/Availability Of Written Program & MSDS**
- ▼ **How to read labels & MSDS's**



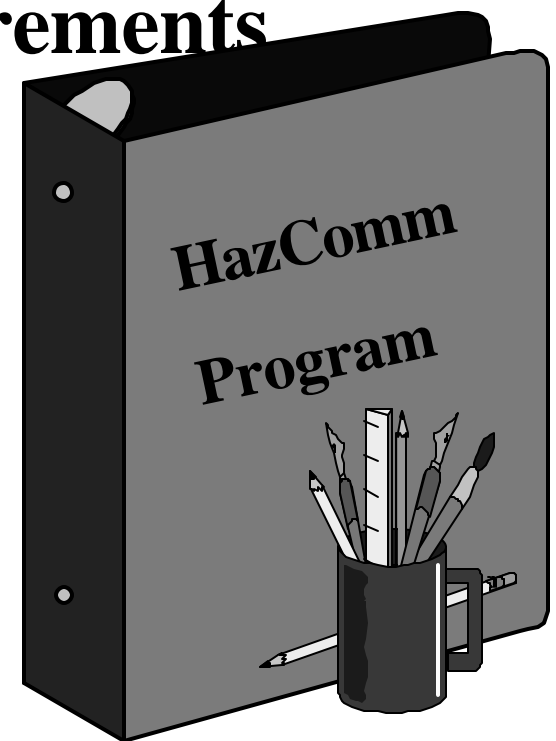
Specific Training



- ▼ **Characteristics**
- ▼ **Health & Safety Hazards**
- ▼ **Work practices or SOPs**
- ▼ **Emergency action plans**
- ▼ **Personal Protective Equipment (PPE)**
- ▼ **Non-routine tasks**
- ▼ **Industrial Hygiene monitoring results**

Written Program

- ▼ **Must be developed, implemented & maintained**
- ▼ **A blueprint for how the requirements will be met**
- ▼ **Readily accessible**



Miscellaneous

- ▼ **Non-Routine Tasks**
- ▼ **Piping Systems**
- ▼ **Contractors/
Multi-Employer Worksites**



Summary

- ▼ What is Hazcom?
- ▼ Why was the Hazcom Standard implemented?
- ▼ What are the 4 major elements of our written Hazcom program?
- ▼ Why is a workplace inventory important?
- ▼ What is the purpose of an MSDS?

Summary (continued)

- ▼ Where do we keep MSDSs & Written Program?
- ▼ Who is responsible for maintaining MSDS in your area?
- ▼ What labeling system do we use?
- ▼ Why do we need MSDS and labeling?
- ▼ Why do we train on Hazcom?
- ▼ What's the difference between General and Specific training?

Instructor Notes

Thank you for your interest in teaching the basics of Hazard Communication to your employees and for promoting self-sufficiency on behalf of the Division of Safety & Hygiene.

A few points to keep in mind while teaching this class to your employees.

Try to do everything you can to get your students “involved” with the information that you will be presenting. This means using actual work place examples wherever possible. Try to use your own MSDS sheets, your own inventory forms, your own labels, and certainly refer to your company specific procedures when at all possible.

If possible, incorporate some exercises into your training. These exercises might be as simple as small groups reviewing a specific MSDS sheet or as involved as having people actually perform a chemical inventory for their immediate work area. If you already have an inventory you might have an exercise where a review is conducted to check for accuracy and completeness. The key is to get your class involved so that they are not just listening to you lecture.

Encourage questions and repeat questions for clarity to be sure that everyone has heard and understood. Even if you know the answer, a good technique is to ask the class if anyone can answer the question. On questions where you’re not sure of the answer or there is disagreement within the class, tell the class that you’ll check on it during a break or as soon after the class as possible. Follow-up and make sure everyone gets the information.

Remember, your goal is to teach your employees to be safe and to provide accurate information about hazard communication and your specific hazcom program.



What is Hazard Communication or Hazcom?

Answers will vary but should include:

- employees have a right to know hazards and identities of chemicals they will be exposed to;
- should know what protective measures are available

