SEIU Emergency Response Awareness Level Workbook

S E I U

Health + Safety

Every Worker's Right

SEIU Education & Support Fund
1313 L St., NW, Washington, DC 20005 (202) 898-3200

Second Edition, 1996 Printing

SEIU Emergency Response Awareness Workbook

Service Employees International Union, AFL-CIO, CLC

1313 L St., NW Washington, DC 20005, (202) 898-3200

© 1994 Service Employees International Union [SEIU], AFL-CIO, CLC

For permission to reproduce any part of this workbook, contact the SEIU Health and Safety Department. (Permission is already granted to SEIU local unions.)

This workbook was adapted by the Service Employees International Union with funds provided by the National Institute for Environmental Health Sciences (NIEHS) under cooperative agreement #1 U45 ES06178-01. Individuals undertaking such projects under government sponsorship are encouraged to freely express their professional judgement. Therefore, these materials do not necessarily reflect the views or policies of the Department of Health and Human Services or of NIEHS. The mention of trade names, commercial products, or organizations does not imply endorsement by the U.S. Government.

SEIU would sincerely like to thank the following organizations for permission to reproduce and/or adapt portions of their materials:

American Federation of State, County, and Municipal Workers (Activity 10)

International Chemical Workers Union (Activities 1 and 5)

Labor Occupational Health Program (Activity 4)

Oil Chemical, and Atomic Workers Union (Activities 3, 6, 7, 8, 9, and 11)

Midwest Consortium for Hazardous Waste Worker Training (Activities 1, 5, and 9)

United Automobile Workers (Activity 9)

University of Alabama at Birmingham (Activity 9)

New England Consortium for Hazardous Waste Worker Training (Activity 5)

Table of Contents

A. SEIU's Hazardous Materials Training Project

If it's true that a picture is worth a thousand words, then the cover of this workbook is worth 100,000 words--one for each of the estimated 100,000 workers in the United States who die from workplace illness and injury each year. By attending this SEIU training program, you have become part of a nation-wide effort to improve the job health and safety conditions of service sector workers.

We have developed this training program for workers represented by SEIU who respond to emergencies involving hazardous materials. The program is paid for by a grant from the National Institute of Environmental Health Sciences, part of the U.S. Centers for Disease Control and Prevention (CDC). The aim of this training program is to bring workers up to the awareness level of hazardous materials emergency response. You will be learning about your proper role in responding to these emergencies. You will also learn about the harmful effects of some of the chemicals you use every day, and ways you can reduce your exposure. The book and the materials are yours to keep.

Your union's training program follows the subjects covered in OSHA regulations. These require specific training for all workers who work with hazardous materials and who need to know how to respond to emergencies. However, your employer must decide whether this training meets his or her full legal obligations under OSHA and EPA regulations.

To be really meaningful, your training should be tailored to your workplace. To do that, your employer will need to figure out exactly what hazardous materials you are likely to work with and

(Source: U.S. Office of Technology Assessment, *Preventing Illness and Injury in the Workplace*, 1985)

A. (continued)

around. He or she will have to train you about the hazards of these materials. Your employer will have to show you their emergency plan, and tell you who is in charge of planning for emergencies. This training is a general introduction--you need more specific training about your workplace.

This training program by itself will not make your workplace safer. It is the beginning of the struggle, not the end. Throughout the program many ideas will be discussed about the steps you and your union can take to translate this knowledge into a safer and healthier workplace. Since there will never be enough OSHA inspectors or union representatives to ensure the safety of your workplace at all times, it is vitally important that each and every worker know about these hazards and their rights under the law so that together you can ensure your own safety. Never has the expression, "An injury to one is an injury to all" been more appropriate.

On behalf of the SEIU Health and Safety Department, thank you for participating in this program and making a commitment to workplace health and safety.

B. Emergencies Involving Hazardous Materials

Thousands of SEIU members respond to emergencies involving hazardous materials. Housekeeping workers may be called in when there is a chemotherapy spill or blood spill. Nurses may be exposed to leaks of anesthetic gases in surgery. Central stores workers may be among the first on the scene at an ethylene oxide leak.

This workbook can help these and other SEIU members learn their appropriate, and usually limited, role in responding to emergencies involving hazardous substances. During this program, you will be discussing :

- the risks of hazardous materials
- possible outcomes of an emergency
- ways to recognize hazardous substances
- your role as the person who is first-on-the-scene
- how to determine the need for help

We welcome any comments you have about how we can improve the program in the future. Please fill out the evaluations at the end of each activity and at the end of the day. Please feel free to discuss your comments or ideas with any of the instructors throughout the day. Thank you for your being part of this training.

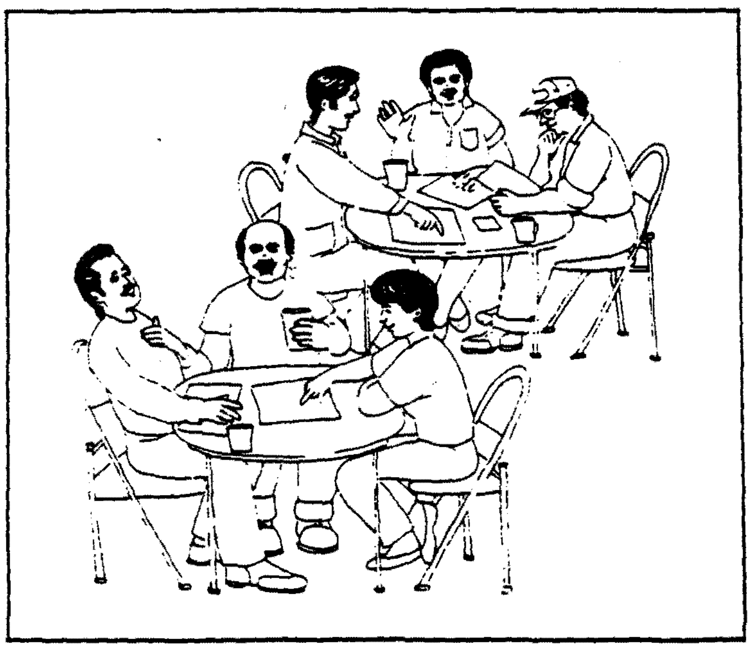
(Source: OSHA Hazardous Waste Operations And Emergency Response Standard, 29 CFR 1910.120 (q)(6)(i).)

C. Introduction to the Training Method

All of us realize that emergencies can be killers. SEIU members can be killed or crippled for life while dealing with hazardous materials emergencies on the job. In order to give us a fighting chance as the first people at a spill, the law says that each of us must get this awareness-level training so that we can work safely.

To make this training effective and meaningful, SEIU is committed to worker-centered learning. Workers know the health and safety problems they face better than anyone else. They face those problems every day on the job. They also know how to solve health and safety problems. SEIU's experience shows that workers learn best from other workers.

Using worker-trainers puts workers at the center of every workshop both as trainers and as active participants. SEIU rank and file workers will conduct these workshops using a method designed specifically for union members called the **Small Group Activity Method (SGAM)**. This method allows us to work in groups to solve problems on our own using our own experiences and the materials supplied in this workbook. It allows us all to learn by doing.



(Source: Anthony D. LaMontagne *et al.*, *Ethylene Oxide Health & Safety Manual, 2nd Edition*, Commonwealth of Massachusetts, 1990)

C. (continued)

- Instead of chapters, this workbook has **activities**.

Activity 1: What Are Hazardous Materials Emergencies?

Each activity has three main sections:

- the goal or **purpose** of the whole activity

<u>**Purpose:**</u> To help understand what can happen at a hazardous materials emergency.

- exercises, which are called **tasks**

<u>**Task 1:**</u> In your groups, please answer the following questions. Please use: • your own experience and • pages 15 - 24 in the workbook to answer the questions. Please choose someone in your group to write down your answers below. That person will report back your group's findings to the whole class.

- **factsheets**, which have information to help answer the questions, and

A. Dangers to Service Sector Workers Many people think service work is safe. But workers in the service sector are exposed to many health and safety risks. Six out

- a **summary** of the main points

Summary: What Are Hazardous Materials Emergencies? 1) Hazardous materials include: • chemicals that can burn or explode • chemicals that cause cancer • poisons

C. (continued)

Each activity goes like this:

Small Group Discussions

For about the first twenty minutes, you will work on the **task** in your groups. You will work together to find solutions. One person in the group volunteers to be the group's first reporter and write down the group's responses. The reporter's job should rotate so that as many of you as possible can serve as a reporter.

The Report Back

After the groups have worked on the problems, the answers are reported back from each group to the entire workshop. The worker-trainers will record the answers on paper in front of the workshop and conduct a general discussion about the issues involved.

Not Another Lecture!

The Summary

At the end of the report-back period the worker-trainers will go over a summary of the main points that have been developed during the activity.

NOTES

Activity 1: What Are Hazardous Materials Emergencies?

Purpose:

To help understand what can happen at a hazardous materials emergency.

Task 1:

In your groups, please answer the following questions. Please use:

- your own experience and
- pages 15 - 24 in the workbook

to answer the questions. Please choose someone in your group to write down your answers below. That person will report back your group's findings to the whole class.

1) What chemicals do you work with every day on the job?

2) What situations do you know about involving spills, leaks, or unidentified materials (hazardous materials emergencies)?

(over)

Task 1: (continued)

3) How can these chemicals harm you? That is, what makes them hazardous? (Please see pages 17 - 19.)

4) If you could write the regulations, how would you define a hazardous materials <u>emergency</u>. (Please see pages 19 - 22.)

5) How would you define a spill that is not an emergency?

(over)

Task 1: (continued)

6) **As a group, go back to question 2 above. Decide which spills meet OSHA's definition of an emergency and which ones don't. Why or why not?**

Emergencies	Not Emergencies

Task 2:

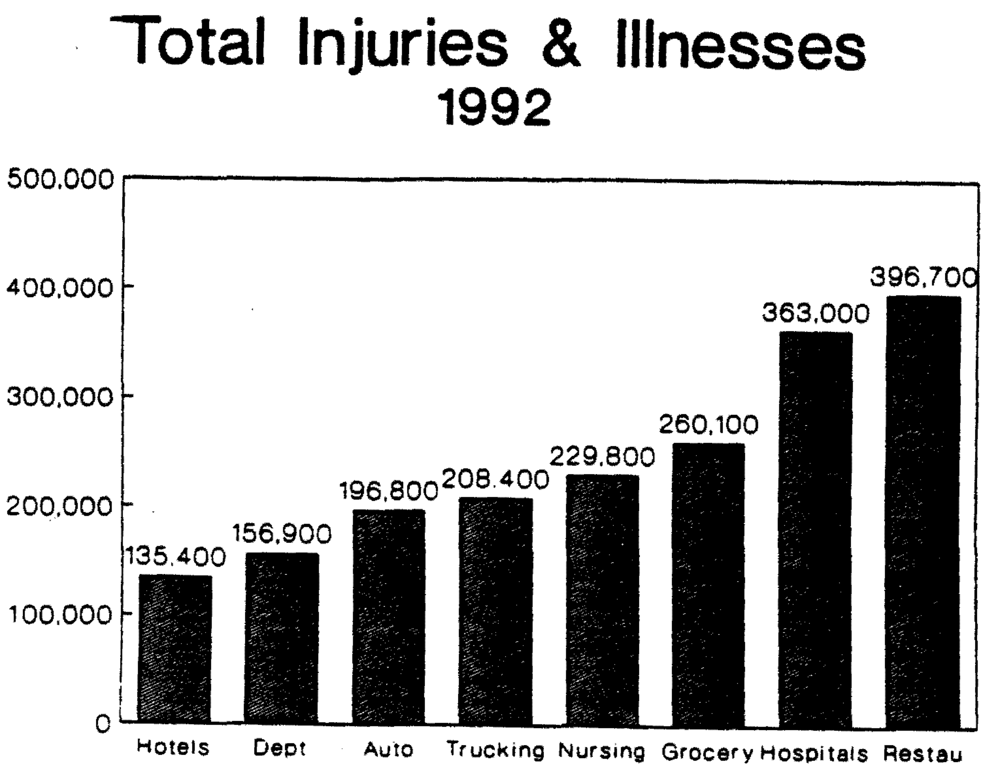
You have been asked by your union to respond to a worker who made the statement below. In your groups evaluate the statement and prepare a brief response for this worker. In doing so, please look at the articles on pages 25 to 27, and refer to at least one article when you present your response.

> **"We run into spills every now and then, but I don't think it's a big emergency. It's not like they ask us to fight fires or something.**
>
> **We've cleaned up lots of spills on our own, and we've never had any problems. All you have to do is use common sense."**

Your group's response:

A. Dangers to Service Sector Workers

Many people think service work is safe. But workers in the service sector are exposed to many health and safety risks. Six out of the top 8 industries with the most injuries and illnesses are in the services.



(Source: U.S. Bureau of Labor Statistics, "Workplace Injuries and Illnesses in 1992," press release, December 15, 1993.)

B. So, How Much Hazardous Materials Do We Produce, Anyway?

We use many chemicals everyday, some of them dangerous. Just how much do we use and transport in the U.S.?

Top 10 Chemicals Produced in the U.S. in 1992

1)	sulfuric acid (battery acid)	99 billion pounds
2)	nitrogen	66 billion pounds
3)	ethylene	45 billion pounds
4)	oxygen	41 billion pounds
5)	ammonia, anhydrous	40 billion pounds
6)	phosphoric acid	28 billion pounds
7)	caustic soda (lye or sodium hydroxide)	27 billion pounds
8)	propylene	25 billion pounds
9)	chlorine	25 billion pounds
10)	soda ash (sodium carbonate)	24 billion pounds

(Source: July 19, 1994 conversation with Keven Swift, Chemical Manufacturers Association, Washington, DC.)

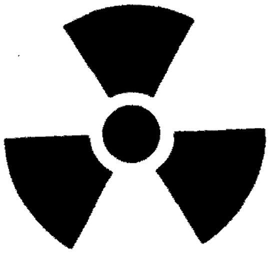
C. What Are Hazardous Materials?

The OSHA/EPA emergency response regulation defines hazardous materials as:

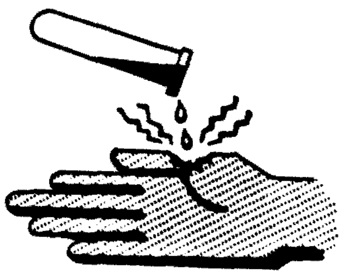
- chemicals that can burn or explode
- chemicals that cause cancer
- poisons
- germs
- radioactive materials
- chemicals that can cause violent chemical reactions
- unknown chemicals

Fire

Poison, cancer

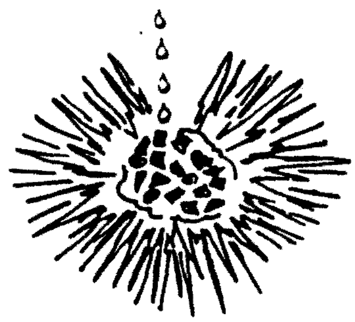


Radioactive



Burn skin

Germs



React violently with water

(Source: Hazardous Waste Operations And Emergency Response Standard, 29 CFR 1910.120 (a)(3).)

C. (continued)

"Hazardous material" is a legal term. OSHA and EPA have many definitions for hazardous materials.

Some materials are hazardous because they are on a list in the regulations. Other materials have certain properties:

TABLE 302.4—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES

Hazardous Substance
Hexachloropropene
Hexaethyl tetraphosphate
Hydrazine
Hydrazine, 1,2-diethyl-
Hydrazine, 1,1-dimethyl-

Some safe materials are called hazardous if they are mixed with hazardous materials:

Hazardous Substance
The following spent halogenated solvents; all spent solvent mixtures/blends containing, before use, a total of ten percent or more (by volume) of one or more of the above halogenated solvents or those listed in F001, F004, or F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.
(a) Tetrachloroethylene
(b) Methylene chloride
(c) Trichloroethylene
(d) 1,1,1-Trichloroethane
(e) Chlorobenzene
(f) 1,1,2-Trichloro-1,2,2-trifluoroethane
(g) o-Diechlorobenzene
(h) Trichlorofluoromethane
(i) 1,1,2-Thrichloroethane

(Sources: *Emergency Response Awareness Level Training Manual*, University of Alabama, Chapter 5, p. 3 and EPA CERCLA Reportable Quantities, 40 CFR 302.)

D. If You Don't Know What Chemical Has Spilled, Assume It Is Hazardous

At any spill, you should assume a material is hazardous until you know for sure it is not. Some hazardous materials have no smell. You may not be able to see it or feel it, but the chemical could be poisoning you.

For example:

- You can't smell carbon monoxide;
- You can't see methylene chloride; and
- You can't smell phosgene until there is a dangerous amount in the air.
- You may be able to smell the benzene in gasoline. But it can also soak through your skin and you can't feel it.

(Source: *Hazardous Materials Workbook*, Oil Chemical, and Atomic Workers Union, New York: Apex, 1993.)

E. If You Don't Know Exactly What the Dangers Are, Don't Go Near It

Some poisons can soak through your skin and kill you. Other chemicals can creep along the ground and find a flame. Chemicals in cylinders can explode like a rocket. Chemicals can mix and start a fire or give off poisonous gases. **If you don't know exactly how the chemical will act in an emergency, assume the worst.**

By law, your employer has to keep a list of all the hazardous chemicals you work around. You have the right to get a copy of this list. It should include:

- all of the hazardous chemicals you use
- all of the hazardous chemicals used by people around you (including contractors) <u>and</u>
- anything that is likely to spill.

Your employer can get information about chemicals that are carried on trucks in your area from government agencies. To get a copy of your employer's list, see page 320.

(Source: *First-On-The-Scene Awareness Program*, Midwest Consortium for Hazardous Waste Worker Training, p. 16)

F. What Is an Emergency?

In the law, a hazardous materials emergency is a spill or leak that you and your co-workers in the area can't handle safely on your own.

It is an emergency if:

- you need special training and equipment to protect youself from the chemicals;
- you even think about calling the fire department or a Hazardous Materials (HazMat) team.

Emergencies include spilling any amount of an unknown or very irritating chemical or spilling a large amount of a chemical. "Large" is defined by the Environmental Protection Agency (EPA), not by your employer. Here are some examples of emergencies:

- A semi crashes and barrels spill out on the side of the road. No one knows what is in them.
- Two chemicals in lab mix, forcing you and your co-workers out of the room.
- A tank of solvent in an auto shop overflows. All of the brake mechanics--in fact everyone in the shop--are pulled off of their regular jobs to clean up the spill.
- One pound of Chlordane (a very poisonous pesticide) spills in the storage room.

F. (continued)

It is your employer's responsibility to decide ahead of time which spills you can handle and which ones are emergencies. The union should review the plan and make sure that it protects workers. In an emergency, only workers with special training and equipment may go near the spill. The definition of an emergency is a very important part of your employer's emergency plan. See page 304 for more information about your employer's emergency plan.

(Source: OSHA Hazardous Waste Operations and Emergency Response Standard, 29 CFR 1910.120 (a)(3).)

G. How Small Is Small?

It depends! Workers can handle some spills, especially small spills of less dangerous materials. But you always need specially trained workers if:

- The material is very dangerous
- The spill is large (even if the material is not extremely dangerous)
- You don't know what the chemical is
- Chemicals may mix

Workers can usually clean up:

A small spill of gasoline or diesel fuel (less than 10 gallons)	**Unless**	It has mixed with another chemical (see below)
		It is on fire
A small leak (a propane cylinder)	**Unless**	It is a deadly chemical (like chlorine)
A spill of less than 55 gallons (one drum)	**Unless**	It has mixed with another chemical
		It is a deadly chemical (like styrene)

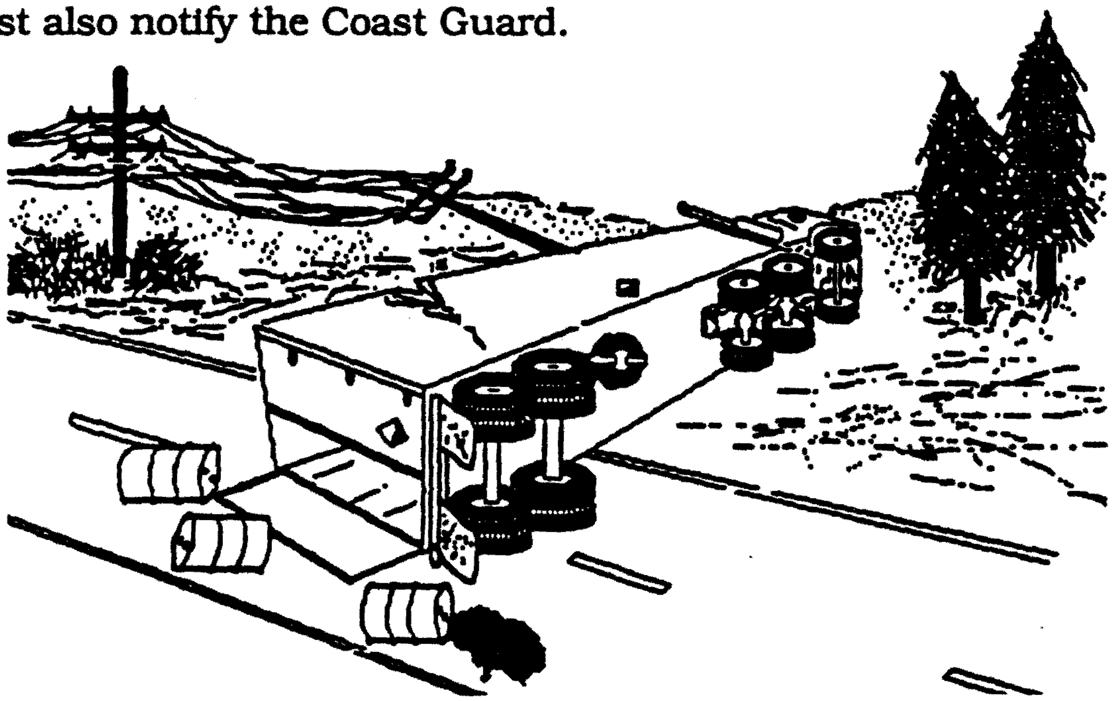
H. How Large Is Large?

It depends! What if your employer only wants to call it an emergency if the spill is enormous? The government has a definition of large spills. This is called the **Reportable Quantity** (RQ). Large spills (bigger than the **Reportable Quantity**) have to be reported to the Coast Guard. The definition of a spill in employer's emergency plan may not be bigger than the **Reportable Quantity.** Here are the **Reportable Quantities** for a few different materials:

asbestos	1 pound
chlorine	100 pounds
sodium hydroxide (lye)	1,000 pounds

You can find the reportable quantities for various chemicals in the *Driver's Guide to Hazardous Materials.*

If any gasoline or oil gets into a river or ocean, your employer must also notify the Coast Guard.



(Sources: CERCLA Reportable Quantities, 40 CFR 302, John V. Currie, *Driver's Guide to Hazardous Materials*, Alexandria, VA: American Trucking Associations, 1992, and *First-on-the-Scene Awareness Program*, Midwest Consortium for Hazardous Waste Worker Training.)

I. What Can Happen at a Spill?

Your first instinct in an emergency is probably to jump in and help. But in a hazardous materials emergency, trying to save someone's life could cost you your own. You could do more harm than good. Shutting off a valve, putting dirt on spilled material, or rescuing someone could poison you, start a fire, or set off an explosion. "Doing the right thing" could be the wrong thing at a hazardous materials emergency.

Workers who respond to hazardous materials emergencies need special protective equipment and training. In fact, the only workers who are allowed to actually handle hazardous materials during a spill must have at least 40 hours of training.

Here are a few examples of what can happen during a spill:

A16 FRIDAY, APRIL 15, 1994

Pesticide Truck Blast Leads to Evacuation

Dallas Morning News

BALCH SPRINGS, Tex., April 14—A truck carrying 21 tons of pesticide crashed and exploded this morning on Interstate 20 southeast of Dallas, churning up a cloud of smoke that sent scores of people to hospitals and forced 4,000 people to evacuate.

A five-square-mile area still was sealed off tonight after the fire was extinguished about 6:15 p.m. Environmental experts were testing the evacuated area for contamination from the fire, which killed the truck's driver.

As many as 100 people went to hospitals, but doctors said they found no cases of pesticide poisoning.

The truck was carrying 43,000 pounds of the acutely toxic pesticide aldicarb in granular form. Police said the truck exploded after it struck the post of an overhanging highway sign on I-20's eastbound side.

(Source: *Washington Post*)

I. (continued)

**JURY AWARDS INJURED WORKER $1 MILLION;
TRIAL FOCUSED ON ADEQUACY OF WARNING LABEL**

An Ohio jury awarded more than $1 million Feb. 28 for severe injuries suffered by a worker cleaning up toxic chemicals that leaked from a punctured drum. . . .

As a result of his injuries [Joseph] Darvis suffers from headaches, rectal bleeding, memory loss, and speech problems.

On Sept. 28, 1988, Darvis reported to work as a dock employee at Conway Central Express Co. . . . A supervisor asked Darvis to unload a truck containing four 55-gallon drums. The drums contained Gen-Glaze-550, a styrene-containing polymeric material. . . .

Punctured Drum

Unknown to Darvis, one drum had been punctured earlier that day as a fork-lift loaded the barrel onto the truck at Gen-Corp's Pilot Plant. . . .

When Darvis opened the truck's rear door, he noticed a paint-like odor. He started unloading the barrels, but soon discovered a five-foot-by-eight-foot pool of liquid at the base of one of the barrels.

The substance, which looked like tar, was the source of the smell. Looking back at the drums, Darvis noted that each barrel was marked with a large red diamond containing the following language: "Flammable Liquid, N.O.S., Flash Point: 86 Degrees F, UN 1993."

Darvis notified his supervisor of the spill. They decided that the material should be renmoved quickly and that the are should be sealed to reduce the risk of an explosion. Darvis grabbed a shovel and began loading the chemicals into four boxes, which he dumped in a nearby dumpster.

The entire process took 35 minutes to 40 minutes. Near the end of the cleanup, Darvis felt a little dizzy and noticed some eye irritation. . . . Darvis shrugged it off and finished the disposal. . . . He asked his supervisor whether a respirator would be necessary and was told it was not.

Darvis' symptoms worsened and he left work early. He never returned to work.

(Source: *Occupational Safety and Health Reporter*, ??/??/??, p. ???)

I. (continued)

C2 THURSDAY, NOVEMBER 4, 1993 •••

I-95 Blocked by Tanker Truck Blaze

■ A tanker truck fire shut down part of Interstate 95 in Prince George's County for nearly 30 minutes yesterday, authorities said.

The tanker truck, carrying 7,500 gallons of diesel fuel, caught fire shortly after 7 a.m on I-95 near Route 198 in Laurel, said Pete Piringer, a spokesman for the Prince George's County Fire Department.

Firefighters quickly extinguished the fire, which began in the truck's brakes and spread to the tires. But authorities closed all four southbound lanes while emergency workers cleared the scene and ensured that the fuel did not ignite, Piringer said. Three of the four southbound lanes were reopened about 8 a.m., he said.

The truck's driver suffered minor burns on a hand when he tried to extinguish the fire, Piringer said.

Acid Spill

On August 11, 1993, James Watson was driving a forklift for Frederick Trading Company in Frederick, MD when 40 one-gallon jugs of muriatic acid were knocked off the pallet. 20 of the jugs broke open, and his co-worker Ryan Grimes called maintenance to have the spill cleaned up.

Raymond Val, the maintenance supervisor, arrived with several co-workers, and tried to clean up the spill. They wore dust respirators and gloves. 3 of the workers were sent to the hospital for acid burns to their lungs. The company was fined $9,500 for not training the employees about how to respond to chemical spills.

(Source: *Washington Post* and OSHA inspection report #0352450-S.)

L (continued)

7/16/91 A3

Chemical Spill Kills California Fish

Los Angeles Times

A derailed Southern Pacific tank car spilled as much as 19,000 gallons of a poisonous weed killer into the Sacramento River in northern California, forcing the evacuation of hundreds of residents, killing tens of thousands of fish and devastating the ecosystem along a 40-mile stretch of the stream, officials said yesterday.

The spill in southern Siskiyou County on Sunday night also forced the temporary closure of a 50-mile stretch of Interstate 5 and briefly engulfed the small city of Dunsmuir in a noxious cloud of gas.

At least two dozen people sought treatment at local hospitals, mostly for headaches, dizziness, nausea and eye irritation. By early today, the toxic compound was expected to reach Lake Shasta, a key source of drinking water for millions of Californians. Federal officials said the chemical would probably pose no threat to the water supply because it will be sufficiently diluted.

Summary: What Are Hazardous Materials Emergencies?

1) Hazardous materials include:

- chemicals that can burn or explode
- chemicals that cause cancer
- poisons
- germs
- radioactive materials
- chemicals that can cause violent chemical reactions.

2) If you don't know what chemical has spilled, assume it is hazardous.

3) If you don't know exactly what the dangers are, don't go near it.

4) A hazardous materials emergency is a spill or leak that you and your co-workers <u>in the area</u> can't handle on your own.

5) It's your employer's responsibility to decide <u>ahead of time</u> which spills you can handle and which ones are emergencies. The union should review the plan and make sure that it protects workers.

6) Shutting off a valve, putting dirt on spilled material, or rescuing someone could poison you, start a fire, or set off an explosion. "Doing the right thing" could be the wrong thing at a hazardous materials emergency.

7) Workers who respond to hazardous materials emergencies need special protective equipment and training. Workers who handle hazardous materials during a spill must have at least 40 hours of training.

NOTES

Activity 2: Using Labels

Purpose:

To help understand what information labels do and do not have to help us in an emergency.

Task 1:

Your group is the union health and safety commitee for SEIU Local 94. Main St. waste water treatment plant management is thinking about buying a new product. Your committee will look at information about the product and tell management whether you think it is OK for workers to use it.

As a group, please use:

- the labels on pages 33 - 34
- your own experience and
- the factsheets on pages 37 - 39

to answer the following questions:

1) **What other steps does your employer have to take under the "Right-to-Know" law besides making sure every container has a label on it?**

2) **What health hazards do the labels tell you about?**

Prestone (p. 33) | **Startex (p. 34)**

(over)

Task 1: (continued)

3) **What safety hazards do the labels tell you about?**

Prestone (p. 33) **Startex (p. 34)**

4) **How would you contact the manufacturers in an emergency?**

5) **Very little information is actually required by law to be on a label. What other information would you want to have in an emergency?**

(over)

Task 1: (continued)

Prestone®

SUPER ANTI-RUST

HEAVY DUTY FORMULA

Plus WATER PUMP LUBRICANT
DANGER: HARMFUL OR FATAL IF SWALLOWED
Read cautions on back label 14.5 FL. OZ. (428 mL)

CONTAINS WATER PUMP LUBRICANT SAFE WITH ALL METALS & ANTIFREEZE/COOLANTS. EASY TO USE
DIRECTIONS: WARNING: Do not remove radiator cap while engine is hot. Allow cooling system to cool. Check owners manual for cap removal instructions.
1. With engine off and cool, (see warning above), remove radiator cap.
2. **Shake bottle well** and add the entire contents of Prestone Super Anti-Rust. One container treats up to an 18 quart cooling system. Check owners manual for capacity.
3. Replace radiator cap, run engine for 10 minutes to mix thoroughly.

DANGER: Contains petroleum distillates. Do not swallow. If swallowed, do not induce vomiting. Call physician, Poison Control Center or Hospital Emergency Room immediately.

0 71153 65130 2

KEEP OUT OF REACH OF CHILDREN

FIRST BRANDS

DISTRIBUTED BY
FIRST BRANDS CORPORATION
P.O. Box 1911
DANBURY, CT 06813-1911

W-3801 MADE IN U.S.A. AS-117

PRESTONE
SUPER ANTI-RUST

STARTEX™
QUALITY PRODUCTS

LACQUER THINNER

CONTAINS: Methyl Ethyl Ketone 78-93-3; Aliphatic Petroleum Distillates 64742-89-3; Toluene 108-88-3; Ethylene Glycol Monobutyl Ether 111-76-2; Methyl Alcohol 67-56-1 (not more than 4%), Acetone 67-64-1.

WARNING: Contains methyl alcohol which is a violent poison. **CANNOT** be made non-poisonous. Flammable. Keep away from heat, sparks, open flame, pilot lights, electrical devices and all other sources of ignition. Do not transfer contents to bottles or other unlabeled containers. Open container slowly to relieve any pressure. Close container after each use. Avoid contact with skin, eyes and clothing. Prolonged contact may cause skin irritation and/or dermatitis. Wear chemical-type splash goggles and protective clothing, including impermeable apron and gauntlet-type gloves. Avoid breathing of vapor or spray mist. Use only in a well-ventilated area, preferably outdoors. For an OSHA controlled workplace and other regular users - Use only with adequate ventilation under engineered air control systems designed to prevent exceeding appropriate TLV. Overexposure to vapors may be prevented by ensuring ventilation controls (vapor exhaust or fresh air entry). If used indoors, open all windows and doors and use other means as necessary to prevent overexposure to vapors. A NIOSH/MSHA-approved (TC-23C) paint spray respirator may also reduce exposure. A dust mask does not provide protection against vapors. In all cases, read respirator manufacturer's instructions and literature carefully to determine the type of airborne contaminants against which the respirator is effective and how it is to be properly fitted. Do not use this product as general-purpose cleaner. Empty container may contain explosive vapors. Do not cut, puncture or weld on or near this container. **Before using, transporting, or storing this product, see Material Safety Data Sheet for additional cautions.**

FIRST AID—ANTIDOTE:

Internal: If swallowed, do not induce vomiting. Contact a Poison Control Center, emergency room or physician immediately.

Eyes: Flush thoroughly with water and get medical attention.

External: Immediately wash thoroughly with soap and water. If irritation persists, call a physician.

NOTICE: Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal.—If you experience eye watering, headaches or dizziness, increase fresh air or wear OSHA-Approved respiratory protection or leave the area—Vapors are invisible and can be ignited by ignition sources many feet away. Extinguish all flames and pilot lights and turn off stoves, heaters, electric motors and all other sources of ignition during the use of this product and until ALL vapors are gone.—Since the manufacturer cannot control the conditions or application methods, the manufacturer cannot assume responsibility for damage to property or person regardless of the legal theory asserted. No warranty or liability beyond replacement of defective product is offered.

STARTEX CHEMICAL, INC.
CUT AND SHOOT, TX 77303

8/94

Task 2:

José, a Local 94 member from Main St. Department of Public Works came to you with the following statement. As a group, please respond to his statement using:

- the label on the next page
- your own experience and
- the factsheets on pages 37 - 40.

to prepare your response.

> **"For the last 2 years I've been using this pesticide for the parks. It didn't bother me at first, but now my hands are breaking out in a rash. It gets better over the weekend, but by the end of the day on Monday my hands itch so much I can hardly work. I don't know if it's the cleaner or what, but I can't keep going on like this"**

You have asked José to bring you the container, which has the label shown on the next page.

What is your group's response to his statement?

(over)

Task 2: (continued)

DOW

DURSBAN* 2E

INSECTICIDE

Controls Numerous Pests of Households, Turf, and Ornamental Plants. Also Recommended for Mosquito Control and Area Control of Ticks and Chiggers.

To Be Applied Only By or Under the Supervision of Pest Control Operators, Public Health Organizations, Mosquito Abatement Districts, and Other Trained Personnel Responsible for Insect Control Programs

ACTIVE INGREDIENTS:	
Chlorpyrifos (O,O-diethyl O-(3,5,6-trichloro-2-pyridyl)phosphorothioate)	22.4%
Aromatic petroleum derivative solvent	42.1%
INERT INGREDIENTS:	35.5%

Contains 2 pounds of chlorpyrifos per gallon.

E.P.A. Registration No. 464-343 E.P.A. Est. 464-[illegible]

AGRICULTURAL CHEMICAL

Do Not Ship or Store with Food, Feeds, or Clothing

PRECAUCION AL USUARIO: Si usted no lee inglés, no use este producto hasta que la etiqueta le haya sido explicada ampliamente.

TRANSLATION: (TO THE USER: If you cannot read English, do not use this product until the label has been fully explained to you.)

WARNING

KEEP OUT OF REACH OF CHILDREN • MAY BE FATAL IF SWALLOWED • MAY BE ABSORBED THROUGH SKIN • MAY BE INJURIOUS TO EYES AND SKIN • COMBUSTIBLE

Do Not Take Internally • Do Not Get in Eyes or on Skin • Wash Thoroughly After Handling Wash *Contaminated* Clothing Before Reuse • Flush Contaminated Eyes with Plenty of Water and Get Prompt Medical Attention • Avoid Breathing Vapors and Spray Mist • Avoid Spraying Food Crops • Keep Away from Food, Feedstuffs, and Domestic Water Supplies Keep Container Closed • DO NOT USE, POUR, SPILL, OR STORE NEAR HEAT OR OPEN FLAME • Handle Concentrate in a Ventilated Area.

Note to Physician: Chlorpyrifos is a cholinesterase inhibitor. Treat symptomatically. Atropine is an antidote.

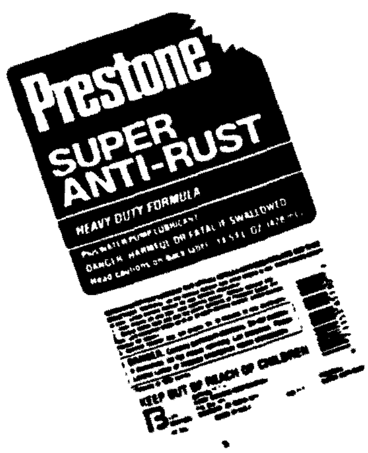
A. Different Kinds of Labels

All hazardous materials must have labels. All labels must have certain information:

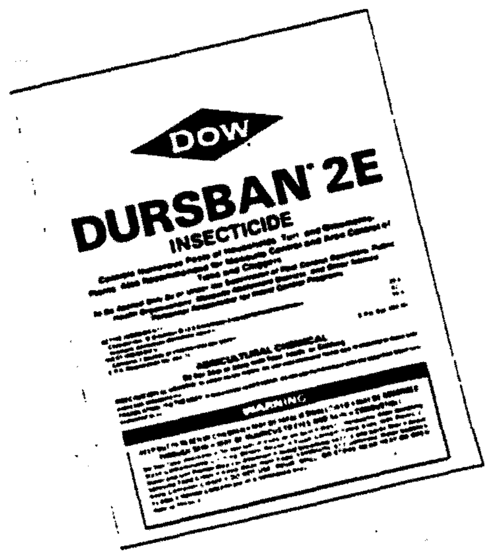
- the name of the product
- health warnings
- the manufacturer's name and location

Some products must have more information on their labels, such as:

• Consumer products (like cleaners)	have	Right-to-Know Labels
• Germicides (including sterilants and cleaners)	have	Pesticide Labels



Right-to-Know Label



Pesticide Label

B. The Right-to-Know Law

Under the Right-to-Know law, your employer has to train you about the dangers of the chemicals you work with. The law says your employer has to do 4 things:

1) Have **labels** on the products you work with (see page 39).

2) Keep **chemical fact sheets** (called Material Safety Data Sheets or MSDSs) on the job (see Activity 3).

3) **Train** healthcare workers about the dangers of the chemicals they work with.

4) **Write a plan** that explains how the employer will do these things.

You will need to work with your union to be sure this law works for you. You have the right to get copies of MSDSs and plans, to make sure they are really protecting you.

Some states have their own Right-to-Know laws. Some of those are stronger than the federal law. In 12 states, there is no State Right-to-Know law (AL, AR, CO, ID, KS, LA, NE, OH, OK, MI, MS, and SD). State and local government workers are not protected by any right-to-know law in these states, since the federal law applies only to private sector workers. For more information about Right-to-Know laws, see page 310.

(Source: OSHA Hazard Communication Standard, 29 CFR 1910.1200 (e), 59 FR 6169, February 9, 1994.)

C. Using "Right-to-Know" Labels

By law, every product you use at work that contains hazardous chemicals must have a label on it. Your employer must put on a label if the product doesn't come with one. The label is your first clue about the hazards of the chemical. The label must have some of the information that is on the Material Safety Data Sheet (MSDS)--the chemical factsheet. Until you get the MSDS, use the information you have on the label. The label must tell you:

- The name of the product and the hazardous chemicals in it.

- Health hazard warnings--for example, CAUSES KIDNEY DAMAGE. Many labels just say, "Warning: Do not get on skin." This is not enough. It doesn't tell you why you shouldn't get it on your skin, or what could happen if you do. These specific warnings are called "target organ" warnings.

- Physical warnings–for example, FLAMMABLE, CAN BURN AT ROOM TEMPERATURE. Many labels just say, "Danger: Do not heat." This is not enough. It doesn't tell you why you shouldn't heat it, or what could happen if you do.

- If it contains a chemical that causes cancer, it needs a special label. The label must say that it is carcinogenic (causes cancer). Some chemicals may need other special warnings.

- The name and address of the company that sold the chemical. This can just be the city and state, not the street address.

Many labels do not have all the information the law requires. Don't trust the label to be complete. Do use it until you can get more information.

(Source: OSHA Hazard Communication Standard, 29 CFR 1910.1200 (c), (6)(a)(4), (f)(1)(ii), 59 FR 6169, February 9, 1994.)

D. Pesticide Labels

By law, every germicide or sterilant (pesticide) must have a label on it. The Environmental Protection Agency (EPA) makes rules about pesticides. According to the EPA, pesticides must have a lot of information on the label. The health and safety information that you can use includes:

- The words:
  Danger– few drops could kill you or
  Warning– teaspoonfull could kill you or
  Caution– one ounce could kill you

- **Hazards to humans**– for example, CAUSES KIDNEY DAMAGE. Many labels just say, "Do not get on skin." This is not enough. It doesn't tell you why you shouldn't get it on your skin, or what could happen if you do.

- **Physical or chemical hazards** – for example, FLAMMABLE, CAN BURN AT ROOM TEMPERATURE. Many labels just say, "Do not heat." This is not enough. It doesn't tell you why you shouldn't heat it, or what could happen if you do.

- Exactly what the pesticide is (the **active ingredients**). Some solvents in pesticides (called "inert" ingredients) may also be very dangerous. These do not have to be listed on the label.

If the labels says "Restricted Use," it is very dangerous. You (or a supervisor) must have special training. The label will also tell you:

- How to mix or use the pesticide so that less gets into the air or on your skin.
- How to store it so that it won't catch fire or react with other chemicals
- The manufacturer's name and address

(Source: EPA/FIFRA Pesticide Labeling regulations, 40 CFR 156.)

Summary: Using Labels

1) Consumer products and pesticides have different labels. But the basic information on them is the same.

2) Your employer has to make sure than there is a label on every container. Labels don't really have enough information to be very helpful in an emergency situation, but they're better than nothing.

3) All labels must have:

- the name of the product
- health warnings
- the manufacturer's name and address.

4) Right-to-Know labels also have special warnings if any ingredients cause cancer.

5) Pesticide labels also have the word Caution (dangerous), Warning (very dangerous), or Danger (extremely dangerous). They also tell you how to use and store the pesticide in safer ways.

NOTES

Activity 3: Using Material Safety Data Sheets (MSDS)

Purpose:

To help understand what information chemical fact sheets do and do not have to help us in an emergency.

Task 1:

Craig, one of your co-workers from Main St. wastewater treatment plant, has come to talk to some union stewards at lunch about a new product he is concerned about. He uses it in a room without ventilation, and breathes it and gets it on his skin. He says it "almost knocked him out" the day before. You decide to get more information from a Material Safety Data Sheet (MSDS).

Your trainer will tell you which of the MSDSs on the next few pages to use. Please work with your group to answer the questions below. Use the factsheets on pages 54 - 71 to help you figure out the MSDS.

1) **What chemical(s) are in this product?** (See the section called "Hazardous Ingredients." The words in parentheses are other names for the same chemical (synonyms)).

2) **According to the MSDS, how can the product get into your body?** (See the section called "Health Hazards" on the MSDS. See page 60 for help in understanding this section.)

Task 1: (continued)

3) **What short-term health problems does the MSDS tell you about?** (Look for the word "Acute" in the "Health Hazards" section of the MSDS. See page 60.)

4) **What long-term health problems does the MSDS tell you about?** (Look for the word "Chronic" in the "Health Hazards" section of the MSDS. See page 60.)

5) **According to the MSDS, can this product cause cancer?** (Hint: You may find the word "Carcinogenic" in the "Health Hazards" section of the MSDS. Carcinogenic means "cancer-casusing." If the MSDS says "Y" or "Yes" the product causes cancer. See page 60.)

6) **According to the MSDS, can this product catch on fire or explode?** (See the section called "Fire Hazards" in the MSDS. You may find the "flash point." If this number is less than 140, it is very dangerous. See page 62.)

Task 1: (continued)

7) **Given all of this information about the product, what will your group of stewards tell your co-worker Craig?**

8) **What do <u>you</u> think are the problems with finding information on MSDSs and counting on them for information?**

9) **Write the name of one product you work with that you want to find out more about when you go back to work.**

Task 1: (continued)

4450 Cranwood.Pky.
Cleveland, Ohio 44128

(216) 663-3011
FAX: (216) 663-3614
24Hour Emergency Number:
Chemtrec (800) 424-9300

LOCTITE CORPORATION
North American Group

* ATTN: SAFETY SUPERVISOR
S.E.I.U.
ATTN MIKE DUFFY
1313 "L" STREET N.W.
WASHINGTON DC 20005

MATERIAL SAFETY DATA SHEET

DATE: 12/02/92
PAGE: 1

I. PRODUCT IDENTIFICATION

PRODUCT NAME: LOCTITE KLEAN N' PRIME
PART NO.: 2556 UPC CODE: (79340)- 02556
PRODUCT TYPE: AEROSOL CLEANER

II. COMPOSITION

INGREDIENTS	CAS. #	% WT.	ACGIH TLV	ACGIH STEL	OSHA PEL
*1,1,1-TRICHLOROETHANE(1)	71-55-6	85-90	350PPM	450PPM	350PPM
ISOPROPYL ALCOHOL(2)	67-63-0	5-10	400PPM	500PPM	400PPM
N,N-DIALKYLTOLUIDINE(3)	N/A	1-2	N/E	NONE	N/E
MERCAPTOBENZOTHIAZOLE	149-30-4	1-3	N/E	NONE	N/E
CARBON DIOXIDE PROPELLENT	124-38-9	3-5	5000PPM	30000PPM	5000PPM

(1)1,1,1-TRICHLOROETHANE IS AN EYE IRRITANT. IT IS MODERATELY TOXIC BY INHALATION. TOXICITY BY INGESTION IS LOW. IT HAS BEEN SHOWN TO CAUSE REPRODUCTIVE EFFECTS AND KIDNEY AND LIVER DAMAGE IN EXPERIMENTAL ANIMALS ON PROLONGED INHALATION. IT IS OUR BEST TECHNICAL JUDGEMENT THAT, WITH PROPER PRECAUTIONS, NORMAL USE OF THIS PRODUCT POSES NO SUCH HAZARDS.
(2) OVER EXPOSURE TO ISOPROPYL ALCOHOL VAPOR MAY IRRITATE THE EYES, NOSE, THROAT. LIQUID ISOPROPYL ALCOHOL IS AN EYE IRRITANT AND MODERATELY TOXIC BY INGESTION.
(3) N,N-DIALKYLTOLUIDINE IS MODERATELY TOXIC BY INGESTION.
*THIS COMPONENT IS LISTED AS A SARA SECTION 313 TOXIC CHEMICAL.

III. CHEMICAL AND PHYSICAL PROPERTIES

VAPOR PRESSURE	: APPROX. 100MM @70 DEG F
VAPOR DENSITY	: APPROX. 4.5
SOLUBILITY IN WATER	: SLIGHT
APPEARANCE	: YELLOW LIQUID
SPECIFIC GRAVITY	: 1.3 @ 70 DEG F
BOILING POINT	: 170-180 DEG F
PH	: DOES NOT APPLY
ODOR	: SHARP

IV. TOXICITY AND HEALTH HAZARD DATA

TOXICITY: MODERATE VIA INGESTION
EYE IRRITANT
CARCINOGENICITY: NTP : N
IARC MONOGRAPHS: N
OSHA REGULATED: N
HMIS HAZARD COMMUNICATION CODES: HEALTH (2) FIRE (1) REACTIVITY (0)
TLV: SEE SECTION II-COMPOSITION
PRIMARY ROUTES OF ENTRY:
SKIN, INGESTION, INHALATION
EXISTING CONDITIONS AGGRAVATED BY EXPOSURE:
NONE ESTABLISHED
SYMPTOMS OF OVEREXPOSURE:
HEADACHE, NAUSEA, DIZZINESS. NARCOSIS AT HIGH CONCENTRATIONS.

EMERGENCY TREATMENT PROCEDURES:
INGESTION:
DO NOT INDUCE VOMITING. CALL PHYSICIAN
INHALATION:
REMOVE TO FRESH AIR. CALL PHYSICIAN.
SKIN CONTACT:
FLUSH THOROUGHLY WITH LARGE AMOUNTS OF WATER.
EYE CONTACT:
FLUSH THOROUGHLY WITH WATER FOR AT LEAST 15 MINUTES. CALL PHYSICIAN.
PERSONAL PROTECTION:
EYES: WEAR SAFETY GLASSES OR GOGGLES.
SKIN: WEAR RUBBER OR PLASTIC GLOVES.

Task 1: (continued)

PART #:2556 PAGE: 2

VENTILATION:
SUFFICIENT TO MAINTAIN VAPOR CONCENTRATION BELOW TLV.

V. FLAMMABILITY AND EXPLOSIVE PROPERTIES

FLASH POINT: 138 DEG F (BASE ONLY) METHOD: T.C.C.
EXPLOSIVE LIMITS(% BY VOLUME IN AIR) LOWER: UNK % UPPER: UNK %
RECOMMENDED EXTINGUISHING AGENTS: CO2,FOAM,DRY CHEMICAL
HAZARDOUS PRODUCTS FORMED BY FIRE OR THERMAL DECOMPOSITION:
TOXIC CHLORIDES
UNUSUAL FIRE OR EXPLOSION HAZARDS:
NONE KNOWN
COMPRESSED GASES:
NAME: CARBON DIOXIDE
PRESSURE AT ROOM TEMPERATURE: 50PSI

VI. REACTIVITY DATA

STABILITY:	X	STABLE		UNSTABLE
HAZARDOUS POLYMERIZATION:		MAY OCCUR	X	WILL NOT OCCUR

HAZARDOUS DECOMPOSITION PRODUCTS(NON-THERMAL):
CHLOROACETYLENES
INCOMPATIBILITY:
CAUSTICS AND ACTIVE METALS

VII. SPILL OR LEAK AND DISPOSAL PROCEDURES

STEPS TO BE TAKEN IN CASE OF SPILL OR LEAK:
ALLOW TO EVAPORATE WITH GOOD VENTILATION. SOAK UP RESIDUE WITH INERT ABSORBENT.
RECOMMENDED METHODS OF DISPOSAL:
FOLLOW EPA AND LOCAL REGULATIONS FOR DISPOSAL OF CHLORINATED HYDROCARBONS. DO NOT INCINERATE PRESSURIZED CANS.

CERCLA REPORTABLE QTY(IN LBS.): N/A
RCRA HAZARDOUS WASTE NO.: N/A

VIII. STORAGE AND HANDLING PROCEDURES

STORAGE: STORE BELOW 110 DEG F
HANDLING:AVOID PROLONGED BREATHING OF VAPOR.

IX. SHIPPING REGULATIONS

DOT TYPE OR CLASS: ORM-D
PROPER SHIPPING NAME: CONSUMER COMMODITY

IATA TYPE OR CLASS: CLASS 2- COMPRESSED GAS SUBSIDIARY RISK 6.1
PROPER SHIPPING NAME: AEROSOL, NON FLAMMABLE, N.O.S. UN1950

IMCO TYPE OR CLASS: CLASS 9
PROPER SHIPPING NAME: AEROSOL
UN #: 1950 PAGE: 9022

PREPARED BY: JEAN TOBBE
TITLE: ENVIR. HEALTH AND SAFETY SPECIALIST
DATE: 2/25/92
SUPERSEDES: 1/22/90
N/A = NOT AVAILABLE
EST = ESTIMATE
DNA = DOES NOT APPLY
UNK = UNKNOWN
N/E = NOT ESTABLISHED
Y = YES
N = NO

MSDS #2

Task 1: (continued)

MATERIAL SAFETY DATA SHEET

I - PRODUCT IDENTIFICATION

COMPANY NAME: Calgon Vestal Laboratories	
ADDRESS: 5035 Manchester Avenue Saint Louis, Missouri 63110	Tel No: (314)535-1810 Nights: (314)535-1395 CHEMTREC: (800)424-9300
PRODUCT NAME: Vesphene II	Product No.: 6393

Synonyms: Aqueous Phenolic Germicidal Detergent

II - HAZARDOUS INGREDIENTS OF MIXTURES

MATERIAL:	(CAS#)	% By Wt.	TLV	PEL
#2-phenylphenol	(90-43-7)	<10	N/A	N/A
o-benzyl-p-chlorophenol	(120-32-1)	< 5	N/A	N/A
sodium p-tertiary amylphenate	(80-46-6)	< 5	N/A	N/A
hexylene glycol	(107-41-5)	<5	25ppm	25ppm
isopropanol	(67-63-0)	<5	400ppm	400ppm

Ingredient subject to reporting under Section 313 of Title III (SARA) and 40 CFR 372.

III- PHYSICAL DATA

Vapor Pressure, mm Hg: N/A	Vapor Density (Air=1)80-90F: N/A
Evaporation Rate(ether=1): N/A	% Volatile by wt 82%
Solubility in H2O: Complete	pH @ 1:128 Solution 10.4
Freezing Point F: 20F	pH as Distributed: 12.4
Boiling Point F: @14.7 psig 200F	Appearance: Amber liquid
Specific Gravity H2O=1 @25C: 1.035	Odor: Mild and pleasant

IV - FIRE AND EXPLOSION

Flash Point F: 117F (Closed Cup)	Flammable Limits: N/A

Extinguishing Media: Suitable for surrounding fire - water, CO2, foam, dry chemical.

Special Fire Fighting Procedures: N/A

Unusual Fire and Explosion Hazards: N/A

V - REACTIVITY DATA

Stability - Conditions to avoid: None known

Incompatibility: None known

Hazardous Decomposition Products: Forced ignition of dried residues will produce CO2, CO, sulfur oxides.

Conditions Contributing to Hazardous Polymerization: Will not occur.

(Cont'd on Page 2)

Task 1: (continued)

Vesphene II
VI - HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE (Medical Conditions Aggravated/Target Organ Effects.
A. ACUTE (Primary Route of Exposure) EYES & SKIN: Use dilution slightly irritating to eyes.Concentrate corrosive to skin and eyes. INHALATION: Inhalation toxicity >30ml/ft3 at 1:128 for 6 hours.Mists may be irritating to nasal passages.INGESTION: Oral LD50 rats 5.9gm/kg.Concentrate is extremely irritating to mouth,throat and stomach.
B. SUBCHRONIC,CHRONIC,OTHER: According to the OSHA Standard 29 CFR Part 1900.1200, sodium o-phenylphenate is listed as a potential carcinogen by IARC. Sodium o-phenylphenate tetrahydrate has been shown to cause bladder tumors when fed at exaggerated doses to rats. However, risks from environmental exposures are considered negligible.

VII - EMERGENCY AND FIRST AID PROCEDURES

EYES: In case of contact,immediately flush eyes with plenty of water for at least 15 minutes.Call a physician.SKIN: In case of contact, immediately flush skin with plenty of water for at least 15 minutes. Remove and wash contaminated clothing before reuse.INHALATION: Remove to fresh air and contact a physician if irritation persists. INGESTION: If swallowed,DO NOT induce vomiting.Drink large quantities of fluid and call a physician immediately.

VIII - SPILL OR LEAK PROCEDURES

Spill Management: Spills may be cleaned up with flowing water.

Waste Disposal Methods: Waste solutions may be sewered.

IX - PROTECTION INFORMATION/CONTROL MEASURES

Respiratory: None normally required.	Eye: Safety glasses or goggles	Glove: Rubber

Other Clothing and Equipment: Mists of use solution may be irritating to nasal passages and lungs.

Ventilation: Normal room ventilation.

X - SPECIAL PRECAUTIONS

Precautions to be taken in Handling and Storing: This product will withstand an occasional accidental freezing without loss in its normal performance characteristics.It must be thoroughly thawed and agitated (roll drum) before being used.
Additional Information: Read and observe labeled use instructions.