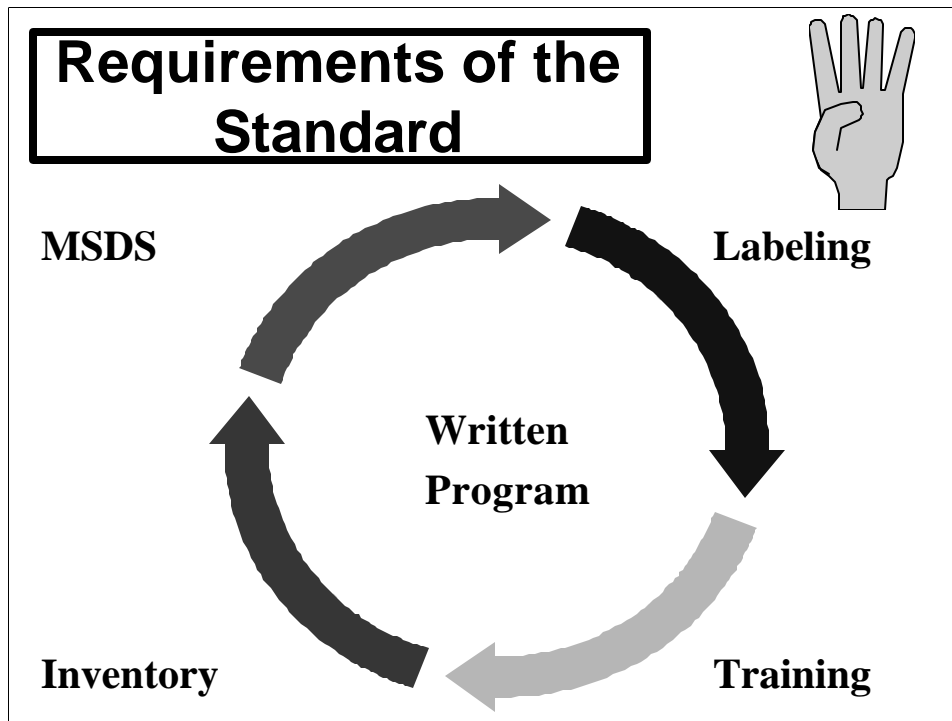
What is the Hazcom standard and why was it promulgated?

- Designed to reduce incidence of chemically-related occupational illnesses and injuries;
- Called “worker right to know” standard;
- Ensures that all chemical hazards in workplace are identified and explained
- Emphasis on communication

Standard covers both physical hazards (flammability) and health hazards (irritation, lung damage, etc.)

Chemical manufacturers and importers must evaluate hazards of their chemicals and prepare labels and Material Safety Data Sheets or MSDS.

A Performance standard. This means can adapt the standard to our specific needs and our work environment.



Today we'll cover an overview of the Hazcom Standard, 29 CFR 1910.1200 and familiarize you with the 4 major requirements of the standard and our written program:

Inventory of the workplace

Material Safety Data Sheets (MSDS)

Labeling and other forms of warning

Employee training and information

HOW TO CONDUCT A WORKPLACE INVENTORY

- ▼ **Identify Materials By Department.**
- ▼ **Note Operations Performed Dept. By Dept.**
- ▼ **Look at Labeling.**
- ▼ **Identify Material by Processes.**
- ▼ **Look at materials use by other Contractors.**
- ▼ **Look at materials on site and in storage.**
- ▼ **Look in all areas.**

Is there anything that should be included that we've forgotten?

Review purchases, check warehouse, identify any by-products such as fumes from welding operations, janitorial supplies, piping within the facility, certain operations performed on an irregular basis but may involve hazardous substances such as confined space entry.

Key Point-must be a comprehensive list and must take a comprehensive approach and remember, the standard covers more than just chemicals in containers. The standard covers chemicals in all physical forms such as solids, liquids, gases, vapors, fumes, and mists whether they are contained or not.

HAZARDOUS MATERIAL INVENTORY

DEPARTMENT	PRODUCT NAME	HAZARDOUS MATERIALS/ BY PRODUCT	MANUFACTURER	LABELS NEEDED	CURRENT MSDS	MAX. QUANTITY ON HAND

This is an example of a form that can be used. You can probably come up with some suggestions for other columns of information as well.

Option #1 - Break into small groups and use copies of this form or your company's form and identify as many hazardous chemicals in your work area as you can. Take no more than 10 minutes for this activity

Option #2 - Actually have groups return to their work areas and complete the inventory form and either have them return to class (no more than 20 minutes) or have them bring the completed form to the next training session for discussion.

Once inventory is complete, you are ready to move on to the next major element of the program, Material Safety Data Sheets or MSDS

(for the next slide try to have copies of one of your MSDS or use copies of the sample provided so the students can follow along as you describe the required areas)

Material Safety Data Sheets (MSDS)

- ▼ Purpose
- ▼ What Information they provide
- ▼ Readily accessible/complete/retain
- ▼ Someone responsible

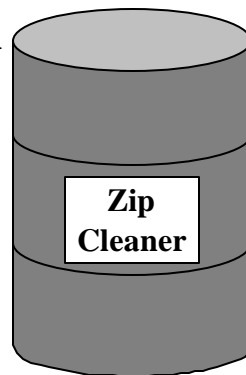


An MSDS is a technical bulletin whose purpose is to provide detailed information on each hazardous chemical in the workplace. Chemical manufacturers and importers are required to obtain or develop an MSDS for each hazardous chemical they produce or import. Distributors are responsible for ensuring that their customers get MSDS and employers must have an MSDS for each hazardous chemical that they use. Remember, we also refer to this standard as the “right to know” standard. If you notice an MSDS with blank spaces, please notify the responsible person or your supervisor and they will see that a complete MSDS is obtained.

There is no specified format for an MSDS but they must be in English and at a minimum they must contain: (refer to your MSDS or sample provided) identity (chemical or common name) used on container label, chemical and common name of all ingredients having known health hazards in concentrations greater than 1% and for known carcinogens at 0.1% or more, physical and chemical characteristics of hazardous components, physical and health hazards including signs and symptoms, primary routes of entry, any known exposure limits, is it a potential carcinogen, precautions for safe handling and use, control measures, emergency first aid procedures, date of preparation, and name, address, phone number of company or responsible person distributing the MSDS. Also, the MSDS must be readily accessible-during workshifts, in the immediate work area, and a responsible-designated person to keep MSDS current, correct, and available. Any questions?