Prepared by: D. Godward   Revision Date: 04/09/91

Seller makes no warranty, expressed or implied, concerning the use of this product other than indicated on the label. Buyer assumes all risk of use and/or handling of this material when such use and/or handling is contrary to label instructions.

While Seller believes that the information contained herein is accurate, such information is offered solely for its customers' consideration and verification under their specific use conditions. This information is not to be deemed a warranty or representation of any kind for which Seller assumes legal responsibility.

PAGE 2

Task 1: (continued)

Chemical Fact Sheet Version 2

CHLORINE

The information in this sheet applies to workplace exposure resulting from processing, manufacturing, storing or handling and is not designed for the population at large. Any generalization beyond occupational exposure should not be made. The best industrial hygiene practice is to maintain concentrations of all chemicals at levels as low as is practical.

Chemical Names: Chlorine gas; CAS 7782-50-5.

Trade Names: Bertholite, and others.

Uses: Bleaching fabrics, water purification, manufacture of rubber and plastics, detinning and dezincing of iron and manufacture of chlorinated hydrocarbons.

PHYSICAL INFORMATION

Appearance: Greenish-yellow gas, amber liquid under high pressure of refrigeration.

Odor: Strongly suffocating and irritating.

Behavior in Water: Soluble.

HEALTH HAZARD INFORMATION

OSHA Standard: 1 ppm.

NIOSH Recommended Limit: 0.5 ppm

ACGIH Recommended Limit: Average 8 hour exposure -- 1 ppm.

Short Term Exposure:

Inhalation: 1.0 ppm may produce irritation of the nose, mouth and throat: at 1.3 ppm and above, irritation may be more pronounced with coughing and labored breathing; high concentration may cause throat muscle spasm leading to suffocation and death; delayed effects may include accumulation of fluid in the lungs, bronchitis and pneumonia. Death may occur after a few breaths at 1000 ppm.

Skin: Strong irritant; may cause both chemical burns and freezing.

Eyes: Irritation reported at 1 ppm, splashed liquid may cause both chemical burns and freezing.

Ingestion: Severe irritant. May cause severe chemical burns and freezing of mouth, throat and stomach. May cause death.

Long Term Exposure: Impairment of breathing functions, tooth erosion, anxiety and the formation of acne-like lesions on the skin have been reported.

*Prepared by the Bureau of Toxic Substance Assessment, New York State Department of Health. For an explanation of the terms and abbreviations used, see "Toxic Substances: How Toxic is Toxic" available from the New York State Department of Health.

Task 1: (continued)

EMERGENCY AND FIRST AID INSTRUCTIONS

Inhalation: Give artificial respiration or oxygen as required. A positive pressure respirator may be necessary. If available give bronchodialtors and decongestants. Seek immediate medical attention.

Skin: Remove soiled clothing after allowing to thaw. Wash with large amounts of water for at least five minutes. Treat as chemical burn. Seek medical attention.

Eyes: Wash with large amounts of water for at least 15 minutes. Seek medical attention.

Ingestion: Seek medical attention immediately.

Note to Physician: Chest x-rays should be followed and pulmonary function tests performed.

FIRE AND EXPLOSION INFORMATION

General: Chlorine is non-flammable. However, it is a strong oxidizer and will support the burning of other materials.

Extinguisher: Use an extinguisher appropriate to the burning material.

REACTIVITY

General: Chlorine and chlorine solutions are highly corrosive and strong oxidizing agents.

Materials to Avoid: Chlorine reacts with anything that burns. It will form explosive mixtures with nitrogen, acetylene, turpentine, ether, ammonia, fuel gas, hydrocarbons and finely divided metals.

Conditions to Avoid: Aqueous solutions of chlorine will react on long standing, especially in exposed to light, giving off oxygen and hydrochloric acid. Chlorine will react in a similar way when exposed to moisture.

PROTECTIVE MEASURES

Storage and Handling: Protect containers against physical damage. Store cylinders and tin containers in a cool, dry, relatively isolated area, protected from weather and extreme temperature changes.

Engineering Controls: Ventilate work area to reduce exposure. Eye wash stations, showers and sinks should be available.

Protective Clothing (Should not be substituted for proper handling and engineering controls): Wear impervious clothing and goggles.

Protective Equipment: For levels up to 5 ppm use a chemical cartridge respirator providing protection against chlorine, a supplied-air respirator or a self-contained breathing apparatus. For levels up to 12.5 ppm use a supplied-air respirator operated in continuous-flow mode or a powered air-purifying respirator providing protection against chlorine. For levels up to 25 ppm use a chemical cartridge respirator with a full facepiece and cartridges providing protection against chlorine, a gas masks providing protection against chlorine, a powered air-purifying respirator with a full facepiece and providing protection against chlorine, a self-contained breathing apparatus with a full facepiece of a supplied-air respirator. For levels above 25 ppm or use in areas of unknown concentrations use a self-contained breathing apparatus with a full facepiece operated in a positive pressure mode or a combination Type C supplied-air respirator with an auxiliary self-contained breathing apparatus, both with a full facepiece and operated in a positive pressure mode. For escape use a gas mask providing protection against chlorine or an escape self-contained breathing apparatus.

PROCEDURES FOR SPILLS AND LEAKS: Get workers out of spill area. Put on protective equipment and ventilate thoroughly. For final disposal contact your regional offices of the New York State Department of Environment. Conservation.

For more information: Contact the Industrial Hygienist or Safety Officer at your worksite or the New York St. Department of Health, Bureau of Toxic Substance Assessment, 2 University Place, Albany, New York 12203.

Task 1: (continued)

The State® CHEMICAL MANUFACTURING CO.
MAIN OFFICE AND PLANT: CLEVELAND, OHIO USA 44114-3783
SALES OFFICES / DISTRIBUTION CENTERS WORLDWIDE

MATERIAL SAFETY DATA SHEET

I. IDENTIFICATION
Name: SOS
Type: An aerosol graffiti remover

D.O.T. Shipping Name: Consumer Commodity
D.O.T. Hazard Class: ORM-D
D.O.T. ID No: N/A
D.O.T. Label: N/A

II. HAZARDOUS INGREDIENTS

Material	Weight %	TLV
Propane (CAS #74-98-6)	< 10%	1000 ppm
Isobutane (CAS #75-28-5)	< 10%	1000 ppm
Methanol (CAS #67-56-1)	< 4%	200 ppm
Methyl ethyl ketone (CAS #78-93-3)	< 40%	200 ppm
Xylene (CAS #1330-20-7)	< 45%	100 ppm
Napthenic distillate (CAS #64741-53-3)	< 5%	0.5 mg/m^3 (oil mist)

This product contains Methanol, Methyl ethyl ketone and Xylene which are toxic chemicals subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA).
NOTE: Technical grade Xylene contains 18-20% Ethyl Benzene. Ethyl Benzene (CAS #100-41-4) has a PEL/TLV of 100 ppm (125 ppm-STEL). Ethyl Benzene is subject to the reporting requirements of Section 313 of SARA Title III.

III. PHYSICAL DATA
Boiling Point(F°): 174°F **Specific Gravity(Water=1):** 0.84
Volatile By Weight(%): 100 **Weight Per Gallon(pounds):** 7.01
Solubility in Water: NEGLIGIBLE **pH:** N/A
Appearance & Odor: Clear straw colored liquid - solvent odor.

IV. FIRE & HAZARD DATA
Flashpoint (Method Used): Propellent below 20°F; Extremely flammable
Extinguishing Media: Water fog, Carbon dioxide, or dry chemical
Special Fire Fighting Procedures: Protect firefighters from possible exploding cans if temperatures exceed 120°F.
Unusual Fire & Explosion Hazards: Aerosol cans may burst or explode if temperatures exceed 120°F.

V. HEALTH HAZARD DATA
EFFECTS OF OVEREXPOSURE: DANGER: Harmful or fatal if inhaled deliberately. Contains Methanol, if swallowed may be fatal or cause blindness. Inhalation vomiting. Skin contact may cause dryness and chapping. Repeated or prolonged exposure to Xylene may cause skin rash.
CHRONIC EFFECTS: May cause lung, liver or kidney damage. The solvents listed have been reported to affect the central nervous system.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Heart disease, respiratory disorders

FIRST AID PROCEDURES:
If Swallowed: Do not induce vomiting. Contact a physician or Poison Control Center immediately.
If Inhaled: Remove person to fresh air. Begin artificial respiration if person has stopped breathing. Contact physician immediately.
If in Eyes: Flush eyes immediately with plenty of cool water for at least 15 minutes. Contact physician.
If on Skin: Flush well with water. Wash area with soap and water, if irritation or redness remains, contact a physician.

VI. REACTIVITY DATA

Stability: STABLE
Conditions to avoid: Heat, sparks, and open flames
Incompatibility(Materials to avoid): Strong oxidizers and water
Hazardous Decomposition Products: Carbon dioxide, Carbon monoxide

HAZARDOUS POLYMERIZATION WILL NOT OCCUR

VII. SPILL OR LEAK PROCEDURES

Steps To Be Taken If Material Is Released Or Spilled: Absorb excess material with absorbent. Put into container. Dispose as hazardous waste.
Waste Disposal Method: Do not puncture or incinerate cans. Dispose as hazardous waste in accordance with EPA RCRA requirements.

Follow All Federal, State and Local Regulations Regarding Waste Disposal.

A. A Blank Material Safety Data Sheet (MSDS)

Not every MSDS is in exactly this order, but they must have all this information.

Material Safety Data Sheet
May be used to comply with
OSHA's Hazard Communication Standard,
29 CFR 1910.1200. Standard must be
consulted for specific requirements.

U.S. Department of Labor
Occupational Safety and Health Administration
(Non-Mandatory Form)
Form Approved
OMB No. 1218-0072

IDENTITY (As Used on Label and List)	Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.

Section I

Manufacturer's Name	Emergency Telephone Number
Address (Number, Street, City, State, and ZIP Code)	Telephone Number for information
	Date Prepared
	Signature of Preparer (optional)

Section II — Hazardous Ingredients/Identity Information

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

Section III — Physical/Chemical Characteristics

Boiling Point		Specific Gravity (H_2O = 1)	
Vapor Pressure (mm Hg.)		Melting Point	
Vapor Density (AIR = 1)		Evaporation Rate (Butyl Acetate = 1)	
Solubility in Water			
Appearance and Odor			

Section IV — Fire and Explosion Hazard Data

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

A. (continued)

Section V — Reactivity Data

Stability	Unstable		Conditions to Avoid
	Stable		

Incompatibility (*Materials to Avoid*)

Hazardous Decomposition or Byproducts

Hazardous Polymerization	May Occur		Conditions to Avoid
	Will Not Occur		

Section VI — Health Hazard Data

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

Section VII — Precautions for Safe Handling and Use

Steps to Be Taken in Case Material Is Released or Spilled

Waste Disposal Method

Precautions to Be Taken in Handling and Storing

Other Precautions

Section VIII — Control Measures

Respiratory Protection (*Specify Type*)

Ventilation	Local Exhaust	Special
	Mechanical (*General*)	Other

Protective Gloves	Eye Protection

Other Protective Clothing or Equipment

Work/Hygienic Practices

* USGPO 1988-491-529/45775

B. The 4 Most Important Sections

An MSDS is a chemical fact sheet that tells you what a chemical can do to you and how to protect yourself. These fact sheets are usually 2 to 4 pages long. Sometimes they are very technical and hard to understand.

The most important sections of the MSDS are:

- **Health Hazard Data**--How can it make you sick? (Section VI (6) on some MSDSs). See page 60 for more information.

- **Fire and Explosion Hazard Data**--Can it catch on fire or explode? (Section IV (4) on some MSDSs). See page 62 for more information.

- **Control Measures** or **Special Protection**--How can you keep it out of the air and out of your body? (Section VIII (8) on some MSDSs). See page 64 for more information.

- **Precautions**--What are safer ways to work with it? (Section VII (7) on some MSDSs). See page 65 for more information.

These four sections will tell you what the chemical can do to you and how you can protect yourself. Remember that your employer has to train you on how to read and use **all** sections of the MSDS.

Sometimes MSDSs do not have all the information you need. Sometimes the information is wrong. But they can be very useful. In this training, you will learn how to use MSDS's to answer questions that may come up at work. This program will help you learn about other books you can use to get information.

(Source: OSHA Hazard Communication Standard, 29 CFR 1910.120 (g), 59 FR 6169, February 9, 1994.)

B. (continued)

Your employer must keep an MSDS for each product you work with in your work area. They have to train you about the chemicals you work with. In that training, you will learn how to read an MSDS. When you work, you should be able to get answers to any questions you have from the MSDSs. See page 310 to find out more about what your employer has to do and how to get copies of MSDSs.

The manufacturer of the product writes the MSDS. They have to look up any studies that have been done on the chemicals. They have to update the MSDS if scientists discover new hazards.

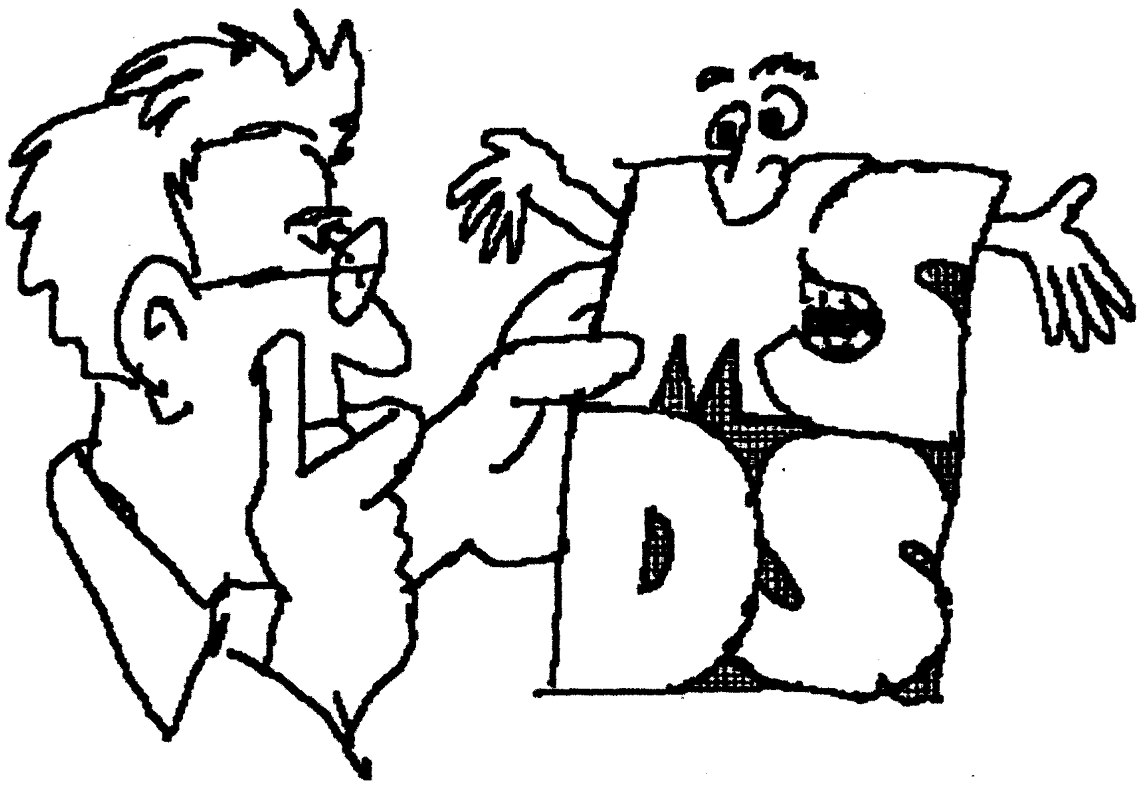
If you need more information, the person who wrote the MSDS has to put a phone number and address that you can call. Your employer has to give you or the union a copy of the MSDS when you ask for it. Use the letter on page 312 to get copies of MSDSs. You can also request a copy of the MSDS from the manufacturer.

(Source: OSHA Hazard Communication Standard, 29 CFR 1910.1200 (g)(8), 59 FR 6169, February 9, 1994.)

C. The Problems with MSDSs

OSHA and many state laws say that employers have to keep MSDSs at the workplace. These fact sheets are supposed to give guidance on using, storing and handling substances safely on the job. But these sheets have problems. Here's how the American Lung Association put it:

> **"Unfortunately, information presented on an MSDS may be incomplete or inaccurate. This is particularly true for information on health effects that workers may experience from low-level chemical exposure over a long period of time."**



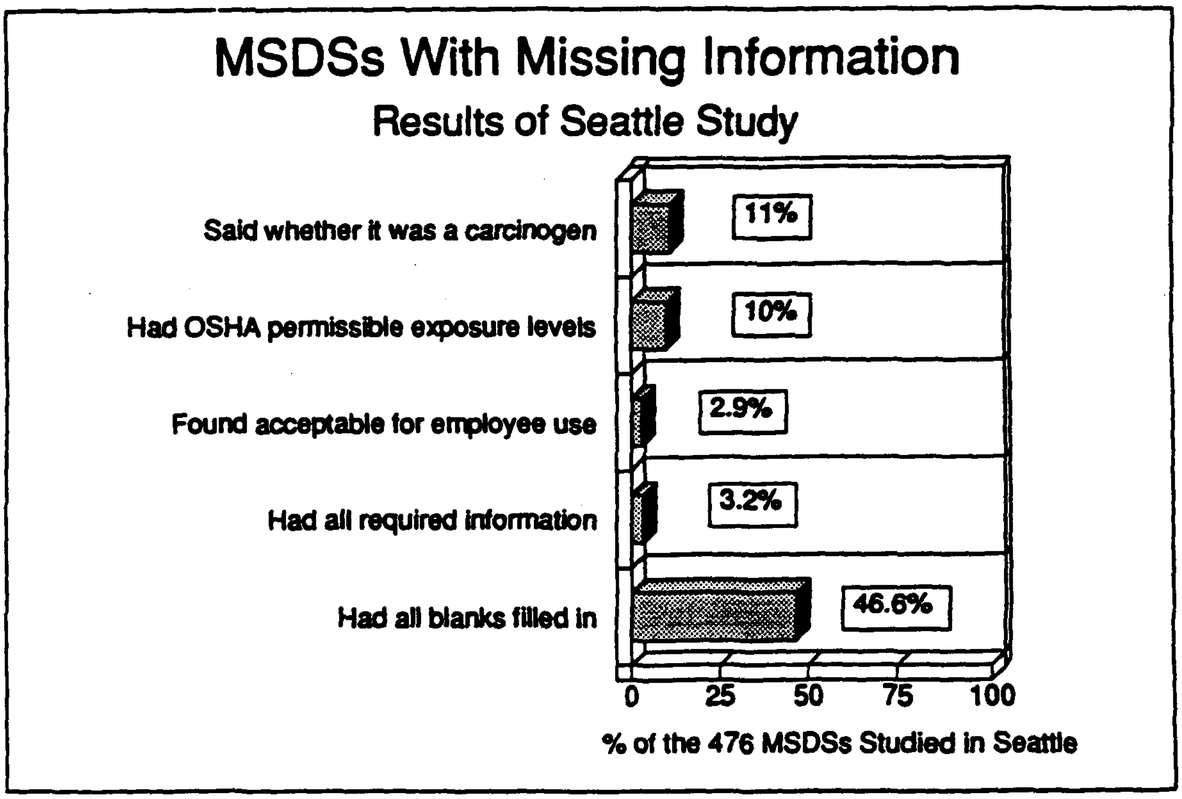
Another problem with MSDSs is that employers sometimes don't keep them up-to-date.

(Source: *Hazardous Materials Workbook*, Oil, Chemical, and Atomic Workers Union, New York: Apex, 1993.)

C. (continued)

The Seattle Area Hospital Council did a study on 476 MSDSs to see how accurate they were. Here's what they found:

- Only 46.6% of the MSDSs had all the blanks filled in.
- Only 70% had information that did not contradict itself.
- Only 3.2% had all the information the law says they must have.
- Only 2.9% were found to be acceptable for use by workers.
- OSHA's legal limits appeared on only 10% of them.
- Whether the chemical caused cancer appeared on only 11% of them.



Source: *Industrial Hygiene News Report*, Vol. 29, November, 1986 (Lake San Marcos, Ca.: Flournoy Publisher).

OSHA does not have the time to look at MSDSs. So they almost never fine employers for having wrong MSDSs.

D. What Health Problems Does it Cause?

To find out what health problems a product can cause, look at the section called **Health Hazard Data** (section 6 on some MSDSs). This section answers the following questions (words in **bold** are on the MSDS):

- How can this stuff get into my body? (**Route(s) of entry**)

  Is it dangerous if you breathe it in (inhalation); if it soaks through your skin (absorption); or if you swallow it by accident or eat with dirty hands (ingestion)? If the MSDS says "Y," then it can.

- What can it do to my health--short-term (**Acute**) or long-term (**Chronic**) health effects?

  This sections should tell you what damage it can do in the short term and long term. Short term health problems could be, "burns eyes," "causes throat irritation," or "causes dermatitis." Long term health problems could be, "causes kidney damage," "causes emphysema," or "causes chemical asphyxiation [suffocating]." See pages 154-155 for more information about "acute" and "chronic" health problems.

- Does it cause cancer? (**Carcinogenicity**).

  This section should tell you whether any of 3 agencies say any ingredient causes cancer. The agencies are:
  - NTP – National Toxicology Program,
  - IARC – International Agency for Research on Cancer,
  - OSHA – Occupational Safety and Health Administration.

If the MSDS says "Y" after any of these initials, then the product can cause cancer.

D. (continued)

👓 How can I tell if it's hurting me? (**Signs and symptoms of exposure**). These are signs of high exposure. The chemical may be hurting your health, even if you can't feel it yet.

These may be similar to the acute (short-term) health effects. For example, "burning eyes," "irritated throat," or "red skin."

👓 **First Aid**. This only helps you if you get a big dose of the material in a short time.

(Source: OSHA Instruction CPL 2-2.38C (Inspection Procedures for the Hazard Communication Standard), section K. 6. a. (4).)

E. Can It Catch on Fire or Explode?

To find out what safety hazards a product can cause, look at the section called "Fire and Explosion Hazard Data" (section 4 in some MSDSs). This section answers the following 2 questions:

- Can the liquid burn at room temperature? (**flash point**). If the flash point is less than 140 degrees, this is a very flammable chemical. For example, ether (an anesthetic) can burn at 49 degrees below zero. But 2-butoxyethanol (a cleaner) won't burn until it reaches 143 degrees.

- Will it explode if it catches on fire? (unusual fire and explosion hazards)

If a liquid has a flash point less than 140 degrees, even a spark can set it on fire. Here are some examples:

Chemical	Flash Point	Means
gasoline	-50	burns below zero
acetone (a solvent)	0	
rubbing alcohol	53	burns at room temperature
Stoddard solvent	110	
TDI (used in polyurethane)	260	burns in a fire

When you pour it from one container to another, be sure the containers are connected with a wire (grounded) so that you won't make a spark when you pour.

Any product in a spray can or cylinder will be like a bomb in a fire. The product is compressed very tightly in the can. When the can heats up, the product expands, and will eventually burst the container.

(Source: NFPA 30: Flammable and Combustible Liquids Code.)

E. (continued)

This section also tells you what kind of fire extinguisher to use for a small fire. There are three common kinds of fire extinguishers, called "A," "B," and "C." Putting water on a chemical fire or using the wrong kind of fire extinguisher can spread the fire.

Also look at the section called "Precautions to be Taken in Handling and Storing" (section 7 on some MSDSs) for safer ways to handle a product that can burn.

Watch out for "safety solvents." They don't burn easily, but they can be very toxic to you!

F. Keeping It Out of the Air

The more a chemical gets in the air, the more of it you can breathe. Keeping chemicals out of the air is one of the best ways to protect yourself. Look in the section called "Control Measures" or "Special Protection" (section 8 on some MSDSs). This talks about how your employer should control the chemicals you work with. It mostly applies to working with the chemical indoors. One way to control chemicals is with fans or other ventilation (fans).

- **Local ventilation** means a fan right where you work. This is the best kind of ventilation.

- **General ventilation** means central heating or air conditioning or a fan for the room. This is worse than local ventilation.

Ventilation has to be set up by a trained person, or else it won't work. It also has to be adjusted if the size of the room is changed (for example, if a large room is divided into small rooms) or if there is a change in the way the work is done. If there is no ventilation, try to open the windows and doors to get a breeze. See Activity 7 for more information about "controls."

(Source: *Hazardous Materials Workbook*, Oil, Chemical, and Atomic Workers Union, New York: Apex, 1993.)

G. Are There Safer Ways of Working with this Chemical?

Another way to keep chemicals out of the air is to change how you work with them. For example, using a spray bottle for paint thinner gets lots of little drops in the air. Squirting the same paint thinner on a rag gets less into the air. (Although you may still have to protect your skin from the chemical.)

When you clean parts in a dip tank, you get lots of solvent on your hands. Even if you wear gloves, a lot of it can still soak through to your skin. But if you dip the parts with tongs, you won't get the chemical on your skin at all.

Look under the section called "Work/hygienic practices" or "Precautions to be taken in handling and storing" for safer ways to work with the product. See page 179 for more information about safer work practices.

(Source: *Fundamentals of Industrial Hygiene*, National Safety Council, Chicago: National Safety Council, 1988, p. 462.)

H. What About Gloves and Other Equipment?

Gloves and respirators (masks) seem like an easy way to protect workers. After all, they're cheap and easy to use, right? Actually, respirators and gloves don't work well, it's hard to choose the right kind, and they are expensive to use in the long run. Gloves and respirators are bad ways to solve chemical problems because:

- all gloves and respirators leak sooner or later
- they are very uncomfortable, which means that you probably won't wear them
- often you can't tell whether they're protecting you or not

By law, your employer has to make the work safe for you. Don't try to make yourself safe for the work.

Look at the section on the MSDS called **Protective gloves, eye equipment, and other protective clothing** (in section 8 in some MSDSs). This information has to be specific. In other words, it won't help you if it says "wear a respirator," since there are 8 common types of respirators and 14 different filters. A good MSDS might say, for example, "wear a half-mask air-purifying respirator with organic vapor filters." Obviously, you can't follow this advice until you have some training about respirators. See Activity 12 for more information about **respirators.**

(Source: *EPA Model Asbestos Worker Training Manual*, U.S. Environmental Protection Agency, 1990.)

H. (continued)

Information about gloves also has to be specific. It won't help you if the MSDS says "wear gloves." There are 9 different common materials used for gloves, and you need different gloves for different chemicals. For example, acetone will soak through an ordinary rubber glove in 10 minutes. But it won't soak through a butyl rubber glove for 17 hours. A good MSDS might say, for example, "wear supported butyl gloves" or "wear nitrile gloves." Here are some examples of how many minutes different gloves will last with different chemicals. For example, a natural rubber glove will only keep acetone off your hands for 10 minutes, but a butyl rubber glove will last for more than 240 minutes (4 hours).

WARNING: Do not use this chart at work. Get information for the brand of gloves you use. This information is taken from many manufacturers.

Chemical	natural rubber	butyl rubber	nitrile rubber	Viton	Silver Shield
acetone	10	>240	15	ID	>240
chloroform	ID	ID	4	>240	10
methylene chloride	6	24	4	60	>240
sulfuric acid	80	ID	240	ID	>240
1,1,1 trichloroethane	ID	41	90	>240	>240

ID = Insufficient Data--DO NOT USE

All equipment has to be cleaned, inspected, maintained, and stored in a safe clean place.

Watch out for MSDSs that tell you to wear gloves or a respirator, but don't say the chemical can harm your skin or lungs. Chances are, it's a dangerous chemical and the manufacturer didn't put all the information on the MSDS.

(Source: *Guidelines for the Selection of Chemical Protective Clothing*, Cincinnati: ACGIH, 1983.)

I. Store Like with Like

Never put old chemicals in the trash or pour them down the drain. You could start a fire or chemical reaction. For example, lye and hydrochloric acid are both used to clean drains. But if these two mix, they will give off gas and get very hot. If you store them together and a container leaks, they could mix by accident. Do not store them in the same cabinet. Do not mix chemicals unless you know exactly what will happen.