Labeling

- ▼ Purpose
- ▼ What information is required
- ▼ Accessible/Legible/in English
- ▼ Types; Mfg.'s, HMIS, NFPA
- ▼ Someone responsible



All in-plant containers of hazardous chemicals must be labeled

All products shipped by manufacturers must include:

identity of material

appropriate hazard warnings

name and address of the producer or other responsible party

All in-plant containers should include:

identity of material

appropriate hazard warnings

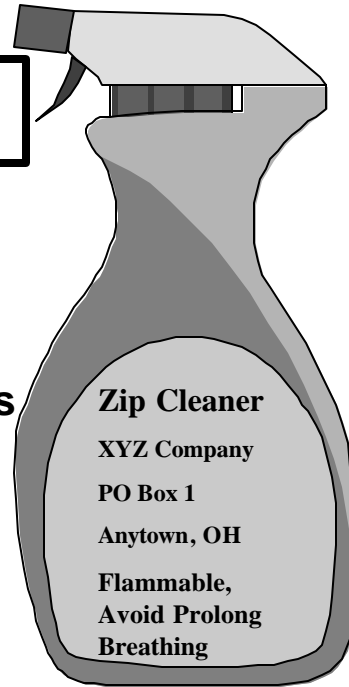
Must be in English but other languages may be supplied as well

Responsible person to ensure that all labels are in use, legible, and prominently displayed

If possible, have some examples of your in-house containers that are properly labeled. Make the point that these container labels are only to serve as an immediate warning and **are not** substitutes for MSDS that must be available and accessible as mentioned earlier.

Manufacturers Label

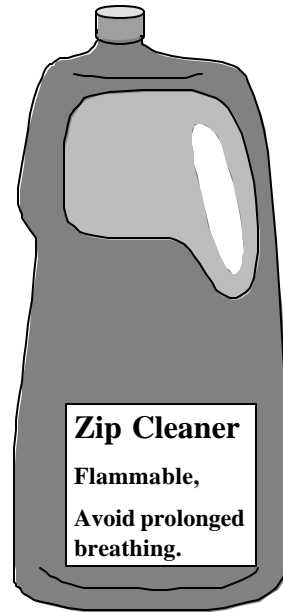
- **Mfg.'s Name/Address**
- **Product Name**
- **Physical Warnings**
- **Health Hazard Warnings Including Target Organs**



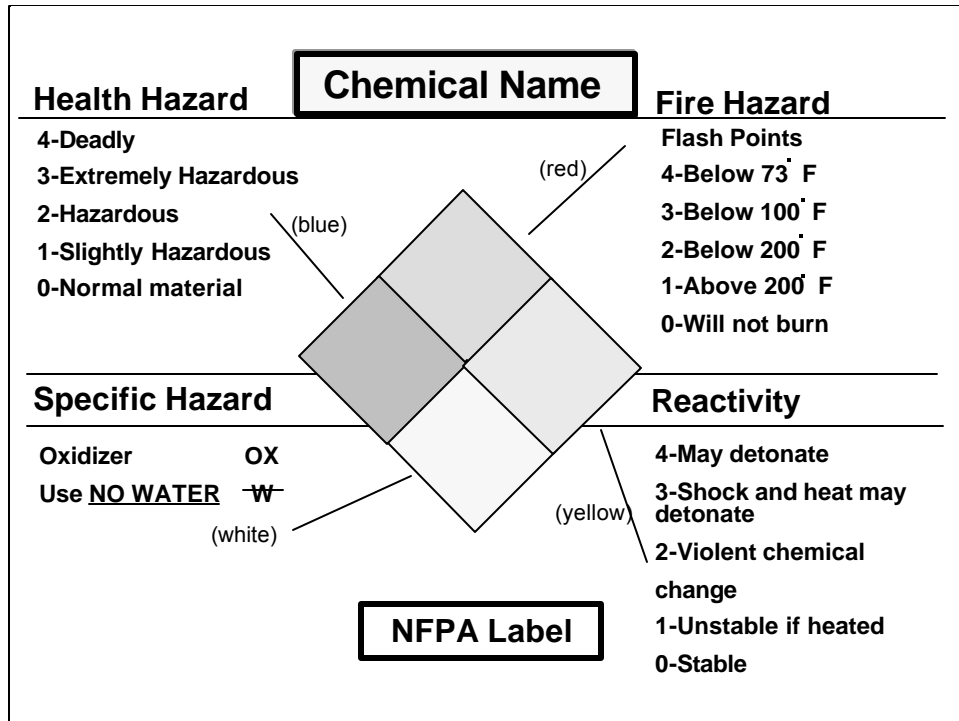
Can show this overhead if manufacturer's labeling not readily available.

In House Label

- **Product Name**
- **Physical Hazards**
- **Health Hazard Warnings
Including Target Organs**



Can show this overhead if in-house labeling is not readily available



In addition to manufacturer's labels, you might see National Fire Protection Association (NFPA) labels (briefly review areas on the label).

OR

HMIS LABEL		
Health	<input style="width: 100%; height: 100%;" type="text"/>	(blue)
Flammability	<input style="width: 100%; height: 100%;" type="text"/>	(red)
Reactivity	<input style="width: 100%; height: 100%;" type="text"/>	(yellow)
Personal Protective Equipment	<input style="width: 100%; height: 100%;" type="text"/>	(white)
Chemical Name: _____		

Hazardous Materials Identification System (HMIS) labels (briefly review areas on the label).

Like the MSDS, to ensure that labeling is accomplished properly, there should be someone designated as being responsible for ensuring that all in-plant containers are labeled.

Someone should also be responsible for ensuring that any shipped containers are properly labeled.

Within our Hazcom written program there is a description of the labeling system that we use (mention exactly where this can be found and have an example if possible),

Our program also details procedures we use to review and update label information when necessary.

(If possible have copies of your Hazcom program that talks about labeling.)

Employee Training

- ▼ **General Training**
- ▼ **Specific Training**

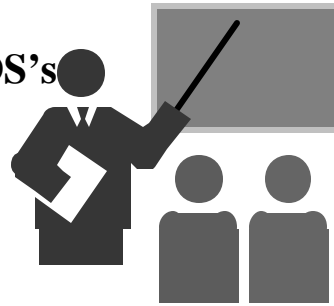


All employers are required to institute an information and training program that provides workers with training not only on their Hazcom program but on the hazardous materials that they will be exposed to in performing their work.

Training divided into two categories, General and Specific.

General Training

- ▼ **Hazard Communication Standard**
- ▼ **Employer's Written Program**
- ▼ **Location/Availability Of Written Program & MSDS**
- ▼ **How to read labels & MSDS's**



Who should receive General Training?

General Training is common to all employees and includes:

the Hazcom standard,

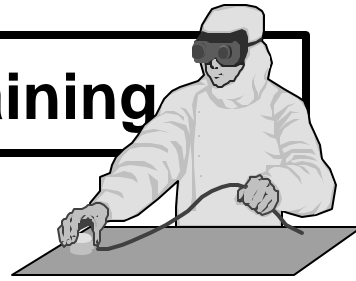
specifics of our written program,

how our hazards will be communicated,

the labeling system that we use, and

how to read and understand the MSDS along with pertinent terminology necessary for understanding.

Specific Training



- ▼ **Characteristics**
- ▼ **Health & Safety Hazards**
- ▼ **Work practices or SOPs**
- ▼ **Emergency action plans**
- ▼ **Personal Protective Equipment (PPE)**
- ▼ **Non-routine tasks**
- ▼ **Industrial Hygiene monitoring results**

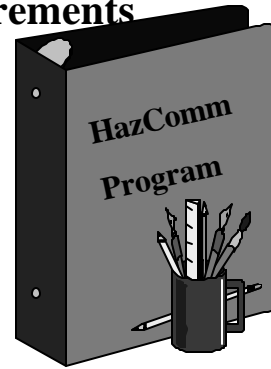
Who should receive specific training?

Those workers who will be handling or will be exposed to the hazardous substances in the facility. It includes: characteristics of the hazardous substance (what does it look like, solid, liquid or vapor, how is its presence detected), physical and health hazards associated with the substance, work practices or standard operating procedures (SOPs) to be used, Emergency action plans associated with the substance, personal protective equipment (PPE) required when using or while exposed to the substance, non-routine task training (i.e. confined space entry), results of any monitoring done within the work area.

Once general and specific training have been accomplished, the following training is required: new employees before they begin, temporary employees before they begin work, all employees on any new substances that may present a hazard, transferred employees if they will be working with new or different substances in their new job assignment, all employees on any new hazards associated with substances already in use, retraining for employees returning from extended leaves or layoff, and finally, all employees should get refresher training as needed.

Written Program

- ▼ **Must be developed, implemented & maintained**
- ▼ **A blueprint for how the requirements will be met**
- ▼ **Readily accessible**



We've briefly discussed The 4 major elements of a written Hazcom program.

Our written program is designed to outline the process our company uses to protect us all from the hazardous materials in our workplace.

Our written program must be kept current and it must provide a blueprint for how we implement our hazcom program.

Finally, our written program is readily available and accessible to all of us.

It can be found at ... (identify where your written program is kept)

Miscellaneous

- ▼ **Non-Routine Tasks**
- ▼ **Piping Systems**
- ▼ **Contractors/
Multi-Employer Worksites**



Finally, in addition to the four major elements of a hazcom program discussed above, there are some miscellaneous items that also need to be addressed in a written program.

Non-routine tasks are tasks that are not performed on an everyday or a regular basis such as cleaning out vats or changing filters (give examples of your non-routine tasks if applicable)

Piping systems would identify how unlabeled piping is to be dealt with

Contractors and multi-employer worksites would spell out how information will be exchanged on hazardous substances. It is also important to note that your employees may need to be trained on any hazards that contractors might bring to your site as well.

Summary

- ▼ What is Hazcom?
- ▼ Why was the Hazcom Standard implemented?
- ▼ What are the 4 major elements of our written Hazcom program?
- ▼ Why is a workplace inventory important?
- ▼ What is the purpose of an MSDS?