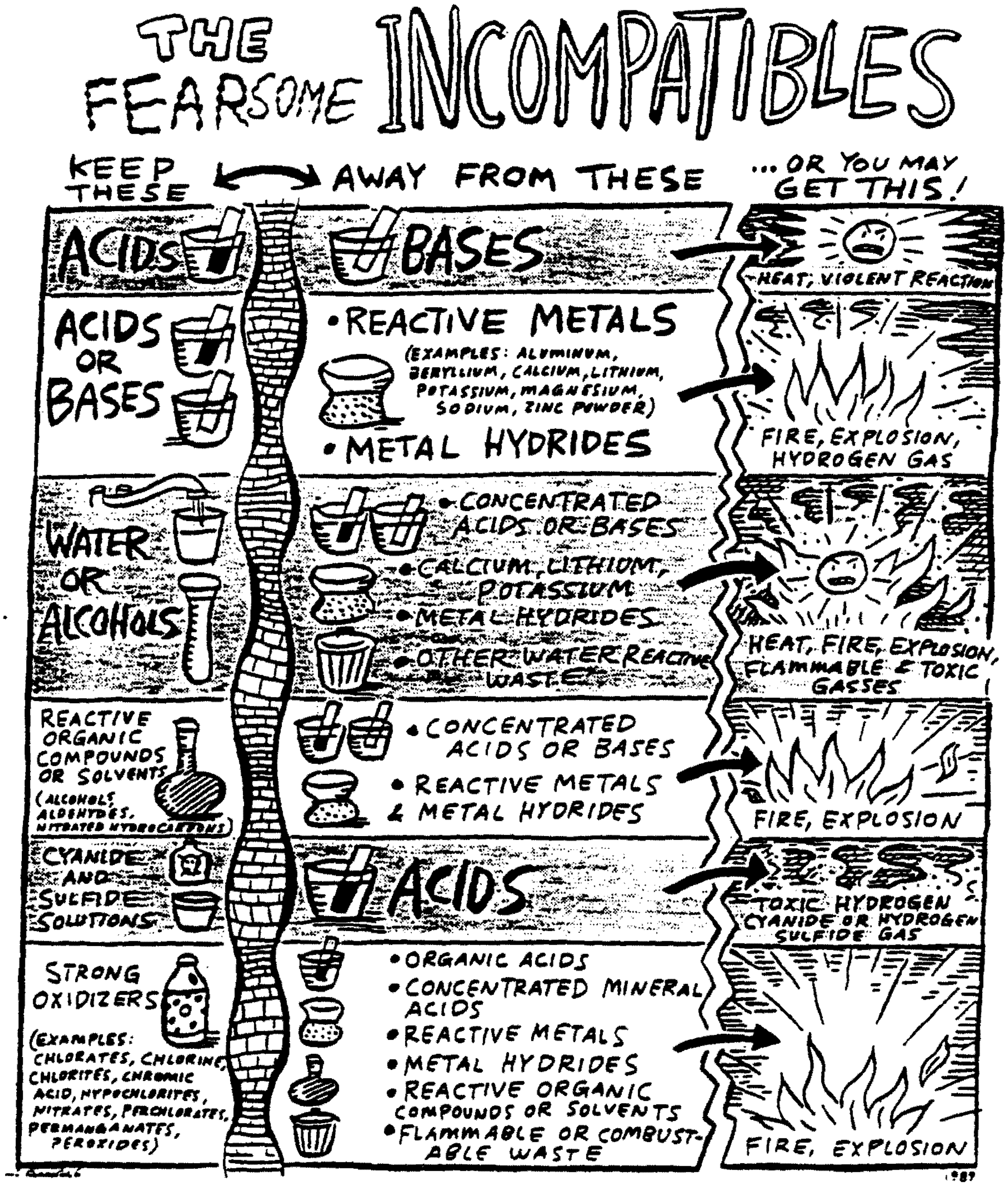
Similar wastes should be stored together in labeled, fireproof containers and sent for treatment or to a special landfill. Look in the section called "Reactivity" (section 5 on some MSDSs). This will tell you what not to mix or store the chemical with. This section often uses a lot of chemistry terms. For example, the MSDS might say. "Incompatible with strong oxidizers, and chemically reactive metals." Here are some examples to help you figure them out:

acids	hydrochloric acid muriatic acid vinegar (acetic acid)
bases (also called alkalis or caustics)	lye (sodium hydroxide) ammonia potassium hydroxide
oxidizers (chemicals that carry their own oxygen and feed a fire)	bleach (sodium hypochlorite) calcium nitrite any chemical name ending in "ite" ammonium nitrate sodium permanganate any chemical name ending in "ate" oxygen (in cylinders)
combustible materials (organic materials)	flammable chemicals dirt (not dry sand) hair, clothing
reactive metals	pure sodium pure magnesium aluminum

(Source: *Drivers Guide to Hazardous Materials*, American Trucking Associations)

I. (continued)

Look under **Waste Disposal** (in section 7 in <u>some</u> MSDSs) for more information.



(Source: California-Arizona Consortium [For Hazardous Waste Worker Training.)

J. Emergencies and MSDS's Don't Always Mix

Many of the emergencies you will face will be large spills or releases of hazardous materials into the work area.

Most MSDS's do not give detailed enough information to handle these situations safely. Remember, to handle large spills or releases you will need special equipment and training. If you don't have this, retreat to a safe area.

Do not try to clean up a big spill by yourself. Look in the section called **steps to be taken in case material is released or spilled** (section 7 of some MSDS's) before you try to clean up any spill, large or small. Remember that this section was probably written for cleanup workers with more training and equipment than you have.

Be sure you have the right equipment. You may find the right equipment listed, but more often than not the MSDS will be vague and non-specific.

(Source: *Hazardous Materials Workbook*, Oil Chemical, and Atomic Workers Union, New York: Apex, 1993.)

K. MSDS's Do Not Give Information on Safer Substitutes

One of the best ways to keep chemicals out of your body is to get your employer to use less hazardous products. For example, when you don't need to disinfect, you can use a mild detergent instead of a disinfectant. The MSDS does not have to give you information about safer chemicals. See page 170 for more information about substitution.

Summary: Using Material Safety Data Sheets (MSDSs)

1) OSHA and State laws say your employer has to have an MSDS for every dangerous product you work with.

2) MSDSs are supposed to have a lot of information, especially in the following areas:

   - Health Hazards
   - Fire Hazards
   - How to keep the chemical out of the air
   - How to work with the product more safely
   - How to protect yourself

3) To use an MSDS effectively, it is important that your employer train you. It is also the law. The employer must train you on all the chemicals you work with. If you have to wear a respirator, or other personal protective equipment, you need to be trained.

4) The MSDS does not tell you how to clean up a large spills safely. Workers who handle hazardous materials in an emergency need special training and equipment.

5) Many MSDS's are missing or have the wrong information. Use them, but always get information from other sources.

NOTES

NOTES

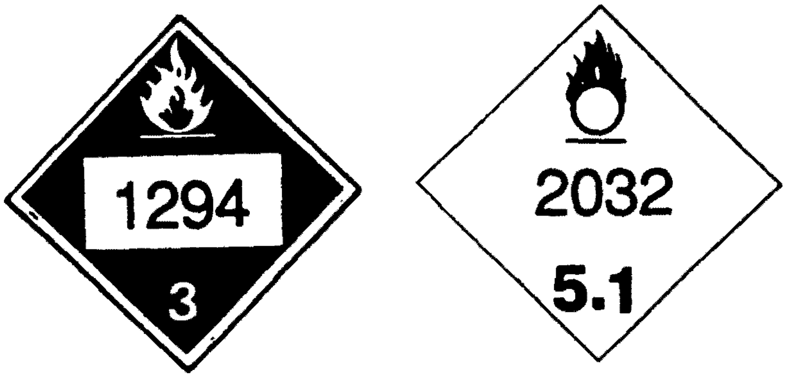
Activity 4: Using DOT and NFPA Labels

Purpose:

To understand the uses and limits of DOT and NFPA labels during emergencies.

Task 1:

Two trucks in the parking lot have had an accident. There are two supervisors and three mechanics in the yard at this time. The trucks have DOT placards on them (shown below).



As a group, please use the factsheets on pages 81 - 93 and your DOT Emergency Response Guidebook (the orange book) to answer the following questions. Your instructor will first show you how to use the guidebook using the factsheet on page 81. Before you use the guidebook, you should understand two things about it.

1) **The advice in the orange and green sections is for firefighters, not for you.** The book may say, "Move the container from the area," "Spray water on the spill," or "Stop the leak," but you could kill yourself if you do any of these things.

2) **It is only good for the first 1/2 hour after the spill.** After 1/2 hour, the situation can change a lot, and the advice isn't any good.

Task 1 (continued):

1) **Based only on the symbols on the DOT placard, what are the dangers to the workers?**

2) **What are the names of the chemicals?**

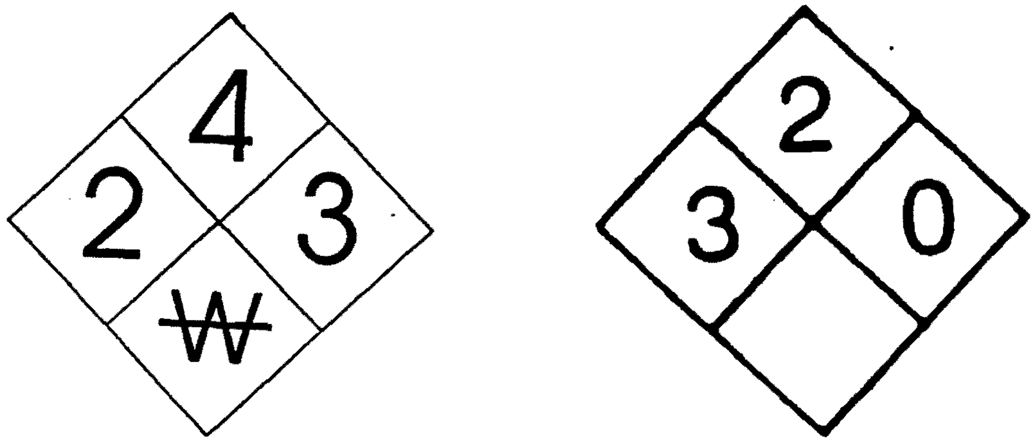
3) **Why is it a bad idea for Awareness-level workers to follow the advice on the Orange Pages of the DOT Guidebook?**

4) **What advice would you give to the workers?**

Task 2:

Two workers from Main Street water works came upon a spill. They have come to the Local 94 health and safety committee with the following concerns. Based on the case study and the label, what information and advice could you provide? In your group, please answer the questions on the next two pages using the factsheets on pages 94 - 104.

> **When Bill and Jerome got to work on Wednesday morning, they opened up the supply closet and saw that a number of 5-gallon buckets had fallen off the shelves and were broken. Their supervisor told them to turn the buckets upright and clean up the spill. On the buckets, they can see these two labels:**



Given the labels, what information and advice can your committee give Bill and Jerome? Please answer the questions on the next two pages as you try to help them out.

(Source: *8-Hour Emergency Response Workbook*, Oil, Chemical, and Atomic Workers Union, 1993.)

Task 2 (continued):

1) **What are the health hazards associated with the chemical?**

2) **How flammable are the chemicals?**

3) **Is the situation stable, or could something more serious develop? Under what conditions are the contents of these buckets likely to react, causing a more serious situation?**

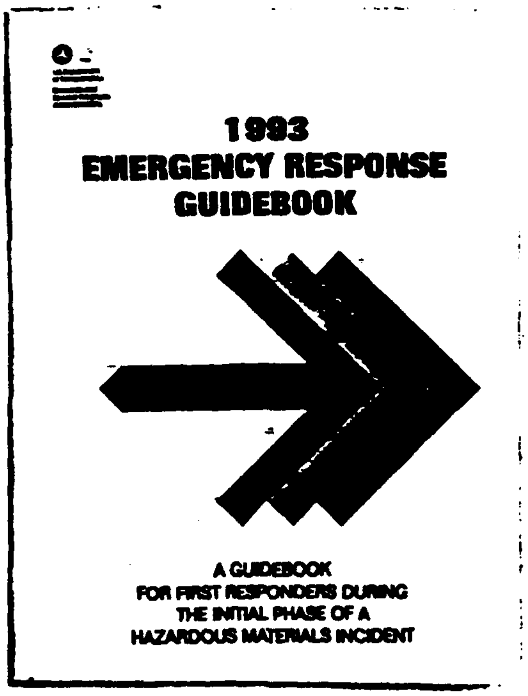
4) **What special information is known about the chemicals?**

Task 2 (continued):

5) **In your opinion what important information are you lacking in this situation?**

6) **What is your advice to Bill and Jerome, given their level of training?**

A. The DOT Emergency Response Guidebook



If it's in the book, get out and go get help

The advice in the DOT book is for firefighters, not for you! If the guide tells you to put out a fire, stop a leak, or do anything that can <u>expose</u> you, don't do it.

B. Get to the Yellow

Look up the number in the **yellow** pages of the book. This will tell you the **name** of the chemical and a **guide number**. Let's say you see the red placard with the number **1170** next to it like on page 87. You look it up, and see the list below:

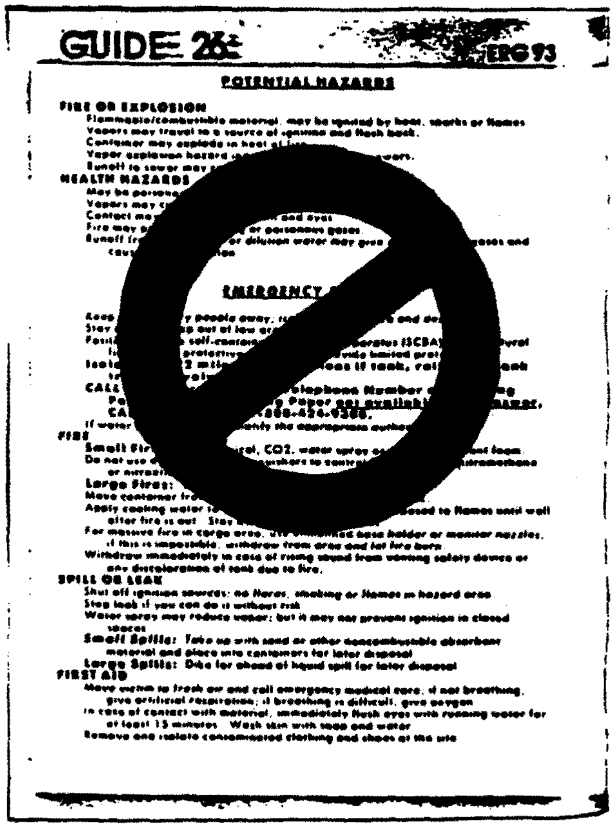
ID No.	Guide No.	Name of Material
1164	27	DIMETHYL SULFIDE
1164	27	METHYL SULFIDE
1165	26	DIOXANE
1166	26	DIOXOLANE
1167	30	DIVINYL ETHER, inhibited
1168	26	DRIER, paint or varnish, liquid, n.o.s.
1169	26	EXTRACTS, aromatic, liquid
1170	26	ALCOHOL (beverage)
1170	26	ALCOHOL (ethyl)
1170	26	ALCOHOLIC BEVERAGE
1170	26	ETHANOL, and solutions
1170	26	ETHYL ALCOHOL, and solutions
1171	26	ETHOXYETHANOL

This tells you the truck is carrying alcohol (or maybe ethyl alcohol, which acts like alcohol.)

The yellow pages also point you to guide number 26. The advice in the guides on the orange pages is for firefighters, not for you! If the guide tells you to put out a fire, stop a leak, or do anything that can expose you, don't do it.

Note: Some of the 1993 Guidebooks were printed with small mistakes. For example, gasoline is 1203, not 1202 as listed in the book. DOT will correct these mistakes in future editions.

C. The Orange Pages: For Firefighters Only!


GUIDE 26

ERG 93

POTENTIAL HAZARDS

FIRE OR EXPLOSION

HEALTH HAZARDS

EMERGENCY

FIRE

Large Fires:

SPILL OR LEAK

Small Spills:

Large Spills:

FIRST AID

The **orange** pages have advice for firefighters. They might say, "Move the container from the area," "Spray water on the spill," or "Stop the leak," but you could kill yourself if you do any of these things.

Anyone who gets near a hazardous material must have special equipment and training. Your job is <u>not</u> top stop the spill. **Your job is only to call in trained people with special equipment.**

Even if the book says so, <u>do not</u>:

- Try to stop the spill
- Try to clean up the spill
- Try to put out a fire
- Try to rescue someone from a spill

D. Your Role in Emergency Response

As an awareness-level worker, you should only do 3 things when you see a hazardous material spill or leak:

- Get out of the area--stay at least 150 feet away.
- Report the incident.
- Try to keep other people out of the area.

There are 2 things you may be tempted or pressured to do. Do NOT do them:

- Do **not** try to rescue anyone.
- Do **not** clean up or touch the material.

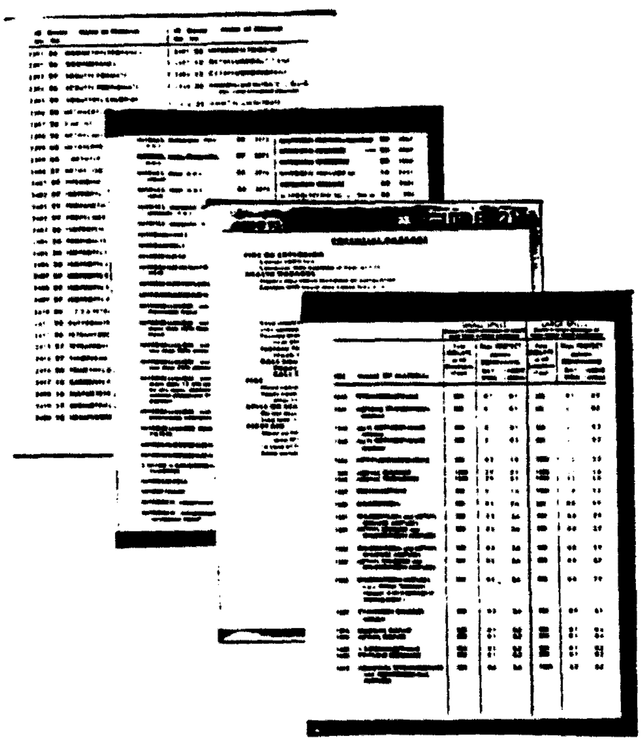
Without special training, you could be hurt or killed, or you could hurt others.

(Source: Preamble to the OSHA Hazardous Waste Operations and Emergency Response Standard, 54 FR 9309.)

E. Colors of the Rainbow

The DOT Emergency Response Guidebook can help you figure out what chemical has spilled. It has 4 sections.

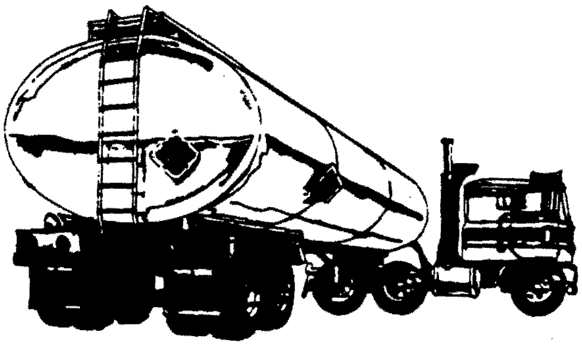
- The **yellow** pages–if you know the 4-digit **number** of the chemical. For example, 1040 is ethylene oxide, a sterilizing gas.
- The **blue** pages–if you know the **name** of the chemical.
- The **orange** pages–the guides (these are written for firefighters, not for you).
- The **green** pages–these tell firefighters how far away to evacuate people.



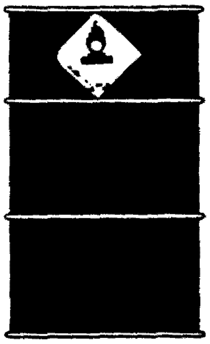
(Source: *First-On-The-Scene Awareness Program*, Midwest Consortium for Hazardous Waste Worker Training, p. 16).

F. Department of Transportation (DOT) Placards

The Department of Transportation (DOT) has set up a system to identify materials quickly in an emergency. Placards are used on trucks and labels are used on packages.



Truck with a **placard**



Drum with a **label**

If you see a placard at a spill, get out!

This is a clue that the material is very dangerous.

All placards are a clue that this is an emergency, and that trained people with the proper equipment are needed.

(Source: DOT Hazardous Materials Transportation Regulations, 49 CFR 172.300; .400; .500)

G. What You Don't Know Can Hurt You

The DOT placards are useful tools in protecting our health and safety, but the placards have very real limits. For instance, the placards:

- Don't tell you about cancer risks of the chemicals
- Only tell you about one danger (for example, oxidizer) even if the chemical also has other dangers (for example, if it's also corrosive)
- Don't tell you about long-term health hazards of the chemicals. For instance, the placard on a drum of benzene may tell you that it's immediately flammable, but it does not say that it can cause cancer 10 - 40 years down the road.
- The "Dangerous" placard can be used for many dangerous chemicals, or for different chemicals carried in the same truck.
- Placards do not have to be used for less than 1,000 pounds of many dangerous chemicals.

(Source: *Driver's Guide to Hazardous Materials*, John Currie, Alexandria,VA: American Trucking Association, 1992.)

H. Color Is the First Clue!

In an emergency, all you will probably be able to see is the <u>color</u> of the placard. Even this limited amount of information is useful, since the colors tell you something about the danger. Here is what the colors mean:

Color	Type	What Could Happen
Orange	Explosive	Could explode if touched
White	Poison	Gases could kill immediately
Red	Flammable	Container could explode
Green	Compressed gas	Container could explode
Black & White	Corrosive	Could start explosive fire
Yellow	Oxidizer or radioactive	Could start explosive fire, radioactive

Labels have the same colors and symbols as placards, but they are much harder to see because they are smaller.

symbol
(page 88)

color
(page 87)

ID number
(page 92)

UN class
(page 88)

(Source: *Hazardous Materials Workbook*, Oil Chemical, and Atomic Workers Union, New York: Apex, 1993.)

I. The Bottom Number Gets You in the Ballpark*

On the bottom of the placerd is a one-digit number called the UN class. The UN number, shown on the left of this chart, tells you what <u>kind</u> of material is inside (like a gas, liquid or solid).

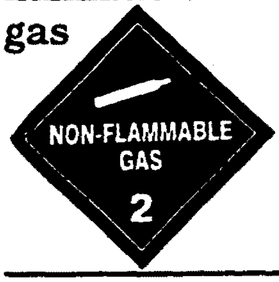
Placard	Example	Hazards
1. Explosives		
Explosive 	picric acid (any amount)	Explodes if dropped or touched.
2. Gases (flammable and non-flammable)		
Flammable gas 	acetylene (1,000 pounds)	Burning vapors spread, container can explode if gas on fire.
Poison gas 	chlorine (any amount)	Burns lungs. Burns skin, eyes on contact.

*Note: This system was just revised on October 1, 1993.

(DOT Hazardous Materials Transportation Regulations, 49 CFR 172.500)

I. (continued)

2. Gases (flammable and non-flammable) (continued)

Non-flammable gas 	oxygen (1,000 pounds)	Container can explode like a missile in a fire.

3. Flammable liquids

Flammable 	gasoline (1,000 pounds)	Can burn even in freezing weather, burning vapors spread, container can explode in a fire.

4. Flammable solids

Flammable solid 	zinc (1,000 pounds)	Container can explode in a fire.
Dangerous when wet 	sodium (any amount)	Water will start a fire and make it burn furiously, container can explode in a fire.

I. (continued)

4. Flammable solids (continued)

Spontaneously combustible

magnesium diamide (any amount)

May start to burn without any outside heat, container can explode in a fire.

5. Oxidizers (solid, gas, or liquid)

Oxidizer

calcium hypochlorite (1,000 pounds)

Will burn if mixed with fuel, even if there is no air. Can burn explosively.

6. Poisonous (solid or liquid)

Poison

parathion (1,000 pounds)

Soaks through skin, causes stomach cramps, convulsions, and can stop the heart.

7. Radioactive (solid, gas, or liquid)

Radioactive

chromium-51 (any amount)

Causes radiation burns, poisoning, and can cause cancer years after exposure.

I. (continued)

8. Corrosive (solid, gas, or liquid)

Corrosive

sulfuric acid (1,000 pounds)

Burns skin, muscle and bone. Can cause fire and explosion if it touches cloth or is mixed with other chemicals.

9. Dangerous (solid, gas, or liquid)

Dangerous

sulfuric acid, sodium hydroxide, and lighter fluid (less than 5,000 pounds total)

Fire, explosion, release poison gases, burn skin.

J. With the I.D. Number, You Can Find the Name of the Chemical

Next to the placards is a 4-digit number that tells you what is in the truck. For example, the number 1789 stands for hydrochloric acid. The problem is, **(in an emergency) if you are close enough to see the numbers, you are too close to the truck.**

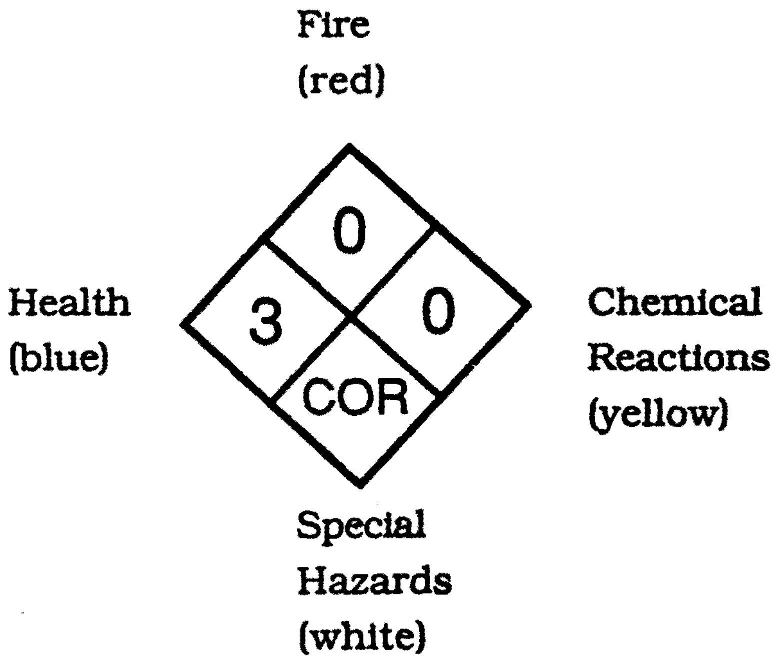
You can use the yellow pages in the DOT Guidebook to figure out what is inside the truck. Do not move closer to the truck to read the placards. Stay at least 150 feet away and use binoculars (if you have them).

Do not move closer to see the numbers

(Source: *Hazardous Materials Workbook*, Oil Chemical, and Atomic Workers Union, New York: Apex, 1993.)

K. Another Labeling System: the NFPA Diamond

The National Fire Protection Association (NFPA) has a system called the **NFPA diamond.** It's not perfect, but if you see this diamond at a spill, it can give you some more information.



The NFPA diamond has 4 sections. Each section has a number in it. The higher the number, the more dangerous the chemical is. The **blue** section on the left is for health hazards. The **red** section on top is for fire hazards. The **yellow** section on the right is for chemical reactions. The **white** section on the bottom is for special hazards (like "oxidizer").

If you see a "2" or higher in any section of the diamond, the material is <u>very</u> dangerous. The diamond on this page is for sodium hypochlorite (bleach). It is a health danger (the "3" on the left), but not much of a fire (the "0" on the top) or chemical reaction (the "0" on the right) danger. It is a corrosive--it eats through skin (the "COR" on the bottom).

L. What the Numbers Mean

Health section (blue)

Number	Description	Examples
4	Materials that on very short exposure could cause death or major residual injury, even though prompt medical treatment was given.	Acrylonitrile Bromine Parathion
3	Materials that on short exposure could cause serious temporary or residual injury, even though prompt medical treatment was given.	Aniline Sodium hydroxide Sulfuric acid
2	Materials that on intense or continued exposure could cause temporary incapacitation or possible residual injury unless prompt medical treatment was given.	Bromobenzene Pyridine Styrene
1	Materials that on exposure would cause irritation but only minor residual injury, even if no treatment was given.	Acetone Methanol
0	Materials that on exposure under fire conditions would offer no hazard beyond that of ordinary combustible material.	

Fire section (red)

Number	Description	Examples
4	Materials that (1) rapidly or completely vaporize at atmospheric pressure and normal ambient temperatures, and burn readily, or (2) are readily dispersed in air and burn readily.	1,3-butadiene Propane Ethylene oxide
3	Liquids and solids that can be ignited under almost all ambient temperature conditions	Phosphorous Acrylonitrile
2	Materials that must be moderately heated or exposed to relatively high ambient temperatures before ignition can occur.	2-butanone Kerosene
1	Materials that must be preheated before ignition can occur.	Sodium Red phosphorous
0	Materials that will not burn.	