Use these questions as major points for review.

Summary (continued)

- ▼ Where do we keep MSDSs & Written Program?
- ▼ Who is responsible for maintaining MSDS in your area?
- ▼ What labeling system do we use?
- ▼ Why do we need MSDS and labeling?
- ▼ Why do we train on Hazcom?
- ▼ What's the difference between General and Specific training?

Hazard Communication Frequently Asked Questions

Why was the Hazard Communication Standard promulgated?

OSHA promulgated the Hazard Communication Standard to ensure that all employers receive the information they need to inform and train their employees properly on the hazardous substances they work with and to help design and put in place employee protection programs. It also provides necessary hazard information to employees, so they can participate in and support the protective measures in place at their workplaces.

What are the associated benefits of implementing the Hazard Communication Standard?

The Hazard Communication Standard provides workers exposed to hazardous chemicals with the right-to-know the identities and hazards of those materials, as well as appropriate protective measures. When workers have such information, they are able to take steps to protect themselves from experiencing adverse effects from exposure. In addition, providing such information to employers helps them to design better protective programs for exposed employees.

There are significant benefits associated with the implementation of the hazard communication standard in the workplace. Employers have used the information provided to select personal protective equipment, design engineering controls, and substitute less hazardous chemicals. All of these actions will improve protection of workers. In addition, the written information can be used to train workers to properly handle the chemicals.

How do I know if I need HazCom training?

You need HazCom training if you may be exposed to or clean up non-emergency releases of hazardous substances.

When is hazard communication training and retraining required?

Employers must provide employee training on the hazardous chemicals in their work area at the time of the worker's initial assignment to that area, and

whenever a new physical or health hazard that the worker has not been trained on is about to be introduced into the work area. Unlike some OSHA regulations, the Hazard Communication standard does not set requirements for specific refresher training.

Training serves to explain and reinforce the information presented through labels and Material Safety Data Sheets. Using these labels and MSDS will only be successful when workers understand the information presented and are aware of the actions to be taken to avoid or minimize exposure. Always take into consideration the education and technical background of the trainees to ensure that they completely understand the information being given to them.

Is there a list of substances regulated by the Hazard Communication Standard?

No. The rule requires chemical manufacturers and importers to evaluate the hazards of the chemicals they produce or import and to prepare appropriate labels and material safety data sheets to convey the hazards and precautionary measures to users of the chemicals. As a user, you can rely on the suppliers to provide you with appropriate information to comply with the Hazard Communication Standard

What are temporary agency employers required to do to meet HAZCOM requirements?

In meeting the requirements of OSHA's Hazard Communication Standard, the temporary agency employer would, for example, be expected to provide generic hazard training and information concerning categories of chemicals employees may potentially encounter. Host employers would then be responsible for providing site-specific hazard training pursuant to sections [1910.1200\(h\)\(1\)](#) and [1910.59\(h\)\(1\)](#)

Can MSDSs be stored on a computer to meet the accessibility requirements of HAZCOM?

If the employee's work area includes the area where the MSDSs can be obtained, then maintaining MSDSs on a computer would be in compliance. If the MSDSs can only be accessed out of the employee's work area(s), then

the employer would not be in compliance with [1910.1200\(g\)\(8\)or\(9\)](#) and [1926.59\(h\)\(1\)\(i-v\)](#).

What are the container labeling requirements under HAZCOM?

Under HCS, the manufacturer, importer, or distributor is required to label each container of hazardous chemicals. If the hazardous chemicals are transferred into unmarked containers, these containers must be labeled with the required information, unless the container into which the chemical is transferred is intended for the immediate use of the employee who performed the transfer.

How does HAZCOM apply to pharmaceutical drugs?

The HCS only applies to pharmaceuticals that the drug manufacturer has determined to be hazardous and that are known to be present in the workplace in such a manner that employees are exposed under normal conditions of use or in a foreseeable emergency. The pharmaceutical manufacturer and the importer have the primary duty for the evaluation of chemical hazards. The employer may rely upon the hazard determination performed by the pharmaceutical manufacturer or importer.

When is the chemical manufacturer required to distribute MSDSs?

Hazard information must be transmitted on Material Safety Data Sheets (MSDSs) that must be distributed to the customer at the time of first shipment of the product. The Hazard Communication Standard also requires that MSDSs be updated by the chemical manufacturer or importer within three months of learning of "new or significant information" regarding the chemical's hazard potential.

What is considered proper training under the HAZCOM standard?

Employees are to be trained at the time they are assigned to work with a hazardous chemical. The intent of this provision ([1910.1200\(h\)](#)) is to have information prior to exposure to prevent the occurrence of adverse health effects. This purpose cannot be met if training is delayed until a later date.

The training provisions of the HCS are not satisfied solely by giving employee the data sheets to read. An employer's training program is to be a forum for explaining to employees not only the hazards of the chemicals in their work area, but also how to use the information generated in the hazard communication program. This can be accomplished in many ways (audiovisuals, classroom instruction, interactive video), and should include an opportunity for employees to ask questions to ensure that they understand the information presented to them.

Training need not be conducted on each specific chemical found in the workplace, but may be conducted by categories of hazard (e.g., carcinogens, sensitizers, acutely toxic agents) that are or may be encountered by an employee during the course of his duties.

Furthermore, the training must be comprehensible. If the employees receive job instructions in a language other than English, then the training and information to be conveyed under the HCS will also need to be conducted in a foreign language.

What are the requirements for refresher training or retraining a new hire?

Additional training is to be done whenever a new physical or health hazard is introduced into the work area, not a new chemical. For example, if a new solvent is brought into the workplace, and it has hazards similar to existing chemicals for which training has already been conducted, then no new training is required. As with initial training, and in keeping with the intent of the standard, the employer must make employees specifically aware which hazard category (i.e., corrosive, irritant, etc.) the solvent falls within. The substance-specific data sheet must still be available, and the product must be properly labeled. If the newly introduced solvent is a suspect carcinogen, and there has never been a carcinogenic hazard in the workplace before, then new training for carcinogenic hazards must be conducted for employees in those work areas where employees will be exposed.

It is not necessary that the employer retrain each new hire if that employee has received prior training by a past employer, an employee union, or any other entity. General information, such as the rudiments of the HCS could be expected to remain with an employee from one position to another. The employer, however, maintains the responsibility to ensure that their employees are adequately trained and are equipped with the knowledge and information necessary to conduct their jobs safely. It is likely that additional

training will be needed since employees must know the specifics of their new employers' programs such as where the MSDSs are located, details of the employer's in-plant labeling system, and the hazards of new chemicals to which they will be exposed. For example, [\(h\)\(3\)\(iii\)](#) requires that employees be trained on the measures they can take to protect themselves from hazards, including specific procedures the employer has implemented such as work practices, emergency procedures, and personal protective equipment to be used. An employer, therefore, has a responsibility to evaluate an employee's level of knowledge with regard to the hazards in the workplace, their familiarity with the requirements of the standard, and the employer's hazard communication program.

Do you need to keep MSDSs for commercial products such as “windex” and “white-out”?

OSHA does not require that MSDSs be provided to purchasers of household consumer products when the products are used in the workplace in the same manner that a consumer would use them, i.e.; where the duration and frequency of use (and therefore exposure) is not greater than what the typical consumer would experience. This exemption in OSHA's regulation is based, however, not upon the chemical manufacturer's intended use of his product, but upon how it actually is used in the workplace. Employees who are required to work with hazardous chemicals in a manner that results in a duration and frequency of exposure greater than what a normal consumer would experience have a right to know about the properties of those hazardous chemicals.

What are the requirements and limits to using generic MSDSs?

... [Regarding] the suitability of a generic material safety data sheet (MSDS). As you are probably aware, the requirements for MSDSs are found in paragraph (g) of 29 CFR 1910.1200. MSDSs must be developed for hazardous chemicals used in the workplace, and must list the hazardous chemicals that are found in a product in quantities of 1% or greater, or 0.1% or greater if the chemical is a carcinogen. The MSDS does not have to list the amount that the hazardous chemical occurs in the product.

Therefore, a single MSDS can be developed for the various combinations of ... [chemicals], as long as the hazards of the various... mixtures are the same. This "generic" MSDS must meet all of the minimum requirements found in

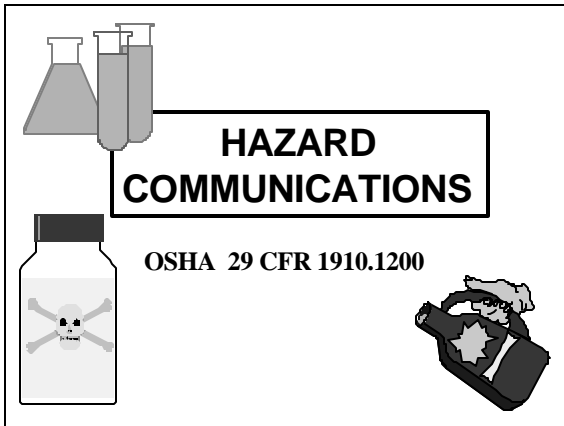
29 CFR 1910.1200(g), including the name, address and telephone number of the responsible party preparing or distributing the MSDS who can provide additional information.

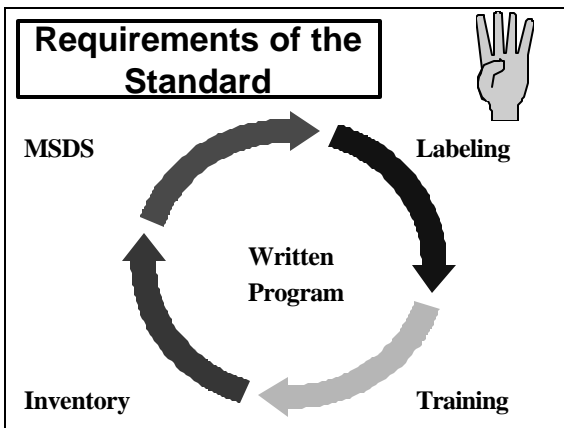
What is the application of HAZCOM to an office environment?