L. (continued)

Chemical reaction section (yellow)

Number	Description	Examples
4	Materials that, in themselves, are readily capable of detonation or of explosive decomposition, or reaction at normal temperstures and pressures.	Benzoyl peroxide Picric acid TNT
3	Materials that (1) in themselves, are capable of detonation or explosive reaction, but require a strong initiating source, (2) must be heated under confinement before initiation, or (3) react explosively with water.	Diborane Ethylene oxide
2	Materials that (1) in themselves, are normally unstable and readily undergo violent chemical change, but do not detonate, (2) may react violently with water, or (3) may form potentially explosive mixtures with water.	Acetaldehyde Potassium
1	Materials that (1) in themselves, are normally stable, but which can (2) become unstable at elevated temperatures, or (3) react with water with some release of energy (but not violently).	Ethyl ether Sulfuric acid
0	Materials that (1) in themselves, are normally stable, even when exposed to fire, and that do not react with water.	

Special hazards section (white)

W	OXY		
water will start a fire (sodium)	oxidizer (calcium hypochlorite)	radioactive (chromium-51)	germs (medical waste)
COR	ACID	ALK	
corrosive (hydrogen chloride)	acid (sulfuric acid)	alkali (base) (sodium hydroxide)	

(Source: *Firefighter Workbook. First Responder, Awareness Level* Seattle [WA] Fire Department and Washington State Fire Protection Services, 1989.)

M. Pros and Cons of the NFPA Labeling System

The NFPA system was developed for firefighters and off-site emergency responders to provide limited but crucial information. Like all labeling systems for first responders, it has its strengths and limitations. The following list can help you decide how useful it is to first responders at your employer.

Advantages

- It may be better than no label.
- It is large enough to read from a safe distance (with binoculars).
- It provides quick information on flammability, reactivity, acute health and special hazards (such as when not to use water on a fire).

Limitations

- The numbers give you limited information--they don't give you specific information about the chemical.
- The system was designed for fighting fires, and spills, not for day-to-day use.
- The health information is based on the idea that an off-site firefighter will normally receive a single short exposure, from a few seconds up to an hour. This is why benzene (which causes cancer) is only ranked a "2" for health hazards. In contrast, SEIU members may work with these chemicals at low levels for their whole working lives.

M. (continued)

- Different employers may use different numbers for the same chemical, based on how dangerous they think the chemical is.

- Chemicals with low numbers may fool workers into thinking these chemicals are safe. In fact, they may have serious dangers not addressed by NFPA.

(Source: *Hazardous Materials Workbook*, Oil Chemical, and Atomic Workers Union, New York: Apex, 1993.)

N. Containers

Certain containers or trucks almost always carry hazardous materials. But the shape of the container is only one clue about what the chemical might be. The pictures of containers on the next few pages are just some clues you could use at a spill. Look at the **shape** of the container and any **words** on it (like the company's name) or the **name of the product** ("gasoline"). If you see "Jones Dairy Farm," the truck is probably carrying milk.

Remember that any container with hazardous materials in it could turn into a bomb in a fire. In a fire, the material swells up and it can burst a metal container.

Swansboro, NC *Daily News*, 10/13/91, p. 6C

Chemical explosion rocks plant

CHARLOTTE (AP) -- Explosions rocked a Charlotte plant Monday afternoon, producing fireballs that shot into the sky and billowing smoke that could be seen cross town.

. . . Pieces of metal could be seen flying into the sky, witnesses said.

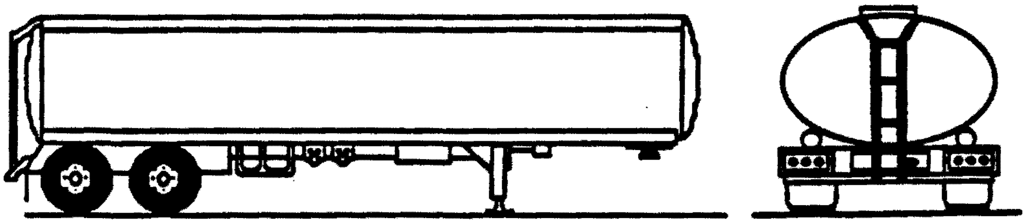
. . . . Firefighters were concerned that there were some chemicals in the plant that couldn't be mixed with water. They were letting the fire burn down to the point where they could get inside.

The explosions occurred in a part of the plant where acetylene is used.

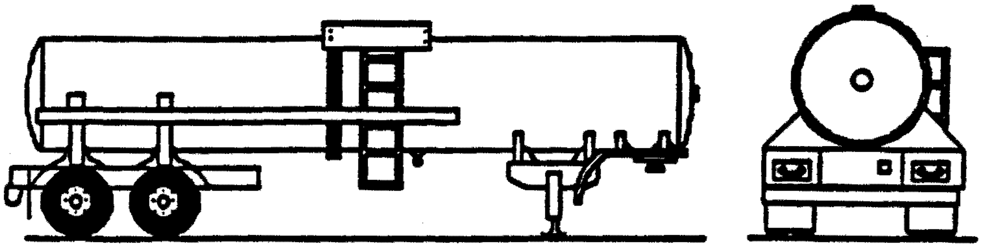
N. (continued)

Trucks on the road/Railroad cars

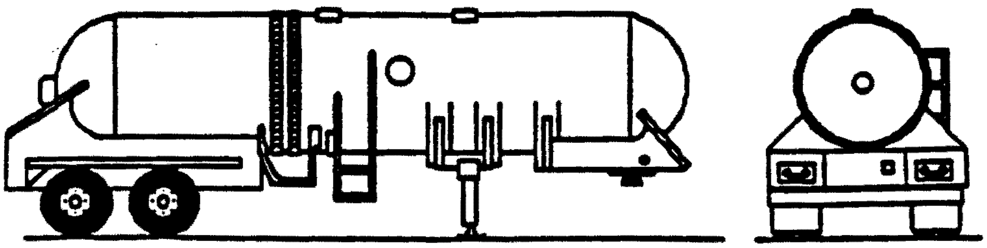
Side view Rear view



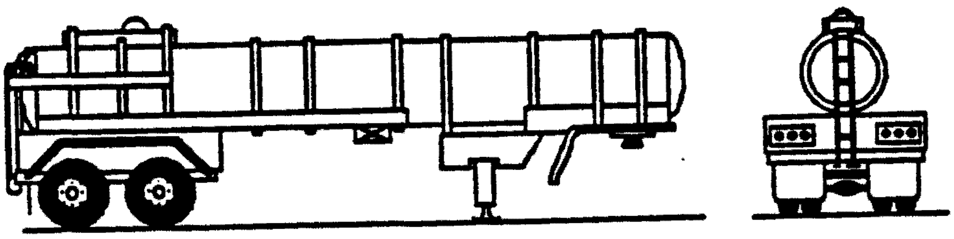
Tank truck (normal pressure): carries chemicals like gasoline



Chemical truck (low-pressure): carries chemicals like methanol

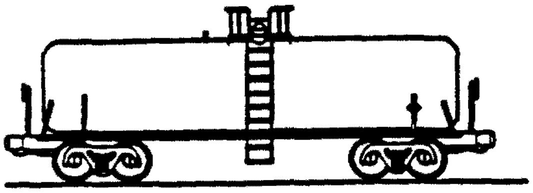


Liquid gas truck (high-pressure): carries chemicals like LP gas

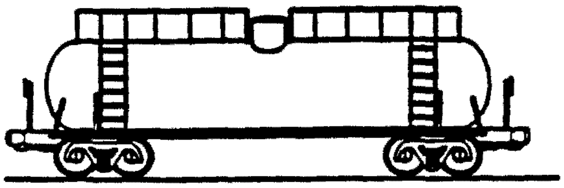


Corrosive truck: carries chemicals like sulfuric acid, that can burn the skin

N. (continued)



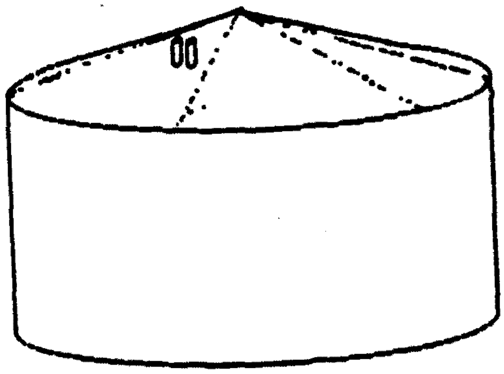
Railroad car (normal pressure): carries chemicals like kerosene



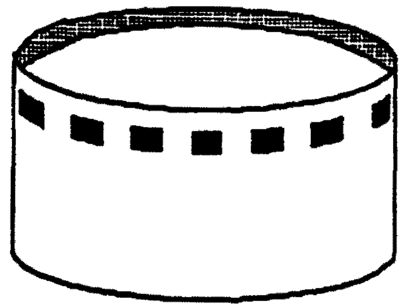
Railroad car (high-pressure): carries chemicals like hydrocyanic acid

Illustrations courtesy of the Midwest Consortium for Hazardous Waste Worker Training. Reproduced by permission.

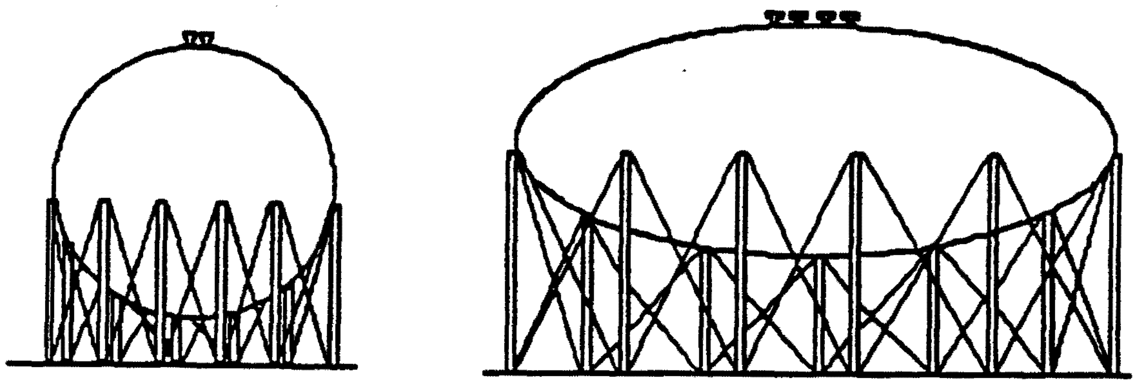
N. (continued)



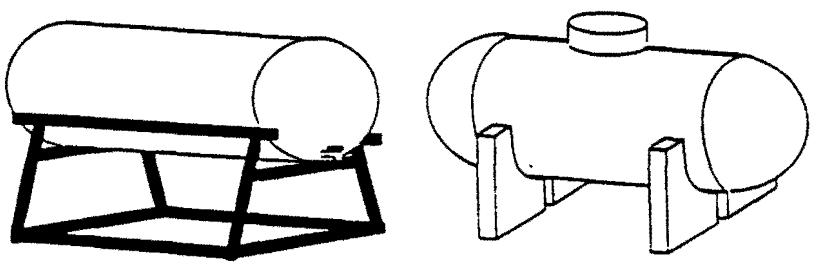
Cone roof tanks: contain flammable liquids



Floating roof tanks: contain very flammable liquids



Spherical tanks: contain flammable gases under pressure



Above-ground tanks

(Source: Midwest Consortium for Hazardous Waste Worker Training.)

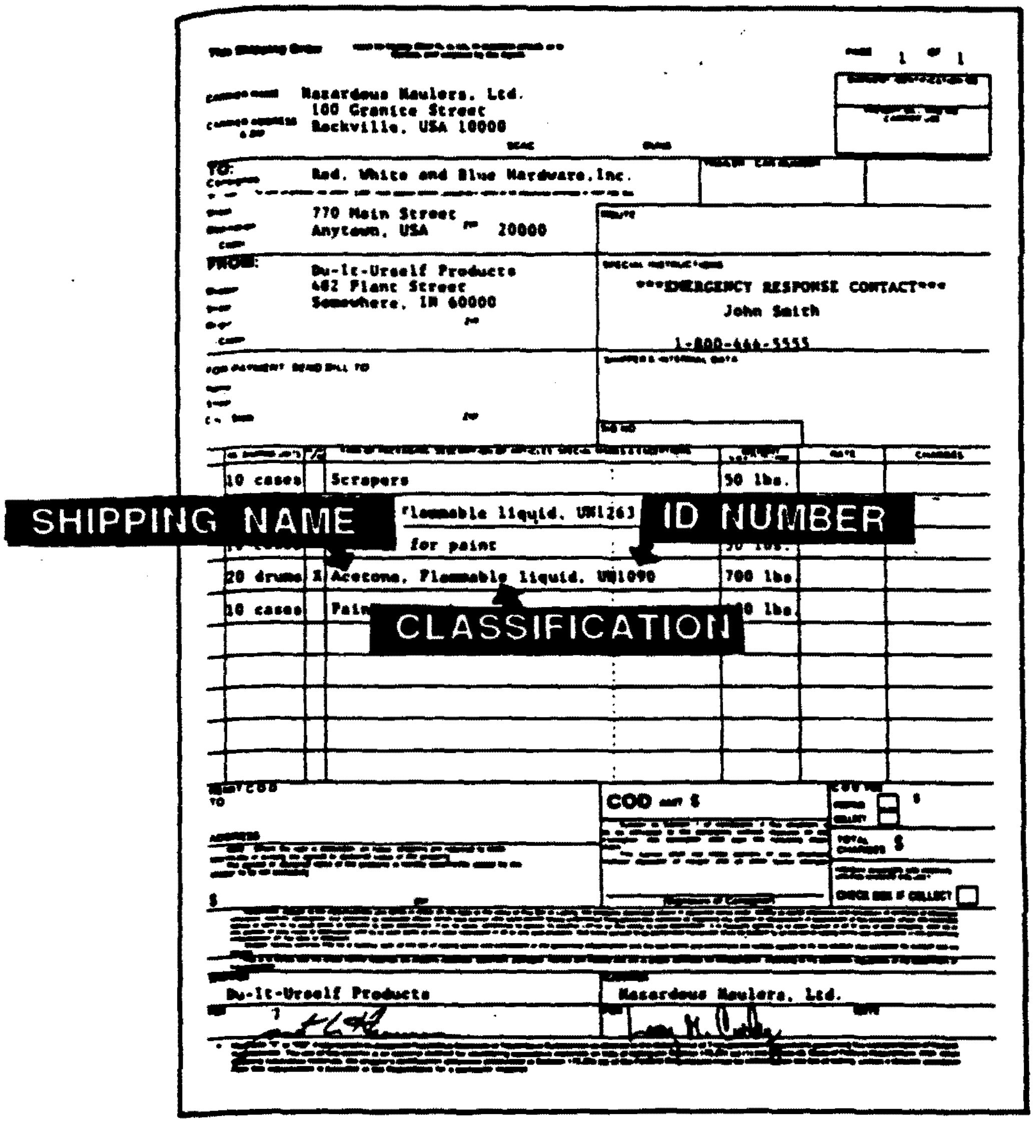
N. (continued)

Containers in the shop

☐ bags ☐ buckets ☐ barrels ☐ cylinders

O. Shipping Papers

Every shipment of hazardous materials should have a **shipping paper** like the one below. In a truck, the driver must carry the papers in the cab. **Never go into a spill to get the shipping papers.** If the driver has gotten out of the truck, have him or her come with you when you call in the spill so they can explain what chemicals are in the truck.



Do not go in

Summary: Using DOT and NFPA Labels

1) The Department of Transportation (DOT) has set up a system to identify materials quickly in an emergency. **Placards** are used on on trucks and **labels** are used on packages.

2) Use the Orange book to figure out what the chemical is. If it's in the Orange Book, it's too dangerous to handle. Get out of the area, and go get trained help.

3) Neither the Orange book nor the DOT placards tell you about <u>all</u> of the dangers. They do not tell you if the material can cause cancer. They do not tell you if the material has more than one danger (it burns <u>and</u> is a poison). They do not tell you if the chemical causes long-term health problems. Look at the MSDS for this information.

4) If you see a placard or a label at a spill, get out! They are a clue that the material is very dangerous.

5) Trucks have a colored placard with a 4-digit number. If you are close enough to see the numbers at a spill, you are too close. In an emergency, all you will probably be able to see is the <u>color</u> of the placard.

6) The NFPA Diamond can tell you about immediate danger. If any number is 2 or higher, <u>get out</u>. Some cancer-causing materials have low numbers, but they are dangerous too.

7) Almost any container could have hazardous materials in it. Boxes, bags, barrels, cylinders, tractor-trailers, and tank trucks may carry hazardous materials.

NOTES

NOTES

Activity 5: Getting More Information

Purpose:

To learn how to use the NIOSH Pocket Guide to check the health information on Material Safety Data Sheets.

Task 1:

Marty, a worker represented by Local 94, has come to you because he is concerned about a product he works with. He says it hurts his eyes and gives him a headache. He asked his supervisor, but he said that according to the MSDS it is "Safe if used as directed." You're not so sure, so you want to look it up in the *NIOSH Pocket Guide to Chemical Hazards.* The first step is to look up the main ingredients in the pocket guide.

In your groups, please use the following to answer the questions on the next page:

- the factsheets on pages 109-123
- the section of the MSDS below and
- the Pocket Guide.

SECTION I - HAZARDOUS INGREDIENTS/EXPOSURE LIMITS

HAZARDOUS INGREDIENTS	CAS NUMBER	TLV/PEL	UNITS	AGENCY	TYPE
STODDARD SOLVENT	8052-41-3	100	PPM	OSHA	TWA
		100	PPM	ACGIH	TWA
		100	PPM	MSHA	TWA
		200	PPM	MSHA	STEL
		100	PPM	CAL OSHA	TWA
PERCHLOROETHYLENE	127-18-4	25	PPM	OSHA	TWA
		50	PPM	ACGIH	TWA
		200	PPM	ACGIH	STEL
		300	PPM	CAL OSHA	CEIL
		200	PPM	CAL OSHA	EXCUR
		100	PPM	MSHA	TWA
AMYL ACETATE	628-63-7	100	PPM	OSHA	
		100	PPM	ACGIH	

Task 1: (continued)

1) Will the Pocket Guide always list the chemicals you are looking for?

2) Why do you have to look up each ingredient separately?

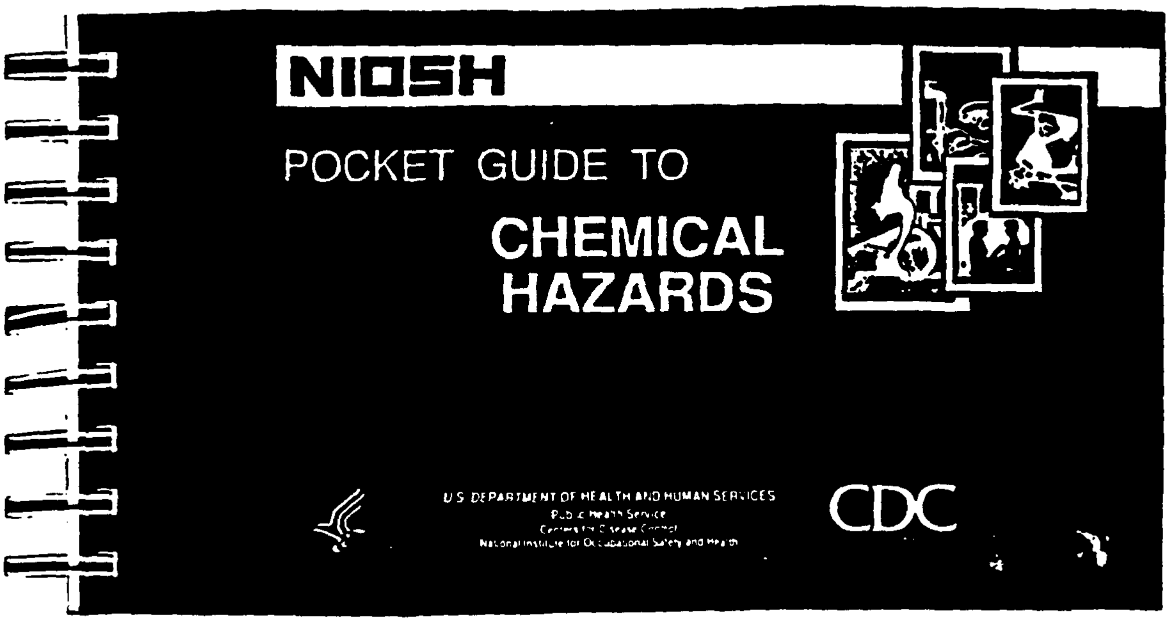
3) Ingredient #1 is Stoddard solvent. What page of the Pocket Guide is it listed on? How did you find that page?

4) Ingredient #2 is perchloroethylene. What page of the Pocket Guide is it listed on? How did you find that page?

5) Ingredient #3 is amyl acetate. What page of the Pocket Guide is it listed on? How did you find that page?

A. How to Get More Information

If you're not sure that the MSDS is right, there are many, many reference books with information about chemicals. One of the most useful books is the *NIOSH Pocket Guide to Chemical Hazards* (the "spiral-bound book"). The Pocket Guide has a lot of information, but it uses a lot of abbreviations, so it can be hard to use. On the next few pages, you will find instructions on how to use the Pocket Guide.



The Pocket Guide is published by the National Institute for Occupational Safety and Health. This is a government agency that does **research** on health and safety on the job. It does not enforce any laws.

(Source: *Activities Workbook, Chemical Emergency Response/Hazardous Waste Training*, International Chemical Workers Union, Chapter 6.)

B. Does The Pocket Guide Tell All?

The Pocket Guide does not list every chemical. It lists all of the chemicals OSHA has set limits for. Chemicals are listed in alphabetical order. The pocket guide does not list products with more than one ingredient. It only lists single chemicals.

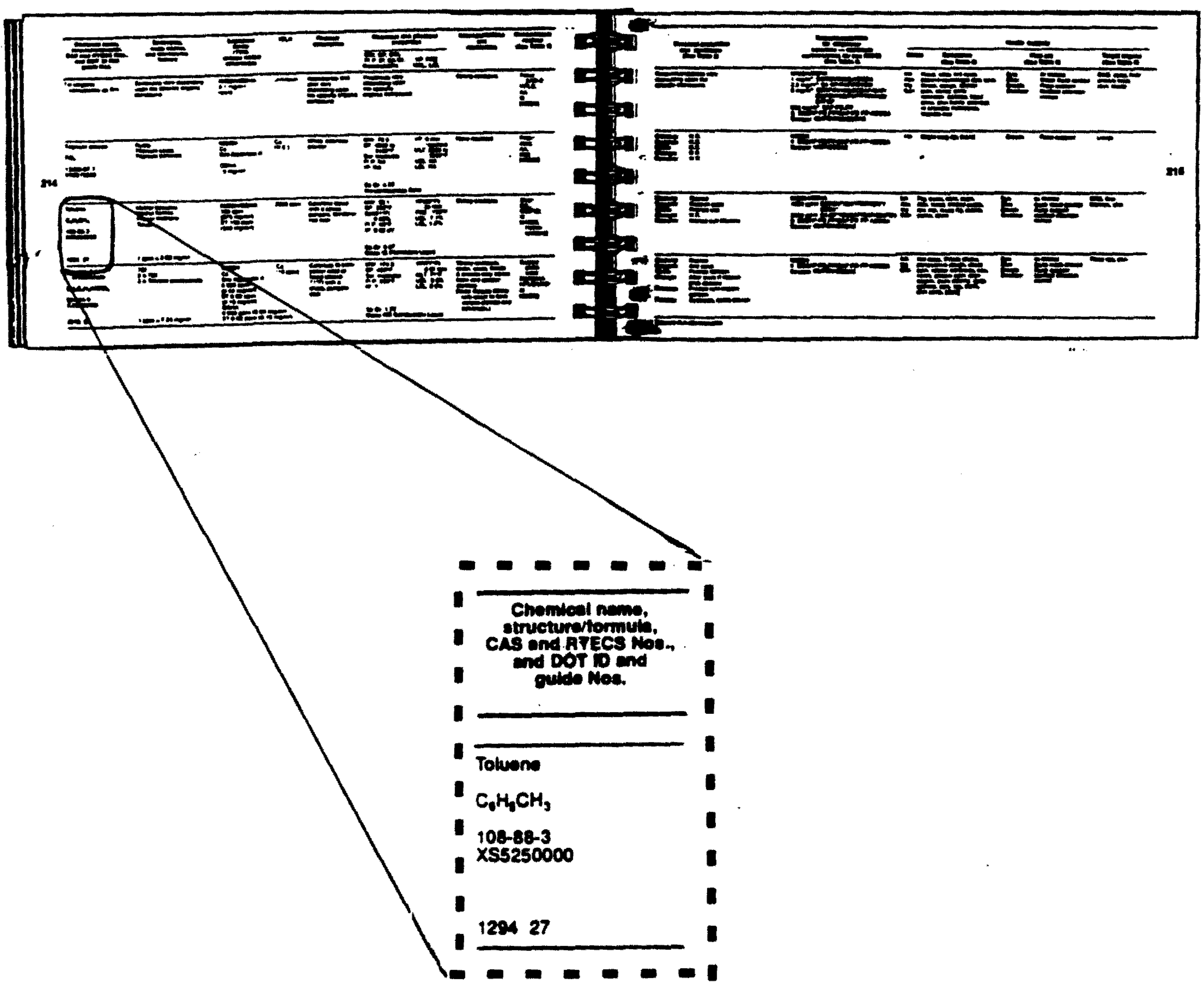
For example, if you work with a disinfectant called "DMQ Damp Mop," you won't find it under DMQ in the Pocket Guide. Get the MSDS and look up the ingredients:

SECTION II: HAZARDOUS INGREDIENTS						
			TABLE Z-1-A			
CAS REGISTRY NO.	%W	CHEMICAL NAME(S)	TWA mg/M³	STEL mg/M³	CEILING mg/M³	CARCINOGEN
67-63-0	1-5	2 Propanol	980	1225	—	No
68424-85-1	4.5	N-alkyl dimethyl benzyl ammonium chloride	—	not established	—	No

The main ingredient is 2-propanol (5%), so look this up in the Pocket Guide under "p."

C. Looking Up Chemical Names in the NIOSH Pocket Guide

Chemical names are listed in the first column on the left hand side of the pocket guide. For now, you don't need to look at the rest of the columns on the left hand page.



D. A Rose by Any Other Name

When you look up a chemical, it's important to know the exact spelling of its name. For example, benzene (with an E) and benzine (with an I) are very different chemicals. Benzene is part of gasoline, and it causes cancer. Benzine is another name for petroleum ether, which doesn't cause cancer.

Another example is 1,1,1 trichloroethane, which is different from 1,1,2 trichloroethane. 1,1,1 trichloroethane (pronounced "one-one-one") is another name for methyl chloroform, which causes nerve damage, but doesn't cause cancer. 1,1,2 trichloroethane (pronounced "one-one-two") causes liver, kidney, and nerve damage and it does cause cancer.

Why are there so many chemical names? Companies are allowed to name their chemicals and products whatever they want. There are no agencies that have to approve the name. Some names are chemical names that can tell a chemist something about the product, like 1,1,1 trichloroethane. Other names are just brand names, like "Comet" or "Vesphene" that don't tell you anything about the product.

What if you can't find your chemical in the Pocket Guide? See the next factsheet.

(Source: *Recognizing and Identifying Hazardous Materials*, Washington State Fire Service, p. 57)

E. Synonyms

Many chemicals go by more than one name. For example:

- 1,1,1 trichloroethane is also called
- methyl chloroform or
- CAS# 71-55-6.

Fortunately, the NIOSH pocket guide has some tables in the back that can help you find the chemical.

The **Synonym Index** starts on page 371 of the pocket guide. If you look up 1,1,1 trichloroethane in that index, here's what you'll see:

SYNONYM AND TRADE NAME INDEX (Continued)

The index tells you to turn to page 202 of the Pocket Guide.