Office workers who encounter hazardous chemicals only in isolated instances are not covered by the rule. The Occupational Safety and Health Administration (OSHA) considers most office products (such as pens, pencils, adhesive tape) to be exempt under the provisions of the rule, either as articles or as consumer products. For example, Mrs. Schissler specifically mentioned copy toner. OSHA has previously stated that intermittent or occasional use of a copying machine does not result in coverage under the rule. However, if an employee handles the chemicals to service the machine, or operates it for long periods of time, then the program would have to be applied.

Student Handouts

Hazard Communication





HOW TO CONDUCT A WORKPLACE INVENTORY

- Identify Materials By Department.
- Note Operations Performed Dept. By Dept.
- Look at Labeling.
- Identify Material by Processes.
- Look at materials use by other Contractors.
- Look at materials on site and in storage.
- Look in all areas.

Hazard Communication

HAZARDOUS MATERIAL INVENTORY

DEPARTMENT	PRODUCT NAME	HAZARDOUS MATERIALS/ BY PRODUCT	MANUFACTURER	LABELS NEEDED	CURRENT MSDS	MAX. QUANTITY ON HAND

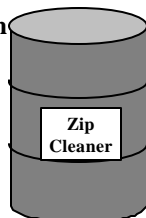
Material Safety Data Sheets (MSDS)

- ▾ Purpose
- ▾ What Information they provide
- ▾ Readily accessible/complete/retain
- ▾ Someone responsible



Labeling

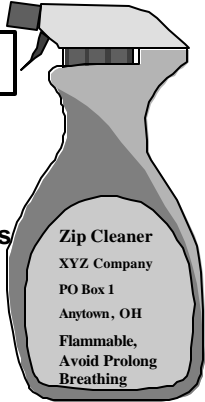
- ▾ Purpose
- ▾ What information is required
- ▾ Accessible/Legible/in English
- ▾ Types; Mfg.'s, HMIS, NFPA
- ▾ Someone responsible



Hazard Communication

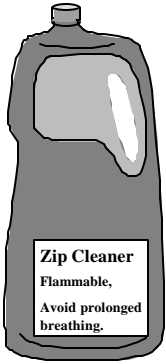
Manufacturers Label

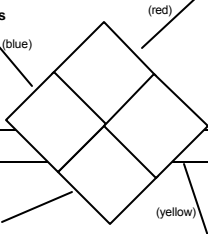
- Mfg.'s Name/Address
- Product Name
- Physical Warnings
- Health Hazard Warnings Including Target Organs



In House Label

- Product Name
- Physical Hazards
- Health Hazard Warnings Including Target Organs




Health Hazard	Chemical Name	Fire Hazard
4-Deadly		Flash Points
3-Extremely Hazardous		4-Below 73 F
2-Hazardous		3-Below 100 F
1-Slightly Hazardous		2-Below 200 F
0-Normal material		1-Above 200 F
		0-Will not burn
Specific Hazard		Reactivity
Oxidizer OX		4-May detonate
Use NO WATER W-		3-Shock and heat may detonate
		2-Violent chemical change
		1-Unstable if heated
		0-Stable

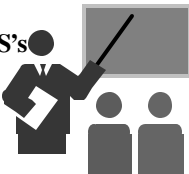
NFPA Label

Hazard Communication

HMIS LABEL	
Health <input type="text"/>	<input type="text"/> (blue)
Flammability <input type="text"/>	<input type="text"/> (red)
Reactivity <input type="text"/>	<input type="text"/> (yellow)
Personal Protective Equipment <input type="text"/>	<input type="text"/> (white)

Chemical Name: _____

Employee Training
<ul style="list-style-type: none">▸ General Training▸ Specific Training


General Training
<ul style="list-style-type: none">▸ Hazard Communication Standard▸ Employer's Written Program▸ Location/Availability Of Written Program & MSDS▸ How to read labels & MSDS's


Hazard Communication

Specific Training



- Characteristics
- Health & Safety Hazards
- Work practices or SOPs
- Emergency action plans
- Personal Protective Equipment (PPE)
- Non-routine tasks
- Industrial Hygiene monitoring results

Written Program

- Must be developed, implemented & maintained
- A blueprint for how the requirements will be met
- Readily accessible



Miscellaneous

- Non-Routine Tasks
- Piping Systems
- Contractors/
Multi-Employer Worksites



Hazard Communication

Summary

- ▾ What is Hazcom?
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Summary (continued)

- ▾ Where do we keep MSDSs & Written Program?
- ▾ Who is responsible for maintaining MSDS in your area?
- ▾ What labeling system do we use?
- ▾ Why do we need MSDS and labeling?
- ▾ Why do we train on Hazcom?
- ▾ What's the difference between General and Specific training?

GLOSSARY OF COMMON TERMS

ABSORPTION: When material is absorbed into the skin.

ACUTE EFFECTS: An adverse effect on a human or animal body, with severe symptoms developing rapidly and coming quickly to a crisis.

ACUTE TOXICITY: The adverse effects resulting from a single dose of exposure to a substance.

ACGIH: American Conference of Governmental Industrial Hygienists.

ASPHYXIATE: A vapor or gas which can cause unconsciousness or death by suffocation (lack of oxygen).