F. Numbers

The **CAS number** is another way to find the chemical. CAS stands for the Chemical Abstracts Service, which is part of the Chemical Manufacturers Association. One CAS number stands for one chemical. The chemical may have many names, but it only has one CAS number. The **CAS number index** starts on page 386 of the Pocket Guide. If you look up CAS# 71-55-6, here's what you'll see:

CAS NUMBER INDEX

62-53-3: 18	74-83-9: 200	75-21-8: 138
62-73-7: 102	74-86-2: 4	75-25-2: 34
62-74-8: 282	74-87-3: 202	75-28-5: 176
62-75-9: 232	74-88-4: 210	75-31-0: 180
63-25-2: 50	74-89-5: 200	75-34-3: 98
64-17-5: 132	74-90-8: 168	75-35-4: 332
64-18-6: 148	74-93-1: 214	75-38-7: 332
64-19-7: 2	74-96-4: 134	75-43-4: 100
67-56-1: 200	74-97-5: 62	75-44-5: 252
67-63-0: 180	74-98-6: 262	75-45-6: 62
67-64-1: 2	74-99-7: 196	75-47-8: 172
67-66-3: 64	75-00-3: 134	75-50-3: 318
67-72-1: 158	75-01-4: 330	75-52-5: 230
68-11-1: 306	75-02-5: 330	75-55-8: 270
68-12-2: 114	75-04-7: 132	75-56-9: 270
71-23-8: 268	75-05-8: 4	75-61-6: 108
71-36-3: 38	75-07-0: 2	75-63-8: 318
71-43-2: 26	75-08-1: 140	75-65-0: 40
71-55-6: 202	75-09-2: 208	75-69-4: 146
72-20-8: 126	75-12-7: 148	75-71-8: 96
72-43-5: 194	75-15-0: 52	75-74-1: 302

The index tells you to turn to page 202 of the Pocket Guide.

Task 2:

Now that you have found the chemicals in the pocket guide, you need to look at the health information in the MSDS.

In your groups, please use the health information from the MSDS on pages 117-118 to answer the questions below.

1) What does the MSDS say about short-term (acute) hazards? (Look at the section called **Health Hazard Data.**)

2) What does the MSDS say about long-term (chronic) hazards? (Look at the section called **Health Hazard Data.**)

(over)

Task 2: (continued)

3) Does the MSDS say it causes cancer? (Look for the word carcinogenic.)

SECTION III - HEALTH HAZARDS/ROUTES OF ENTRY

EYE CONTACT:
One or more components of this material is an eye irritant. Direct contact with the liquid or exposure to vapors or mists may cause stinging, tearing, redness and swelling.

SKIN CONTACT:
One or more components of this material is a skin irritant. Direct contact or exposure to vapors or mists may cause redness, burning, drying and cracking of the skin and skin damage.

SKIN ABSORPTION:
Contact may result in skin absorption but symptoms of toxicity are not anticipated by this route alone under normal conditions of use. Persons with pre-existing skin disorders may be more susceptible to the effects of this material.

INHALATION (BREATHING):
One or more components of this material is toxic by inhalation. Breathing vapors or mist may be harmful. Effects of overexposure may include:

Irritation of the nose and throat.
Signs of nervous system depression, (e.g., headache, drowsiness, dizziness, loss of coordination and fatigue).
Irritation of the respiratory tract.
Pulmonary edema (accumulation of fluid in the lungs).

Respiratory symptoms associated with pre-existing lung disorders (e.g., asthma-like conditions) may be aggravated by exposure to this material.

INGESTION (SWALLOWING):
While this material has a low degree of toxicity, ingestion of excessive quantities may cause:

Irritation of the digestive tract
Signs of nervous system depression (e.g., headache, drowsiness, dizziness, loss of coordination, and fatigue).
Nausea
Vomiting
Abdominal pain
Diarrhea

ASPIRATION HAZARD - One or more components of this material can enter lungs during swallowing or vomiting and cause lung inflammation and damage.

Task 2: (continued)

Persons with pre-existing heart disorders may be more susceptible to irregular heartbeats (arrhytmias) if exposed to high concentrations of this material (see Section II - Note to Physicians).

Perchloroethylene, a component of this product, is a probable human cancer hazard. It has been identified as a possible carcinogen by NTP and IARC.

Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage (sometimes referred to as Solvent or Painter's Syndrome). Intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal.

Task 3:

Now you need to look up the health information in the pocket guide, so you can tell Marty if the MSDS is correct. You find out that the main ingredient is perchloroethylene, so you only need to look up one chemical in the pocket guide.

In your groups, please use the Pocket Guide to answer the questions below. Try to figure out what the medical terms mean, not just what they stand for (see pages 122-123).

1) What does the pocket guide say are the short-term (acute) hazards ("Symptoms" in the Pocket Guide)? See page 134 for more information about acute hazards.

2) What does the pocket guide say are the long-term (chronic) hazards ("Target Organs" in the Pocket Guide)? See page 135 for more information about chronic hazards.

3) Does the pocket guide say it causes cancer? (Look for the word [carc] under "Symptoms" in the Pocket Guide)

(over)

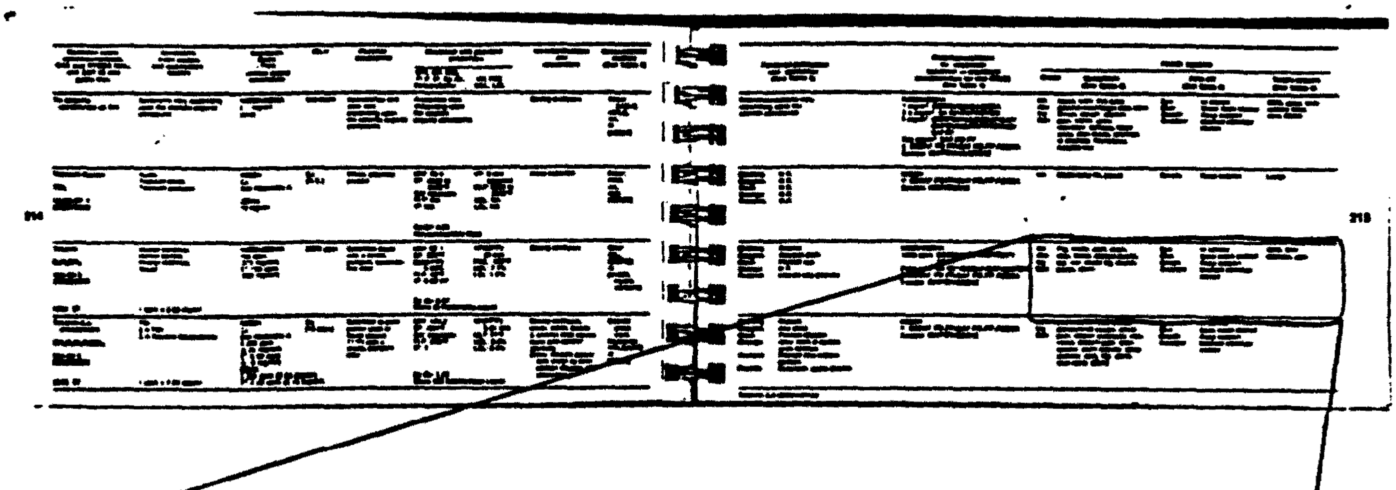
Task 3: (continued)

4) Which source would you trust for information about health hazards?

5) What new information can you give your co-worker Marty?

G. Looking Up Health Information in the Pocket Guide

Health information is listed on the far right hand side of the Pocket Guide. For now, you don't need to look at the rest of the columns on the right hand page.



Explained on pages xxix-xxxii of the Pocket Guide

Explained on pages xxxiii-xxxvi of the Pocket Guide

Explained on pages xxix-xxxii of the Pocket Guide

Health hazards				
Route	Symptoms (See Table 5)	First aid (See Table 6)		Target organs (See Table 5)
Inh Abs Ing Con	Ftg, weak; conf, euph, dizz, head; dilated pupils, lac; ner, musc ftg, insom; pares; derm	Eye: Skin: Breath: Swallow:	Irr immed Soap wash prompt Resp support Medical attention immed	CNS, liver, kidneys, skin

Inh = Inhalation (breathing)
Abs = Skin absorption
Ing = Ingestion (swallowing)
Con = Skin and eye contact

H. What Does "euph" Mean?

One thing that makes the Pocket Guide hard to use is all of the abbreviations. Here are some of the abbreviations used in the Pocket Guide, and what they mean.

Symptoms

Abbreviation	Stands for	Means
anor	anorexia	no appetite
arrhy	arrhythmia	irregular heartbeat
ataxia	ataxia	not coordinated
[carc]	carcinogen	causes cancer
cyan	cyanosis	blue lips--not enough oxygen
derm	dermatitis	flaky, dry, red skin
dysp	dyspnea	trouble breathing
eryt	erythema	red skin
equi	equilibrium	sense of balance
euph	euphoria	feeling "high"
hema	hematuria	blood in urine
hemog	hemoglobinuria	blood in urine (any word with "hem" has to do with blood)
inco	incoordination	clumsy
lac	lacrimation	watery eyes
lass	lassitude	no energy
narco	narcosis	feeling sleepy, slow, in a stupor
pares	paresthesia	tingling, shooting pains in arms/legs
pulm edema	pulmonary edema	"drowning in your own fluids"
som	somnolence	sleepy
vert	vertigo	loss of balance

(Source: Clayton L. Thomas, M.D., M.P.H., ed., *Taber's Cyclopedic Medical Dictionary, edition 16*, Philadelphia: F.A. Davis, 1989.)

H. (continued)

Target Organs

Abbreviation	Stands for	Means
CNS	Central Nervous System	brain and spinal cord
CVS	Cardio-Vascular System	heart, veins, and blood
GI tract	Gastro-Intestinal tract	mouth, stomach, and intestines
PNS	Peripheral Nervous System	nerves (other than brain)
Resp Sys	Respiratory System	nose, throat, and lungs

To look up other terms used in the Pocket Guide, ask for a medical dictionary in your library.

Summary: Getting More Information

1) NIOSH is a government agency that does research on chemicals. The NIOSH Pocket Guide has the best, independent research about how chemicals can harm your health.

2) You have to know the exact name of the ingredient you are looking up to use the Pocket Guide. It does not list brand names.

3) The Pocket Guide does not list every chemical, only chemicals that OSHA has set limits for.

4) The Pocket Guide uses a lot of abbreviations. Look them up on pages 122-123 of this workbook or in a medical dictionary at your library.

5) Most chemicals have several different names. Use the synonym index or the CAS number index at the back of the Pocket Guide if you can't find the chemical you're looking for.

NOTES

NOTES

Activity 6: Tackling Toxic Chemical Myths

Purpose:

To increase our ability to see through the common myths about the impact of toxic chemicals at the workplace on our health.

Task 1:

Local 94 has asked the health and safety committee to respond to a worker who made the statement below. In your groups evaluate the statement and prepare a brief response for this worker.

> **"The danger of chemicals is overstated. If you use your nose to warn you and don't breathe any of the really bad stuff, it won't harm you. Of course, you must respect things like acids and avoid them. They can blow your lungs away.**
>
> **I don't buy this panic about cancer. I know people who got cancer and never worked with chemicals anywhere. I also know people who work with chemicals and have not gotten cancer.**
>
> **It is obvious all cancer doesn't come from chemicals. The way they do lab tests is to shoot tons of chemicals into rats. How can they avoid getting cancer?**
>
> **In my opinion, I've worked with this stuff for 20 years and I'm okay. So, what's all the fuss about?"**

In preparing your response, please review the fact sheets on pages 129 - 148, and try to refer to at least one factsheet when you present your response.

(over)

(Source: *Hazardous Materials Workbook*, Oil, Chemical, and Atomic Workers Union, New York: Apex, 1993.)

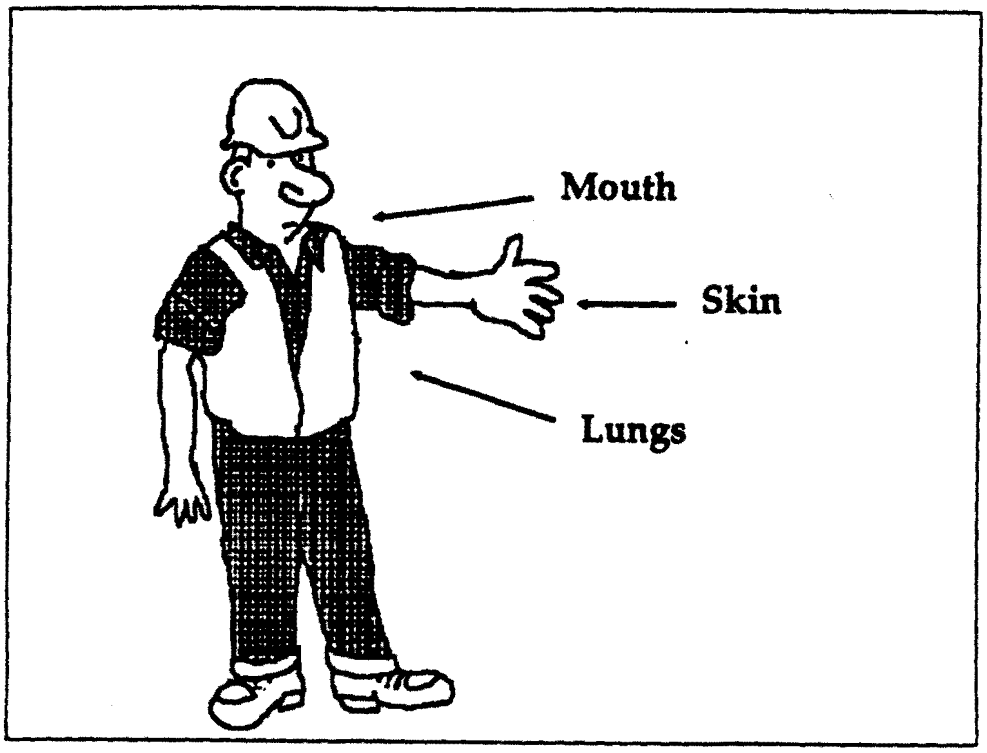
Task 1: (continued)

What would your group say to this worker?

A. How Toxic Chemicals Enter Your Body

The three basic ways toxics enter your body are:

- **Breathe in: through your nose or mouth (Inhalation)**
- **Soak through the skin (Absorption)**
- **Swallow: on your hands when you eat or smoke (Ingestion)**.

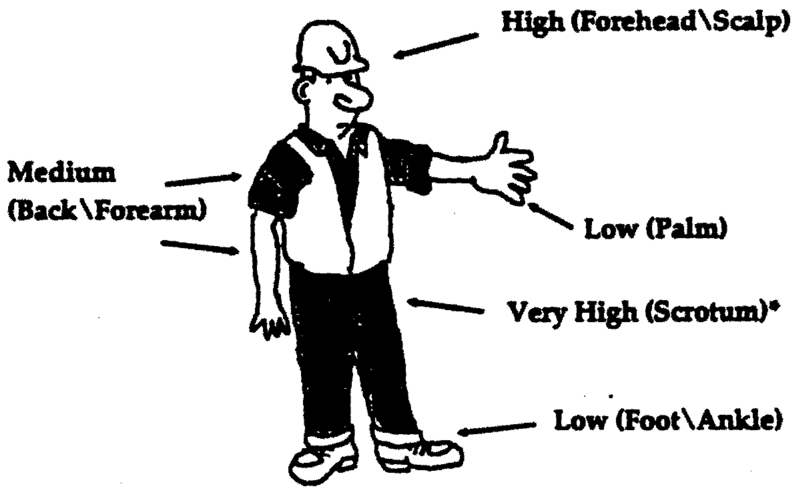


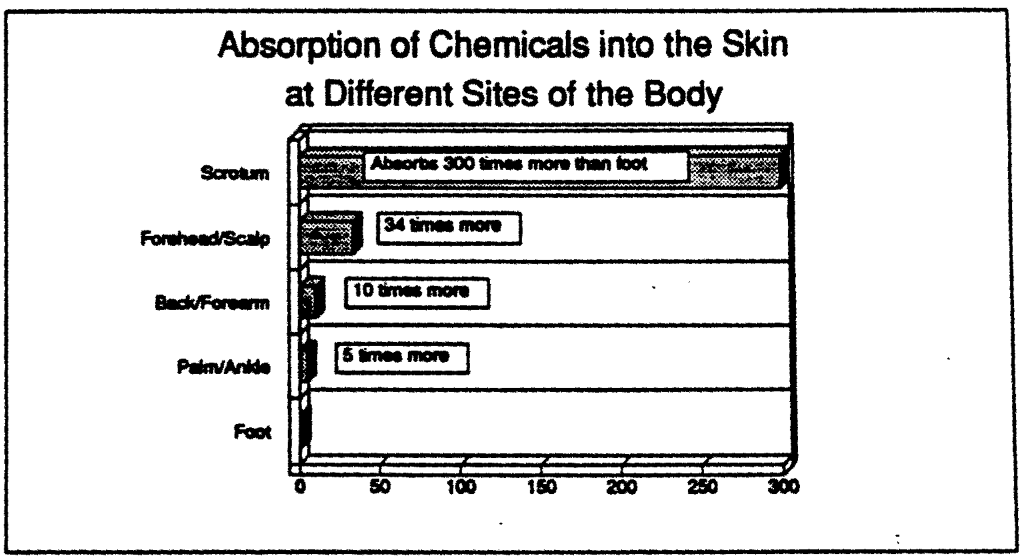
No matter how the chemical gets into your body, it can travel through your blood and harm other parts of your body. Chemicals can damage your brain, liver, kidneys, lungs, stomach . . . in fact, any part of your body. For example, methylene chloride can soak through your skin and damage your heart and brain.

Of course, if the chemical doesn't get in or on your body, it can't harm you.

B. Even if You Hold Your Breath Toxic Chemicals Enter Your Body

Toxics can enter and harm your body even if you don't breathe them in. They can also enter your system by being absorbed through the skin or by being ingested (eaten) with your food and drink. In fact, as the chart below shows, when it comes to absorption through the skin, different parts of your body absorb chemicals at very different rates. (Watch out for your privates! Wash your hands before using the bathroom.)

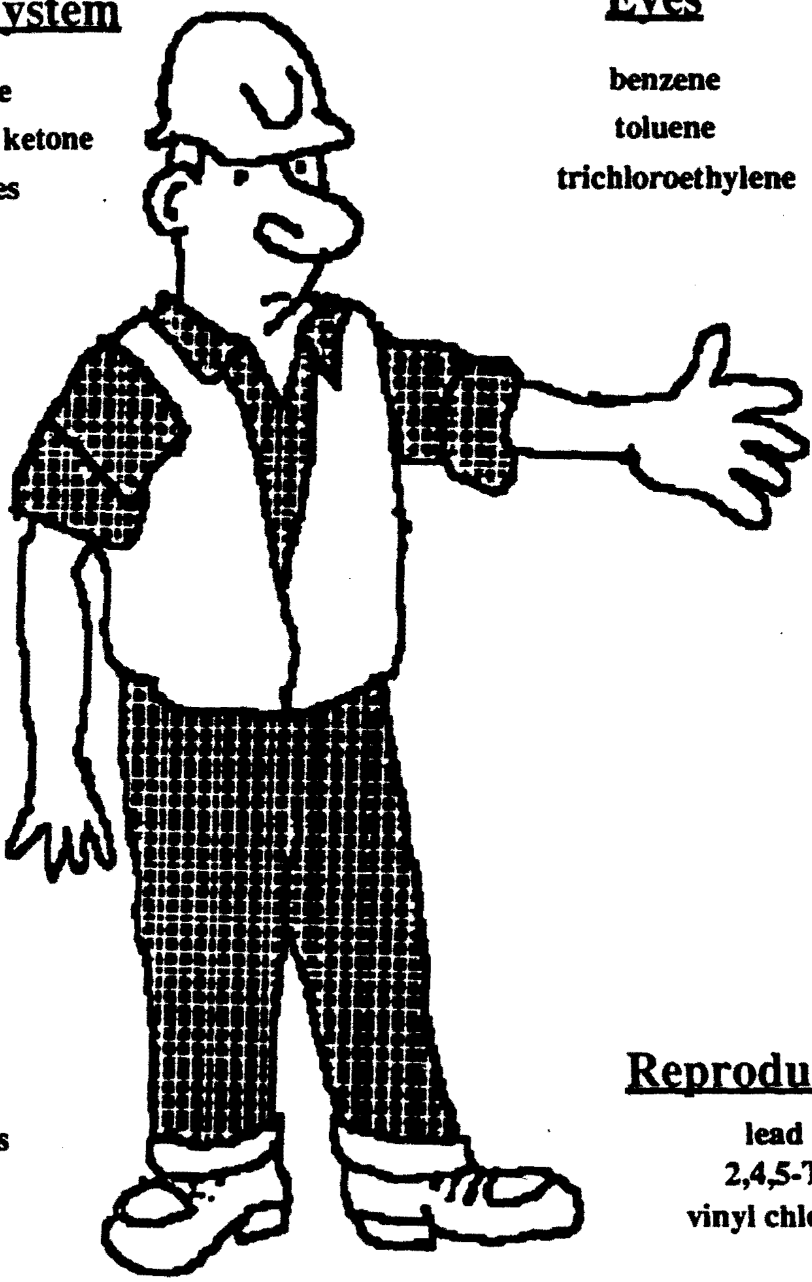




Source: E. Hodgson and P.E. Levi, *A Textbook of Modern Toxicology* (Elsevier: New York, 1987), p. 34-35.

* For men (Studies of female workers yet to be done.)

C. Chemicals Can Harm Many Parts of Your Body



Nervous System

gasoline
methyl ethyl ketone
pesticides

Eyes

benzene
toluene
trichloroethylene

Lungs

asbestos
chlorine
sodium hydroxide (lye

Stomach

methyl ethyl ketone
turpentine
xylene

Kidneys

Cellosolve
toluene
xylene

Skin

benzene
tar
toluene

Liver

mineral spirits
PCBs
toluene

Reproductive

lead
2,4,5-T
vinyl chloride

These are just a few examples of how chemicals can make you sick.

D. Your Nose Doesn't Always Know

You can't really rely on your sense of smell to protect you from exposure to toxic chemicals. Let's face it, your nose has some important limitations. Here are three basic ones:

- First of all, there are dangerous chemicals that are odorless, such as carbon monoxide or carbon dioxide. No nose can smell it.

- Secondly, for some chemicals, you can only detect the smell when the toxic is around you in such large quantities that your health is already being harmed by it. For example, by the time you can smell ethylene oxide, you're already in trouble.

- Thirdly, our noses can become accustomed to chemicals with very strong odors. That means that after a while we can no longer smell even very powerful odors. For example, our noses can learn not to smell such strong odors as ammonia and chlorine.

E. Dose and the Body's Response

Toxic chemicals and their byproducts react with your body. To cause harm, you have to be exposed to enough of the substance. "Dose" means how much of a substance enters your body:

If there is a lot of the chemical in the air (even for a short time), a lot of it will get into your body. (A large exposure over a short time is a large dose.)

If there is only a little bit of the chemical in the air, but you breathe it for a long time, a lot of it will get into your body. (A small exposure over a long time is also a large dose.)

Your body has a lot of ways to defend itself. These defenses work against some chemicals. But they don't work forever. For example, you can breathe low levels of freon (a refrigeration gas) without any problems. But at high levels, the same gas could make your heart beat unevenly. It could kill you.

Some chemicals are so dangerous, **no amount is safe**. No matter how small the dose is, your body cannot protect itself. Many people think that no amount of a cancer-causing chemical is safe.

F. The Short and Long of It

Chemicals can make you sick soon after they get into your body or they can take years to cause disease. The two words that describe this are **acute** and **chronic**.

Acute Effects

The word "acute" means that you feel the effects when you are exposed (or soon after).

- Hydrogen fluoride irritates your lungs right away when you breathe in it.
- Carbon monoxide binds up your red blood cells so they can't carry oxygen. It acts right away. If enough red blood cells are bonded, you won't know it, because you'll be dead.
- Caustic soda corrodes the skin. It burns.

F. (continued)

Chronic Effects

The word "chronic" means that the disease doesn't show up until a long time after you are exposed. It is common when you are exposed to a small amount of a substance for a long time.

- Asbestos can give you cancer years after you breathe it. It won't even irritate your lungs when you breathe it in.
- Chlorine can cause bronchitis when you breathe it in for a long time (months to years).
- Benzene can cause leukemia (cancer).

F. (continued)

Many chemicals will cause both short-term and long-term health problems. It depends on how much you take into your body. A large dose all at once (spilling a solvent on your clothes) will probably cause an acute effect. A small dose day in and day out for a long time may cause a chronic effect. For example, formaldehyde used in labs causes both acute and chronic effects:

- A large dose of PCBs causes a skin disease called chloracne.
- Over a long period of time, small amounts of PCBs cause liver cancer.

G. Safety

Many chemicals cause **safety** problems, too. They can:

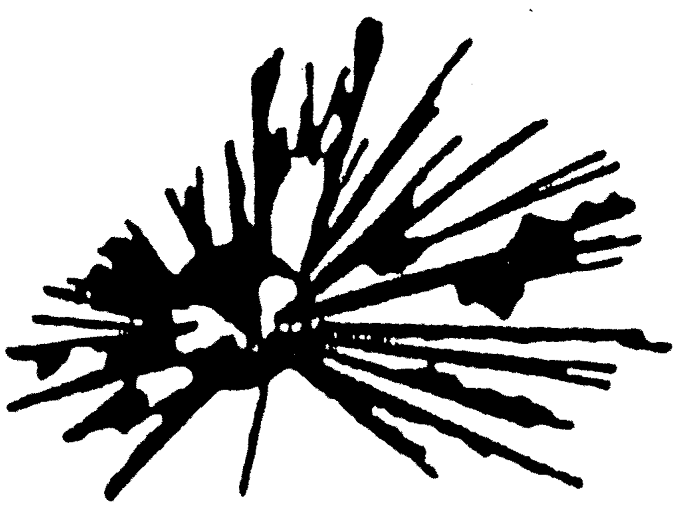
- **burn**
- **explode or**
- **cause chemical reactions**

Fire

Some chemicals can burn at room temperature. Any chemical that can burn below 140 degrees is very dangerous. For example, xylene (a solvent) can burn at 81 degrees (room temperature). But Cellosolve (another solvent) won't burn until it reaches 340 degrees.

Explosions

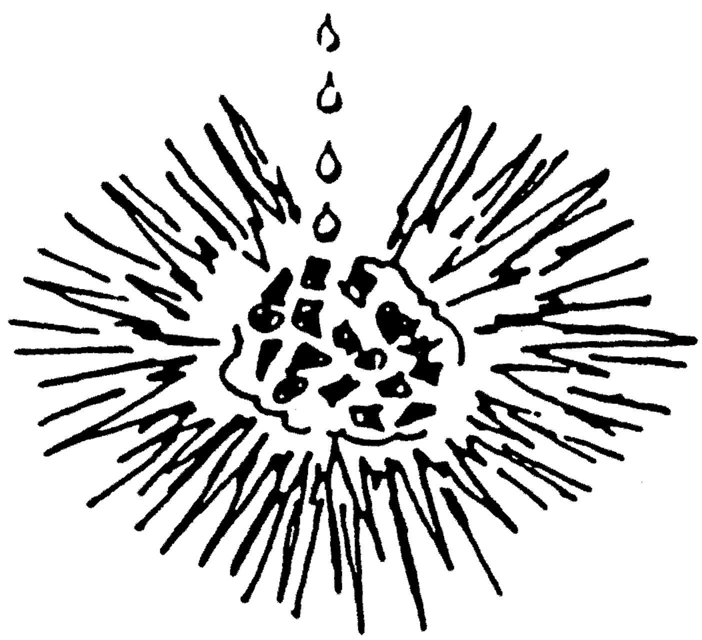
Many chemicals can explode if they catch on fire inside a container. Some mixtures are explosive, even if the two chemicals that mix are not. For example, chlorine or gasoline will not explode by themselves (unless they are in a closed container that is in a fire), but if you mix them, the mixture is explosive.



G. (continued)

Chemical reactions

When chemicals are mixed, they can give off poisonous gases; become very hot and catch on fire; or explode. Chemicals that create health and safety hazards when they are mixed are called **incompatible**. For example, if you mix bleach and ammonia, deadly chlorine gas will be released. Don't mix any chemicals unless the label tells you to.



H. Some of the Chemicals We Know Cause Cancer in Humans

We are a long way from knowing all the causes of cancers. But we have learned the hard way that certain chemicals (and processes) do cause cancer in humans. The sad fact is that science found out that these chemicals cause cancer because workers died. There are 200-300 more chemicals we suspect of causing cancer.

Listed here are a few chemical we know give people cancer:

Arsenic	Asbestos
Benzene	Chromium
Mustard Gas	Vinyl Chloride

Chemicals that cause cancer are called **carcinogens**. Here are 18 other chemicals and processes we know cause cancer.

Acrylonitrile
4-Aminobiphenyl
Analgesic mixtures containing phenacetin
Auramine manufacture
Azathioprine*
Benzidine
Benzo(a)pyrene
1,3 Butadiene
Chlornaphazine*
Bis (Chloromethyl) ether
Myleran*
Certain combined chemotherapy for lymphomas*
Chlorambucil*
Coke oven emissions
Conjugated estrogens
Cutting oils
Cyclophosphamide*
Diethylstilbesterol (DES)*
Hematite underground mining
Isopropyl alcohol manufacture by the strong acid process
Leather dust
Melphalan*
Methoxsalen with Ultra-Violet A therapy (PUVA)*
2-Naphthylamine
Nickel refining
Radon gas
Rubber manufacture (certain occupations)
Soots, tars, and mineral oils (containing PNAs)
Thorium dioxide
Uranium
Wood dusts (hardwoods)

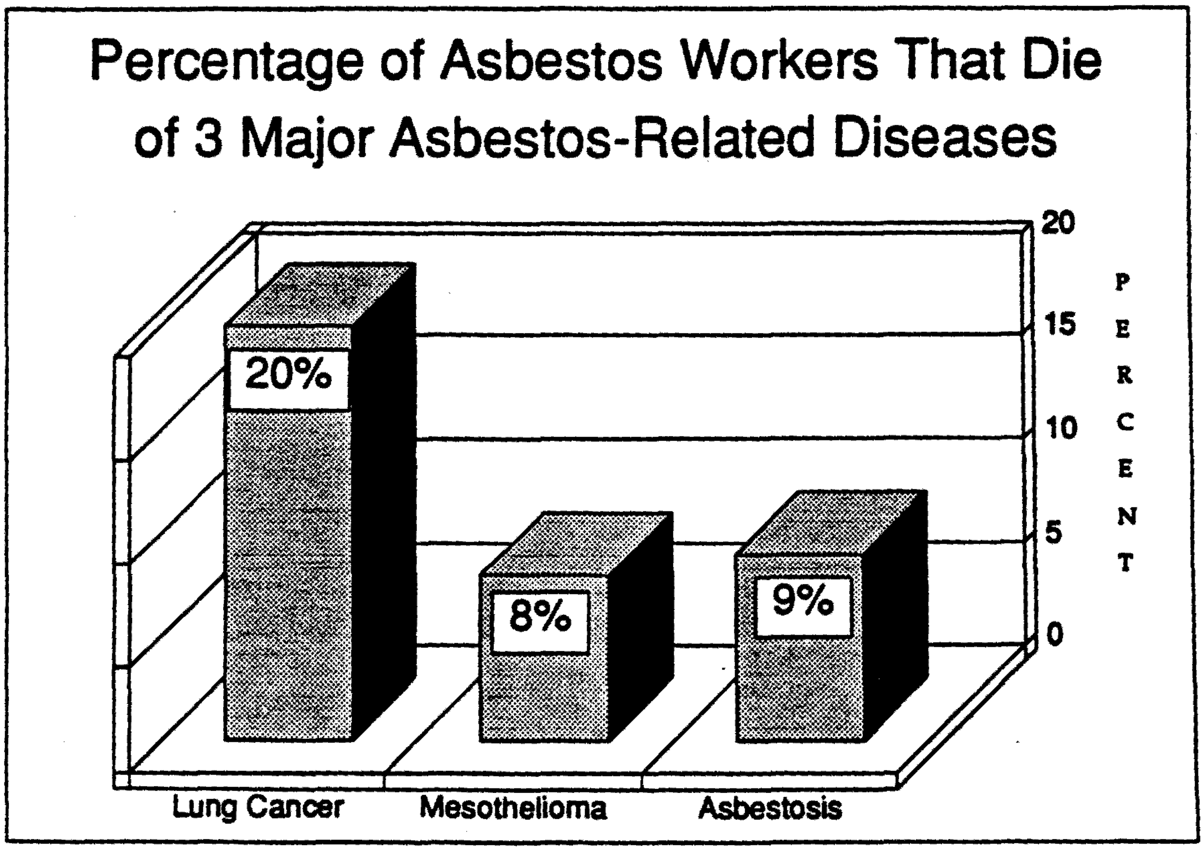
*Medical substances that cause cancer.

(Sources: U.S. Dept. of Health and Human Services, National Toxicology Program, *Sixth Annual Report on Carcinogens*, Pub. No. NTP-85-001 (Research Triangle Park, N.C., 1991) and Intl. Chemical Workers' Union.)

I. The Odds of Getting Disease

A funny thing about humans is that while we are all pretty much the same, we're also different as individuals. For example, even if a large group of us gets a very large dose of a toxic chemical, not all of us will develop disease. But, we do know that such an exposure will give some of us disease, and there is really no way of knowing who that might be.

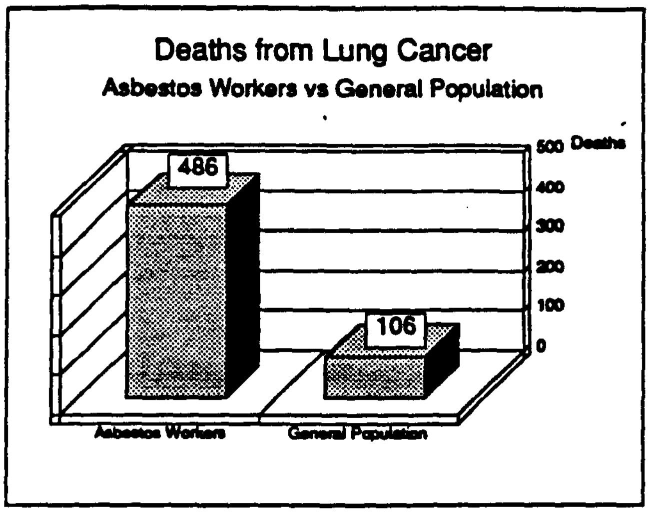
For example, let's look at asbestos workers. We now know that as a group they run a very high risk of dying from lung cancer, mesothelioma (cancer), and asbestosis. But not all asbestos workers get these diseases. The chart below shows just what the odds are for asbestos workers.

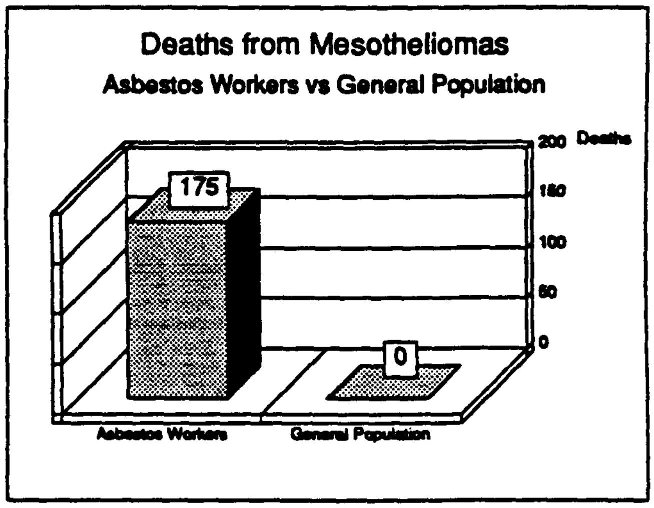


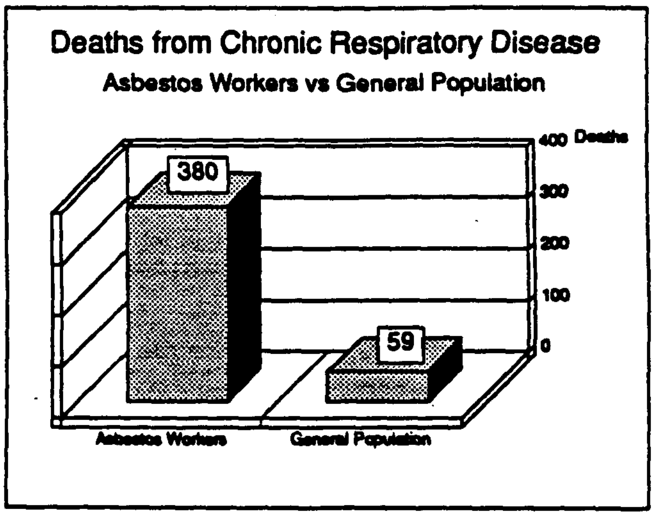
Source: I. J. Selikoff, *Disability Compensation for Asbestos-Related Disease in the United States* (New York: Mt. Sinai School of Medicine, 1982).

J. How Do We Know When a Toxic Substance Really Causes Human Disease?

It is true that in most cases people who aren't exposed to workplace toxic chemicals get the same kinds of cancers as workers exposed to carcinogens. But the numbe rs are very different. When we say something is a human carcinogen, we know that exposed workers suffer more cases of a particular kind of cancer than we would find in the population at large. In fact, this is how scientists "prove" something causes cancer in humans. They study groups of exposed workers and groups of people **not exposed** but who are otherwise similar. If the workers' rates of cancer are higher, the exposure is considered to be a cause of cancer. (The branch of science that studies who gets diseases is called **epidemiology**.) The graphs compare deaths of a population of 17,800 asbestos workers and 17,800 people in the general population from 1967 to 1976.

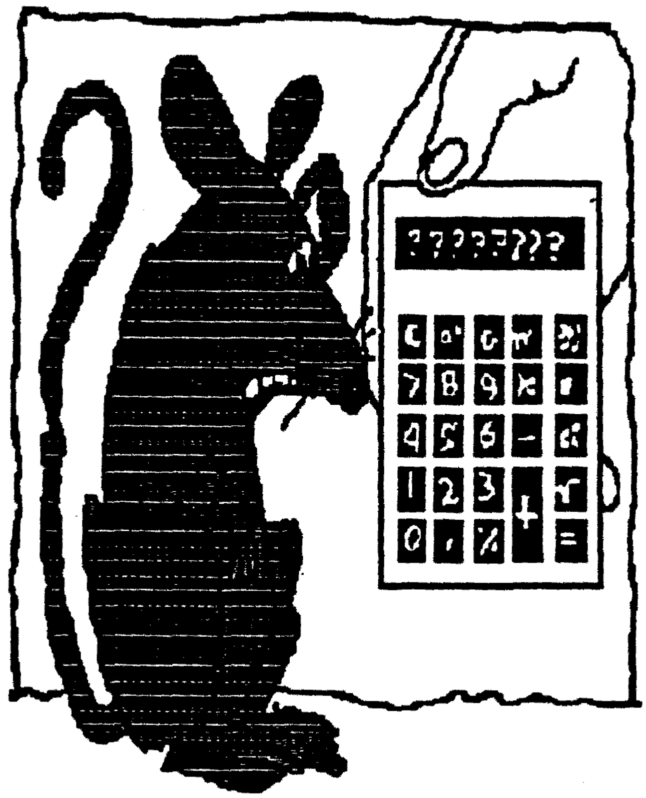




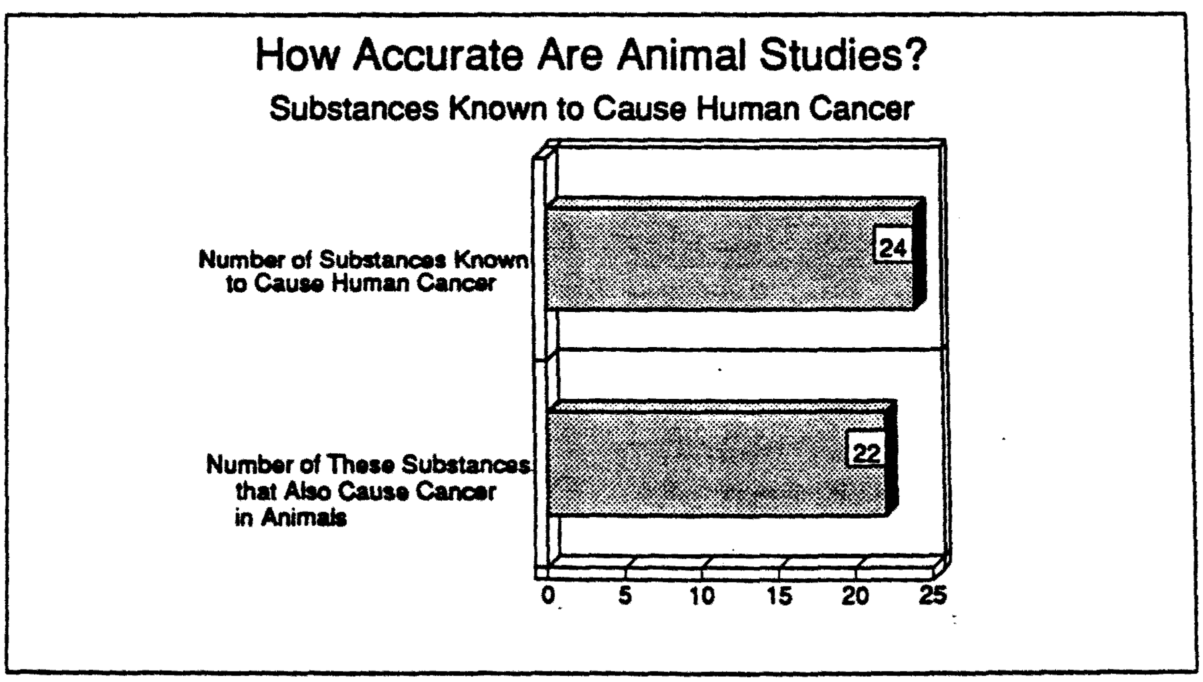


Source: I. J. Selikoff, *Disability Compensation for Asbestos-Associated Disease in the United States* (New York: Mt. Sinai School of Medicine, 1982).

K. Do Animals Tell the Truth?



There are some pretty good reasons why it pays to take cancer studies on animals very seriously. Of the 24 substances that we now know from human studies to cause cancer, 22 of them also cause cancer in animals. (There are 200-300 other chemicals that are suspected to cause cancer in humans.) It is true that the animals are given large doses, but the real reason for this is that it speeds up the time it takes for the cancer to show up. Large doses in themselves don't cause cancer. If you give an animal a large dose of a safe substance, they don't get cancer.

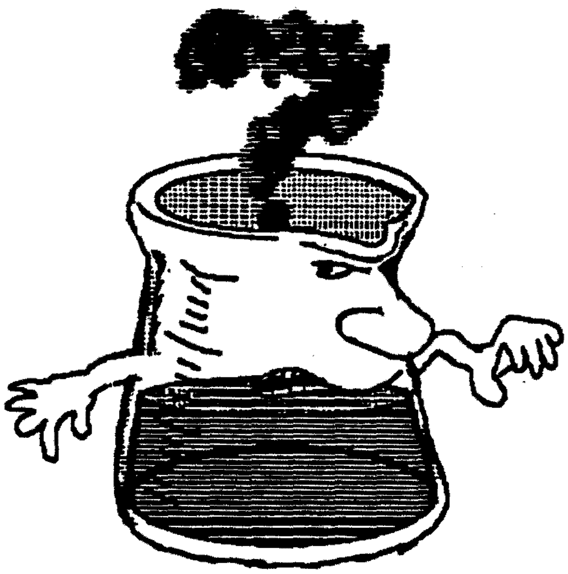


Source: U.S. Department of Health and Human Services, National Toxicology Program, *Fourth Annual Report on Carcinogens*, Pub. No. NTP 85-001 (Research Triange Park, N.C., 1985).

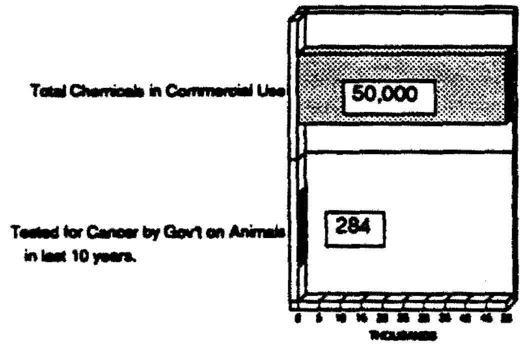
Factsheet

L. What We Don't Know May Hurt Us

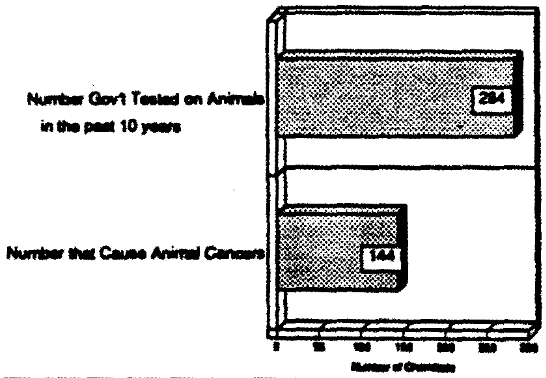
The vast majority of chemicals in use have not even been tested on rats. Of the more than 50,000 chemicals in commerical use, only 284 have been tested on animals by the government in the past ten years. Of those 284 chemicals, about half (144) have been shown to cause cancer in animals. This proves that not all chemicals cause cancer in animals



How Many of the 50,000 Chemicals in Use
Are Gov't Tested for Cancer on Animals



Not All Government Tested Chemicals
Cause Cancer



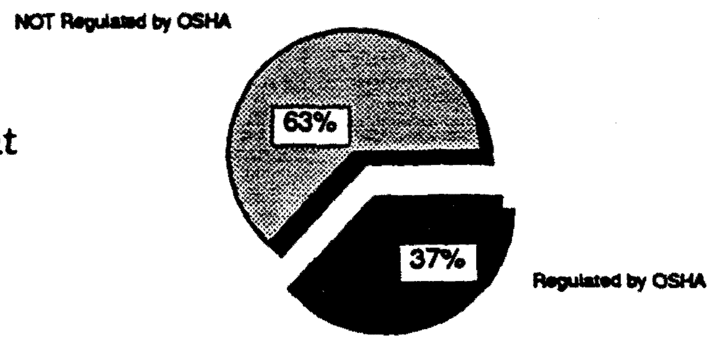
Source: U.S. Congress, Office of Technology Assessment, *Identifying and Regulating Carcinogens*, OTA-BP-H-42 (Washington, D.C.: U.S. Government Printing Office, November 1987), p. 18.

L. (continued)

So far, OSHA has regulations for only one-third (53) of the 144 chemicals that the government's National Toxicology Program has identified in the past 10 years as causing cancer in animals. (Of those 53, only 21 are regulated by OSHA as carcinogens.)

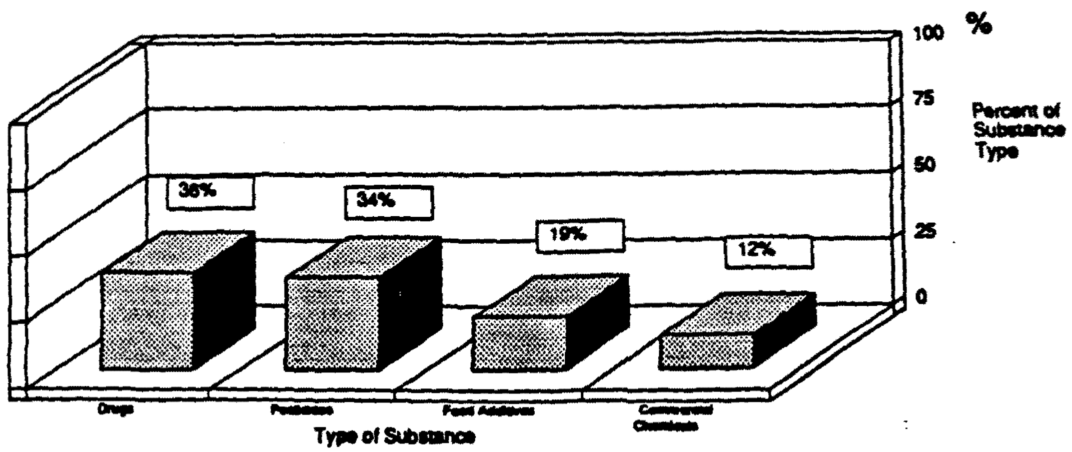
This means that OSHA has no regulations for nearly two thirds of all the known carcinogens. Unfortunately, we produce chemicals first and ask questions later. The chart below shows just how few chemicals we actually know about when it comes to health and safety. The chart refers to the percent of chemicals of different types about which science has any health and safety information at all.

Percent of 144 Animal Carcinogens That are OSHA Regulated



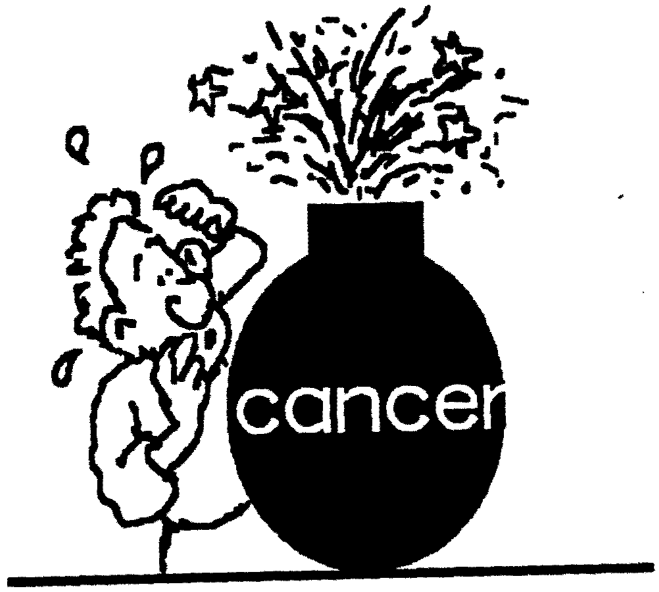
Source: Office of Technology Assessment

Percent of Substances for Which We Have at Least Limited Information

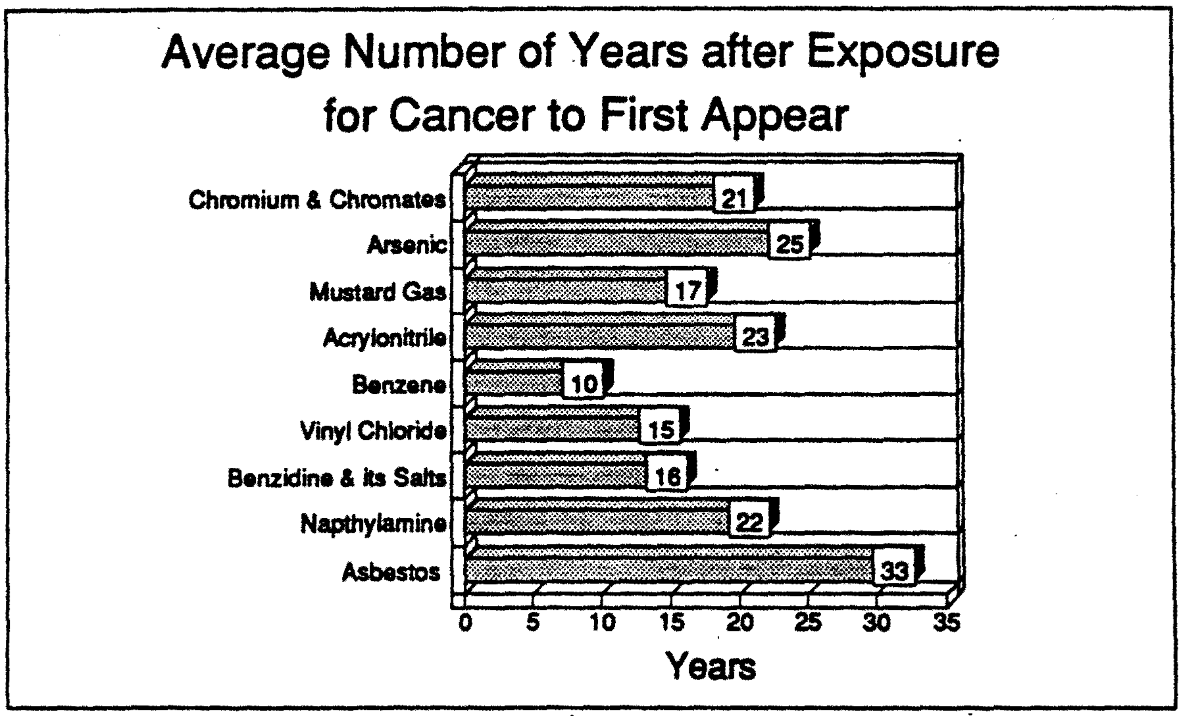


Source: *Toxicity Testing – Strategies to Determine Needs and Priorities*, National Research Council, 1984.

M. The Toxic Time Bomb



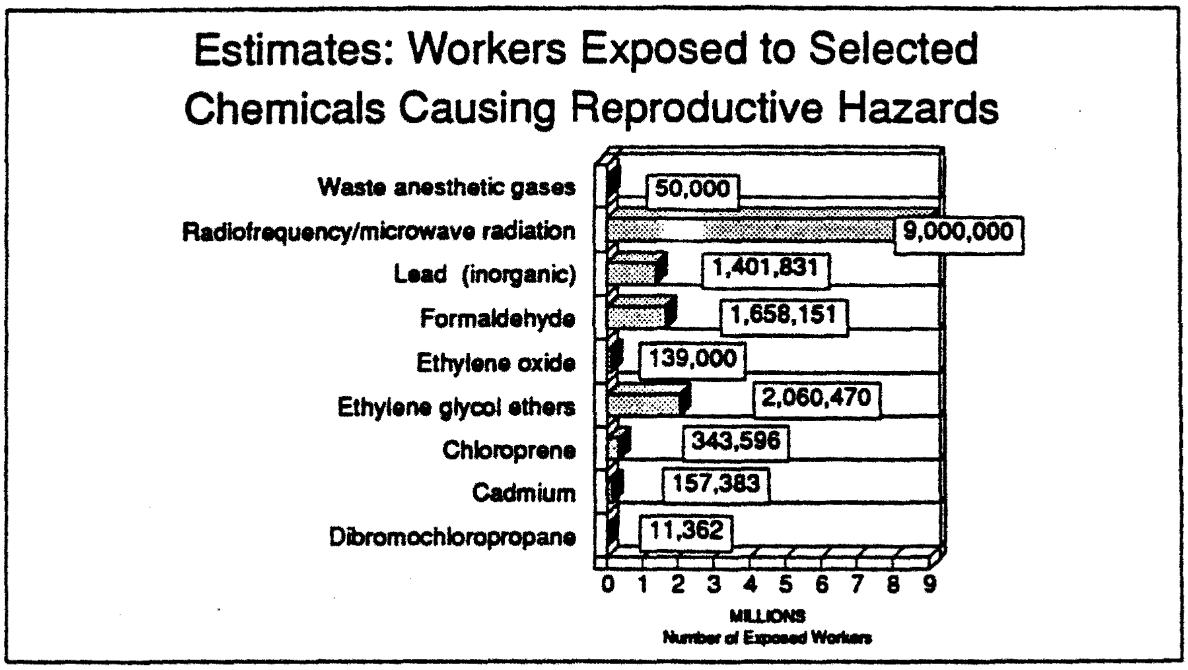
It's a big mistake to feel confident that because you've been exposed for many years and have no symptoms, all is well. The sad fact of the matter is that it can take 10 to 40 years to see the results of a harmful exposure to a cancer-causing chemical. You may be healthy for 20 years and get it the very next year. The time it takes to show up is called the latency period. The chart below shows some of the latency periods for different carcinogens. Unfortunately, there may be thousands of unknown time bombs ticking in our workplaces that have not been discovered yet.



Source: B. S. Levy and D. H. Wegman (Eds.), *Occupational Health: Recognizing and Preventing Work Related Disease* (Boston: Little Brown & Co, 1983).