CARCINOGEN: A substance or agent capable of causing or producing cancer in mammals.

CEILING: The maximum allowable human exposure limit for an airborne substance, not to be exceeded even momentarily

CFR: Code of Federal Regulations.

CHEMICAL NAME: 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.

CHRONIC EFFECTS: An adverse effect on a human or animal body, with symptoms which develop slowly over a long period of time or which recur frequently.

CHRONIC TOXICITY: Adverse effects resulting from repeated doses of or exposures to a substance over a relatively prolonged period of time.

COMBUSTIBLE: A liquid having a flash point of 100 degrees Fahrenheit or higher, also solids such as wood and paper.

COMMON NAME: 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.

CONTAINER: 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.

CORROSIVE: A liquid or solid that has corrosive characteristics and will cause visible destruction to skin or metals.

DOT: US Department of Transportation

EMPLOYEE: 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 by the federal Standard.

EPA: US Environmental Protection Agency.

EPCRA: Emergency Planning and Community Right-To-Know Act (Title III or SARA)

FLASH POINT: The temperature at which a liquid will give off enough flammable vapor to ignite.

FLAMMABLE: A flammable liquid is a liquid with a flash point below 100 degrees F.

HAZARDOUS CHEMICAL: Any chemical which is a physical hazard or a health hazard.

HEALTH HAZARD: 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.

HEMATOPOIETIC SYSTEM: The blood forming organs, especially bone marrow and lymph nodes.

IARC: International Agency for Research on Cancer.

IDENTITY: Any chemical or common name which is indicated on the 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.

INCOMPATIBLE: Materials which could cause dangerous reactions from direct contact with one another.

INGESTION: The taking of a substance by mouth.

INHALATION: The breathing of a substance.

IRRITANT: A substance which, by contact in sufficient concentration for a sufficient period of time, will cause reaction to the eyes, skin or respiratory system.

LABORATORY: A facility where the "laboratory use of hazardous chemicals" occur. It is a workplace where relatively small quantities of hazardous chemicals are used on a non-production basis.

LABORATORY SCALE: Work with substances in which the containers used for reactions, transfers, and other handling of substances are designed to be easily and safely manipulated by one person. "Laboratory scale" excluded those workplaces whose function is to produce commercial quantities of materials.

LABORATORY USE OF HAZARDOUS CHEMICALS: Handling or use of such chemicals in which all of the following conditions are met:

1. chemical manipulations are carried out on a "laboratory scale;"
2. multiple chemical procedures or chemicals are used;
3. the procedures involved are not part of a production process, nor in any way simulate a production process; and
4. "protective laboratory practices and equipment" are available and in common use to minimize the potential for employee exposure to hazardous chemicals.

LD50: Lethal dose needed to kill 50% of the test population.

LEL: Lower Explosive Limit.

MSDS: Material Safety Data Sheet.

NFPA: National Fire Protection Association.

NIOSH: National Institute for Occupational Safety and Health.

NTP: National Toxicology Program.

OSHA: Occupational Safety and Health Administration.

OXIDIZER: A substance that yields oxygen readily to stimulate combustion or organic matter.

PEL: Permissible Exposure Limit; a limit set by OSHA setting the quantity of a material that you can safely be exposed to.

PHYSICAL HAZARD: A chemical for which there is scientifically valid evidence that it is a combustible liquid, a compressed gas, explosive, flammable, an organic peroxide, and oxidizer, pyrophoric, unstable (reactive) or water-reactive.

PPM: Parts per million; a unit of measurement used when setting the PEL.

PYROPHORIC: Igniting spontaneously in air.

RCRA: Resource Conservation and Recovery Act.

REACTIVITY: A description of the tendency of a substance to undergo chemical reaction with the release of energy.

SARA: Superfund Amendments and Reauthorization Act of 1986.

SELECT CARCINOGEN: Any substance which meets one of the following criteria:

1. it is regulated by OSHA as a carcinogen;
2. it is listed under the category "known to be a carcinogen" in the NTP Annual Report on Carcinogens;
3. it is listed under Group 1 (carcinogenic to humans) by IARC;

or

1. it is listed in either Group 2A or 2B by IARC or under the category "reasonably anticipated to be carcinogens" by NTP.

The "select carcinogen" applies only to work areas in the laboratory chemical hygiene plan.

SENSITIZER: A substance which upon first exposure causes little or no reaction, but which on repeated exposure may cause a marked response not necessarily limited to the contact site.

SIC: Standard Industrial Classification Code.

SODIUM: Is a flammable solid.

SPECIFIC CHEMICAL IDENTITY: The chemical name, Chemical Abstracts Service (CAS) Registry Number, or any other information that reveals the precise chemical designation of the substance.

STEL: Short Term Exposure Limit.

TLV: Threshold Limit Values (TLVs) ® refer to airborne concentrations of substances and represent conditions under which it is believed that nearly all workers may be repeatedly exposed day after day without adverse health effects. American Conference of Governmental Industrial Hygienists (ACGIH).

TRADE SECRET: 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.

TWA: Time Weighted Average, usually figured over an 8-hour work day.

UEL: Upper Explosive Limit.