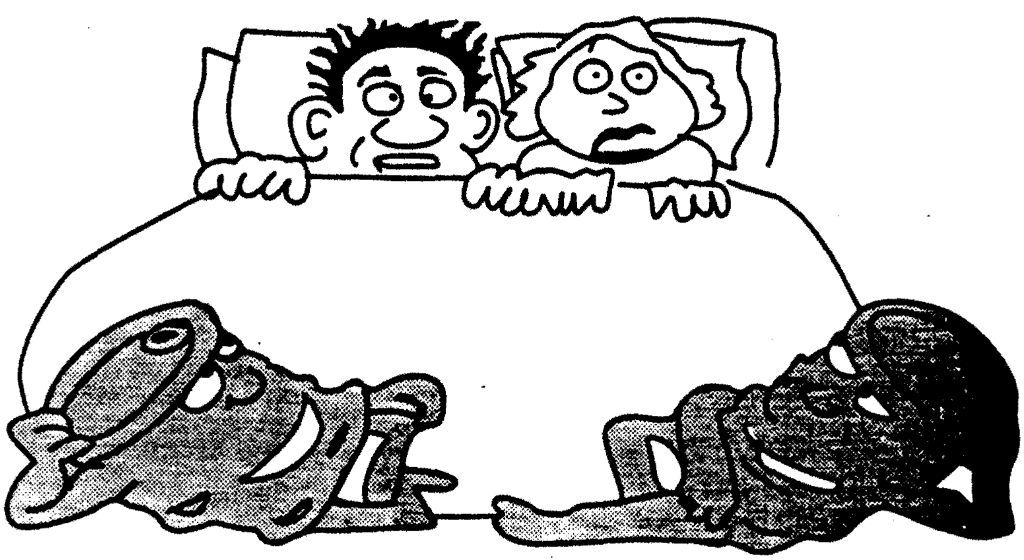
N. Toxic Chemicals Can Also Harm the Unborn

We are not the only ones that can suffer from toxics. Studies now show that some of the chemicals at work actually harm our reproductive systems and cause damage to the fetus.



Note: Examples of agents have been selected on the basis of positive animal and/or human data; inclusion or exclusion of agents does not constitute an evaluation of their potential reproductive toxicity in humans.

Source: *Morbidity and Mortality Weekly Report*, Vol. 34/No.35, September 6, 1985 (Atlanta: Center for Disease Control).



O. Reproductive Hazards to Men and Women

Potential Adverse Effects of Job Exposures on Reproduction or on the Ability to Have Normal, Healthy Children

Prior to Conception

- Menstrual disorders - women.
- Interference with sexual functions - men.
- Genetic damage in male and female germ cells can be passed on to the children and result in disease or birth defects.
- Can also cause miscarriage or stillbirth.

At Conception

- Difficulties in conceiving a child (for example, by interference with the sperm's ability to fertilize the egg).

During Pregnancy

- Miscarriage, stillbirth, cancer, disease, or birth defects as a result of substances crossing the mother's placenta and reaching the developing fetus (e.g., certain drugs, chemicals and viruses) or by direct action, such as radiation exposure.

On the Newborn

- Toxic effects on development of the baby as a result of chemicals transmitted in breast feeding.

On the Child

- Toxic effects on development of the child from exposure to substances inadvertently brought home on parents' workclothes.

Source: Andrea Hricko and Melanie Brunt, *Working For Your Life: A Women's Guide to Job Health Hazards* (joint publication of Labor Occupational Health Program and Public Citizen's Health Research Group, 1976).

O. (continued)

Hazard	Outcome
Proven Reproductive Hazards (Based on Human Studies)	
Anesthetic gases	Miscarriage, Death of Newborn
Diethylstilbestrol (DES)	Cancer
Hepatitis B	Newborn Hepatitis, Liver Cancer
Organic Mercury	Cerebral Palsy, Brain Malformation
Lead	Miscarriage, Premature Birth
Polychlorinated Biphenyls (PCBs)	Low Birth-Weight
Radiation	Miscarriage, Brain Defects, Skeletal Defects
Suspected Reproductive Hazards (Based on Human Studies)	
Carbon Monoxide	Slowed Growth
Cytotoxic Drugs	Miscarriage
Ethylene Oxide	Miscarriage
Hexachlorophene	Birth Defects
Organic Solvents	Cleft Palate, Miscarriage, Newborn Infection, Childhood Cancer
Physical Stress (Including Heat)	Prematurity
2,4,5-Trichlorophenol	Miscarriage
Vinyl Chloride	Brain Defects
Suspected Reproductive Hazards (Based on Animal Studies)	
Acrylonitrile	
Arsenic	
Cadmium	
Dioxin	
Glycol Ethers	
Inorganic Mercury	
Organochlorine Pesticides	
Polybrominated Biphenyls (PBBs)	
Tellurium	

Source: Linda Rosenstock and Mark R. Cullen, *Clinical Occupational Medicine* (W.B. Saunders Company, 1986).

Task 2:

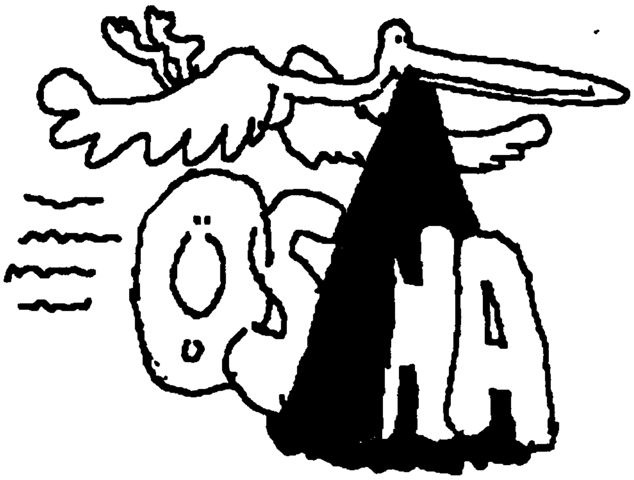
In your groups, please evaluate the statement below and prepare a response. Please read the factsheets on pages 150 - 155 and refer to at least one fact sheet in giving your group's response.

> **"Because our employer and our union have really tried hard to prevent exposures to toxic chemicals, we now have all our readings below the OSHA limits.**
>
> **While it's true that we still use cancer-causing chemicals, the levels are low. So we can now honestly tell our members that we have created a safe work place."**

What is your group's response to this worker's statement?

Note: "Parts per million" or ppm is a way to measure how much of a chemical (how many "parts") is in the air. The "parts" could be cups, gallons, or any measure. One part per million is a very small amount. It is equal to about 3 tablespoons of something in a tank truck (10,000 gallons) full of water.

P. How OSHA Health Standards Were Born



OSHA standards did not simply come from impartial scientists who were deeply concerned about our health. In fact, many of the standards were adopted from unpublished industry studies (which means nobody could verify them). Before OSHA had begun setting standards in 1970, **threshold limit values** (TLVs) were established by the American Conference of Governmental Industrial Hygienists (ACGIH). Despite the governmental sounding name, this is not a government organization. Every year since 1946, ACGIH has published an annual report of TLVs. These TLVs were never meant to be mandatory standards; instead they were workplace exposure guidelines to be followed by government contractors. In 1971, OSHA adopted nearly all of the ACGIH 1968 standards. In 1989, OSHA updated the exposure standards based on the 1987 ACGIH TLV list. One main problem with that process was that **many of the ACGIH standards were based heavily or entirely on company information** (which was the only information available at the time). A second major problem is that the **standards were often modified to include economic considerations**, where the final level of exposure takes into account what companies say is affordable. In 1993 the OSHA limits were overturned by the U.S. Court of Appeals. OSHA went back to the old 1971 limits.

(Source: B.I. Castleman and G.E. Ziem, "Corporate Influence on Threshold Limit Values," *American Journal of Industrial Medicine*, 13:531-559, 1988.)

9. How OSHA Standards Are Changed

Standard setting by OSHA is a political process. It usually takes a very strong effort from worker and public interest groups to get any of the standards changed. Often, **power–not just science–** determines which levels are changed and how much they change. (See case study below.)

The Benzene Story

1974	**When disturbing levels of leukemia appeared among Ohio tire builders exposed to benzene, NIOSH issued a criteria document urging further investigation.**
1976	**With more evidence from Ohio, NIOSH recommended that benzene be added to the list of carcinogens. NIOSH urged OSHA to issue an emergency temporary standard reducing the permissible time-weighted exposure limit from 10 ppm to 1 ppm, with a 5 ppm limit over any 15-minute period.**
1977	**OSHA issued the emergency standard.**
1978	**The American Petroleum Institute and other industry representatives went to court to challenge OSHA's standard. The Fifth Circuit Court of Appeals overturned the standard based on employer arguments that OSHA failed to estimate the costs to industry that would result from the regulation.**
1980	**Unions appealed this decision to the U.S. Supreme Court. The Supreme Court backed the lower court's decision.**
1983	**Armed with more data from NIOSH showing that workers exposed to benzene for even brief periods were six times more likely to die from leukemia, a coalition of unions and public health groups petitioned OSHA for a new emergency standard. OSHA issued a notice of proposed rule-making, the first step in a lengthy process of issuing a new regulation. The unions accused OSHA of ignoring a six-year history of efforts to lower the benzene standard.**
1984	**OSHA rejected the coalition's petition for an emergency temporary standard. The agency promised a standard by the end of the year. Nothing happened and in December a group of unions filed suit against OSHA with the Washington, D.C. Circuit Court.**
1986	**OSHA agreed to issue a standard by February 1987; the D.C. Court accepted this.**
1987	**In September, OSHA lowered the standard to 1 ppm with a short-term exposure limit (STEL) of 5 ppm.**

Source: Compiled by Cate Poe from interviews with Diane Factor and Peg Seminario, AFL-CIO Health and Safety Department, and from *The New York Times*, April 23, 1983 and *BNA Reporter*, March 29, 1984.

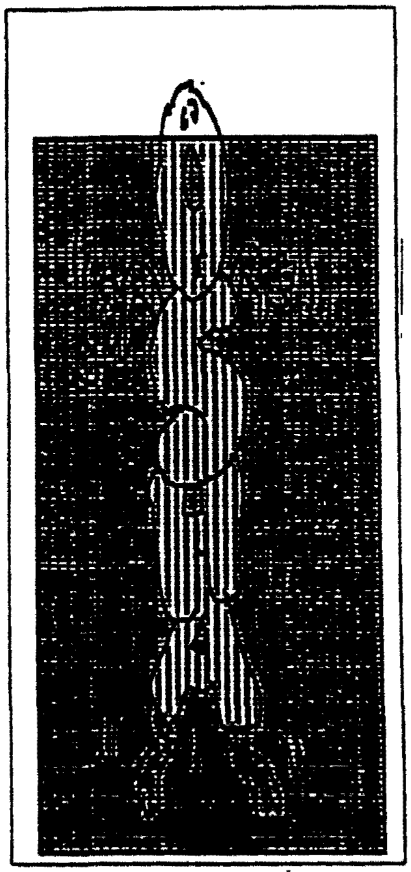
R. OTA Explains Why OSHA Levels Are Too High

A study by the U.S. Congress Office of Technology Assessment (OTA) shows that standards used by OSHA often were set by looking at health effects other than cancer. **If they had been looking at cancer effects, the levels would have been lower.** It also shows that OSHA has been very slow on regulating suspected carcinogens.

- In 1970, Congress created OSHA. In 1971, OSHA set exposure limits for some 400 chemicals relying primarily on the 1968 recommendations of the American Conference of Governmental Industrial Hygienists (ACGIH).

- At that time, ACGIH recommendations were developed primarily to protect workers from **non-carcinogenic** toxic effects. For example, benzene causes headaches, dizziness and nausea in workers exposed to 50 ppm. Although it also causes leukemia (a cancer of the blood system) at much lower levels, the original exposure limit was set to protect workers from the headaches, dizziness and nausea--not cancer.

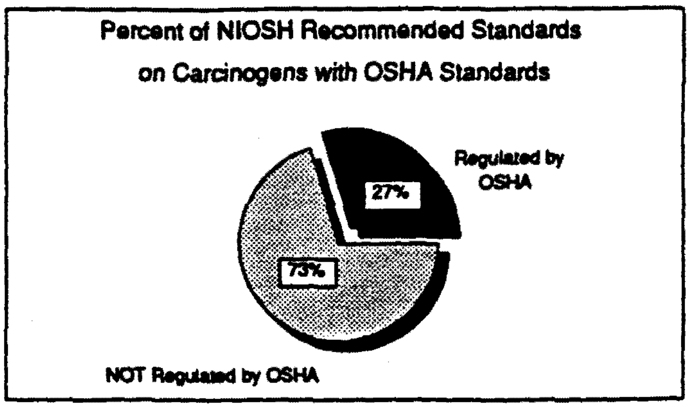
- Even ACGIH guidelines are updated annually based on new information. **OSHA standards are not.** Many ACGIH guidelines are now lower than OSHA standards.



(Source: U.S. Congress, OTA, *Identifying and Regulating Carcinogens*, OTA-BP-H-42 (Washington, D.C., U.S. Government Printing Office, Nov. 1987).

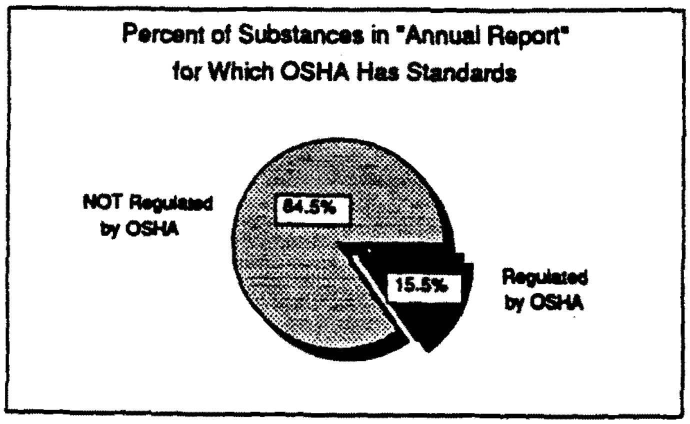
R. (continued)

Since 1971, the National Institute for Occupational Safety and Health (NIOSH), whose role is to recommend exposure levels to OSHA, has made recommendations on 71 chemicals or processes they considered to be carcinogenic. **OSHA has issued standards for only 21 of the 71 NIOSH recommendations on carcinogens.** Two were struck down by the courts. In other words, only 27% of the chemicals thought to be carcinogenic by NIOSH have been addressed by OSHA standards as carcinogens.



OSHA has been issuing final rules **at a rate of over 3 years per regulation.** These days OSHA only seems to act when forced to by the courts, Congress or the EPA. For example, the formaldehyde standard issued by OSHA involved a petition, a referral from EPA and a court order after OSHA delays.

The National Institute for Environmental Health Sciences is responsible for issuing the *Annual Report on Carcinogens.** Included are all substances known to be or which may reasonably be anticipated to be carcinogens to which a significant number of people are exposed. OSHA has jurisdiction for 110 of the 145 listed in the 1985 report. **Of the 110, OSHA has issued standards for only 17** (15.5 percent--see chart).



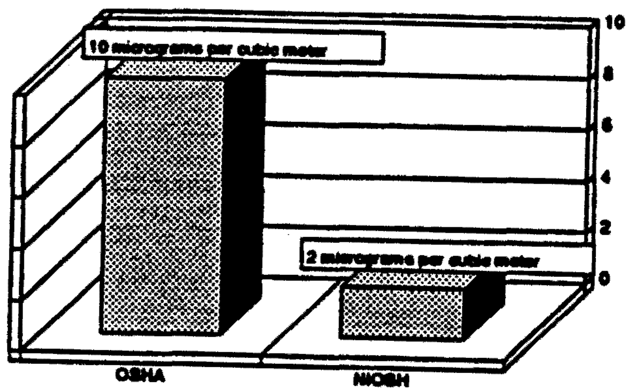
Source: U.S. Congress, Office of Technology Assessment, *Identifying and Regulating Carcinogens*, OTA-BP-H-42 (Washington, D.C.:U.S. Government Printing Office, November 1987).

*U.S. Department of Health and Human Services, National Toxicology Program, *4th Annual Report on Carcinogens*, Pub. No. NTP 85-001 (Research Triangle Park, NC, 1985).

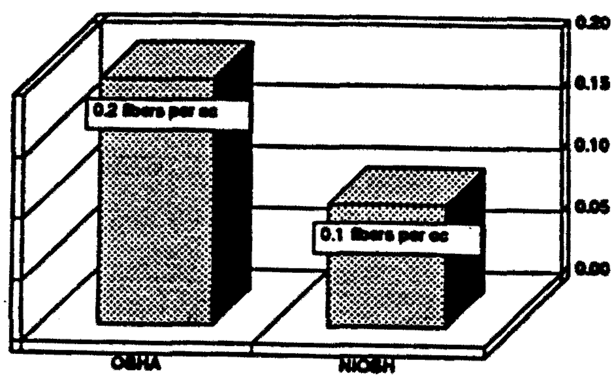
S. How and Why NIOSH and OSHA Differ

The National Institute for Occupational Safety and Health (NIOSH) recommends standards to OSHA based on scientific studies of hazards; the OSHA standards that are eventually enforced are often compromises among government, industry and labor. As a result, in **many cases, NIOSH's recommended standards are stricter than OSHA levels (see charts). This means that even if an employer is below OSHA standards, we still may be receiving deadly exposures.**

Arsenic
OSHA Standard vs NIOSH Recommendation



Asbestos
OSHA Standard vs NIOSH Recommendation

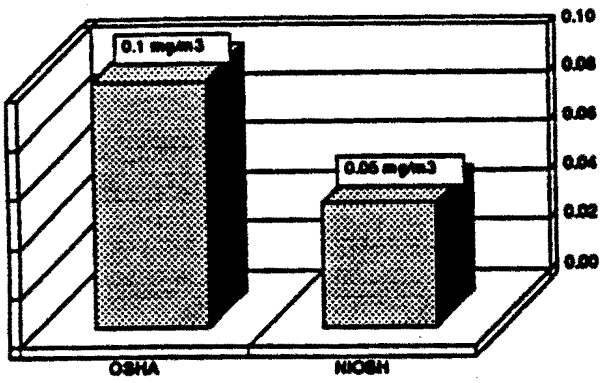


cc = cubic centimeters

Note: The OSHA asbestos standard will soon be lowered from 0.2 f/cc to the NIOSH recommended level of 0.1 f/cc.

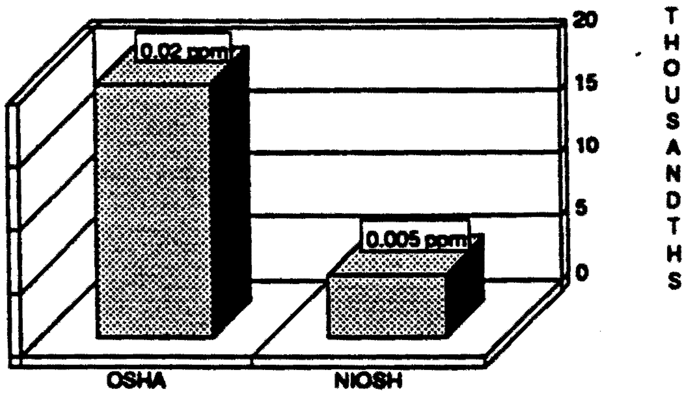
S. (continued)

Mercury
OSHA Standard vs NIOSH Recommendation



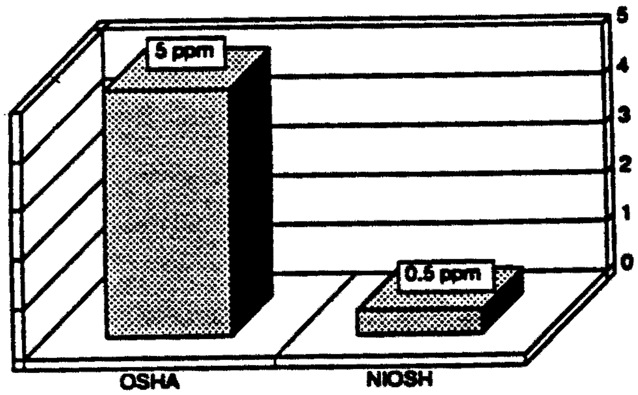
mg/m3 = milligrams per cubic meter

TDI Toluene-diisocyanate
OSHA Standard vs NIOSH Recommendation



ppm = parts per million

Sulphur Dioxide
OSHA Standard vs NIOSH Recommendation

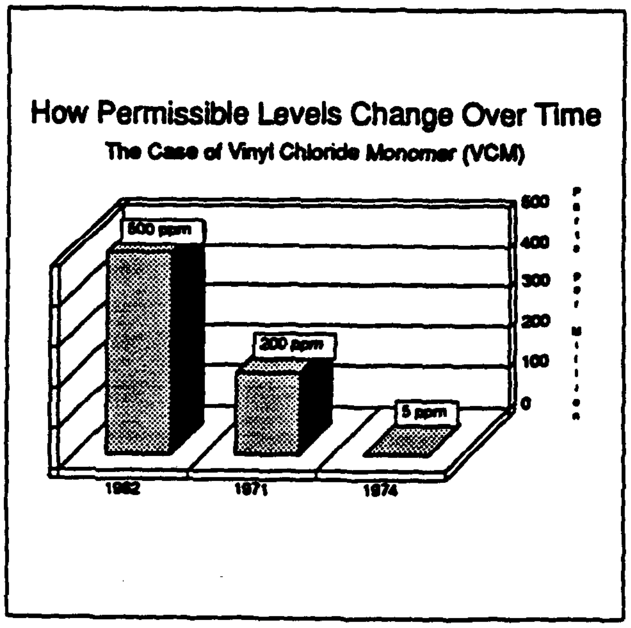


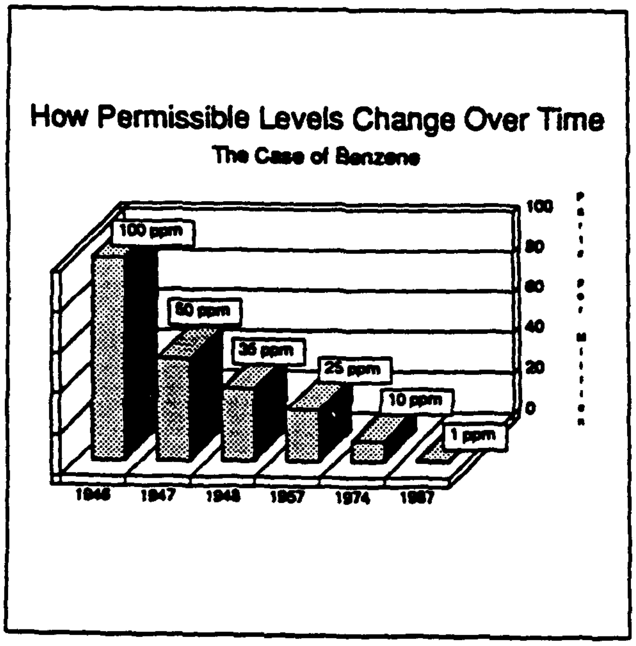
ppm = parts per million

Source: U.S. Department of Health and Human Services, *NIOSH Pocket Guide to Chemical Hazards*, September 1985.

T. Safe Today; A Killer Tomorrow

Unfortunately for us, there is no proof that there are any safe levels of exposure to chemicals that are known to cause cancer. The history of "safe levels" shows us that as more scientific knowledge is gathered, it almost always turns out that lower levels are needed. The charts below show how the standards change.





In the case of Vinyl Chloride Monomer (VCM) which is used to make Polyvinyl Chloride (PVC), a plastic, a limit of 500 parts per million was set in 1964 because the substance made people drowsy.

Then, animal research, which showed it hurt the liver, bones and kidneys, resulted in threshold limit values (TLVs) of 200 ppm. In 1974, a company announced that three of its VCM workers died of liver cancer. This caused the limit to be reduced to 1 ppm.

The standards for benzene have also declined. Benzene was first known to be a cause of leukemia in 1942.

Summary: Tackling Toxic Chemical Myths

1) There are a variety of ways a toxic chemical can enter our bodies. We should remember that absorption through the skin is often ignored, but can be a dangerous route of entry into our bodies.

2) With many toxic chemicals, it takes a long time after exposure before the disease appears. This latency period may give us a false sense of security when we work with very dangerous toxic chemicals.

3) It is true that not everyone who gets exposed to a toxic chemical gets sick. But it is impossible to identify which exposed person will get sick. You are playing Russian roulette with your life if you think you are immune to toxic chemicals.

4) Not all chemicals cause cancer, either in animals or in humans.

5) Toxic chemicals cause other serious problems in addition to cancer. We now know that the reproductive systems of men and women workers may be damaged or impaired.

6) Many toxic chemicals affect the brain and nerves throughout the body.

7) Animal studies are, in fact, very useful for warning us which chemicals might cause cancer in humans. The alternative to animal studies is to wait until human exposure shows cancer. By that time, millions may have been exposed.

8) Most chemicals that cause cancer are not regulated properly. In many cases the OSHA standard is too high to protect you adequately. Even if your exposure is below OSHA standards, you may still be exposed to very dangerous levels.

NOTES

Activity 7: Controlling Hazards, the Best and Worst Ways

Purpose:

To understand why controlling hazards at the worker (with equipment like respirators) is a poor way to protect workers.

Task 1:

Your small group is the health and safety committee for SEIU Local 94. You have been asked to review the control measures being used to protect workers from chemicals at Main Styreet Public Works Department. Your trainer will tell you which of the following case studies to work on. Please read the case study and work with your group to answer the questions that follow using the factsheets on pages 162 - 164.

Task 1: (continued)

Waste Water Case Study

Workers at the Main Street wastewater treatment plant use a product called "flocculant" to get solids out of the waste water. The flocculant is a gel that comes wrapped in plastic. Workers cut it up by hand, wearing gloves. They add it to machines that automatically mix it with water and add it to the waste water.

The workers complain of trouble breathing, especially after working with it for several hours. The building has no ventilation, since neighbors have complained about odors from the plant.

The plant recently switched from another brand of flocculant because it cost more. One worker's fingernails also fell off, but Main Street is not sure what caused that.

Task 1: (continued)

Road Crew Case Study

Workers on the Main Street highway crew paint road stripes using a paint truck. They used to do it with a hand striper, but they recently switched to the truck. They also switched to a paint without lead, because of state environmental regulations.

The workers thin the paint in the yard by pouring solvent and paint into the mixer of the truck. When they paint, a second truck has to follow behind the paint truck to protect it from traffic. The driver in the following truck gets headaches from the paint, but feels a little better if he closes the windows and turns off the fan in the truck. He was given the choice of wearing a respirator, but he couldn't get a good fit.

Task 1: (continued)

Building Service Case Study

Local 94 represents the workers who clean the classrooms and labs at Main Street Junior College. A special floor crew uses a floor stripper containing methylene chloride. They do the cleaning on the weekends when there are no students in the building, and the air conditioning is shut off.

They mix the stripper with water according to the directions, and mop it onto the floor. Then the squeeze out the mop in a bucket. Recently they ran out of yellow gloves and had to borrow gloves from the cafeteria. Since then, several workers have had rashes on their hands

About a year ago, the "Total Quality Management committee at the college looked into a stripper called "Citra-Solv." They found it was safer than the stripper they now use, but it irritated the eyes, and it was more expensive. No one has heard anything about the issue since then.

Task 1: (continued)

Print Shop Case Study

Workers in the sign shop make road signs using silkscreens. After they print the signs, they clean the screens, using naphtha in a high-pressure sprayer. They spray the naphtha onto the screens over an open 5-gallon bucket. Then they scrub the screens using long-handled brushes. The workers wear respirators, but no gloves. In warm weather they clean the screens outside, but in the winter it is too cold to do that.

The workers clean 3-4 screens each morning, then carry the bucket to a storage shed in back of the garage. They dump the waste naphtha into a storage tank, where the solids settle to the bottom of the tank. The naphtha is then reused.

Task 1: (continued)

Garage Case Study

Workers at the Main Street Garage use oxy-acetlyene rigs for welding. In good weather, they like to do the welding outside, but that isn't always possible. Management put in a fan in the welding area in the garage, but that seems to make it worse because it blows air and fumes toward the workers.

Workers wear welding jackets, gloves, and masks with dark lenses when they weld. Only one of the workers knows how to do arc welding, so he orders all of his own sticks and equipment.

Recently one of the acetylene cylinders was dropped when someone tripped over a hose. Luckily the valve didn't break, and no one was hurt.

Task 1: (continued)

1) What controls are being used?	2) Where are the controls located: at the source, along the path, or at the worker? (See page 168.)
____ chemical substitution	____________________
____ redesign the process	____________________
____ enclose the process	____________________
____ mechanize the process	____________________
____ limit the number of workers	____________________
____ local exhaust ventilation	____________________
____ general ventilation	____________________
____ special work methods	____________________
____ keeping the area orderly	____________________
____ personal protective equipment	____________________

Task 1: (continued)

3) What problems do you see with the controls that are being used?

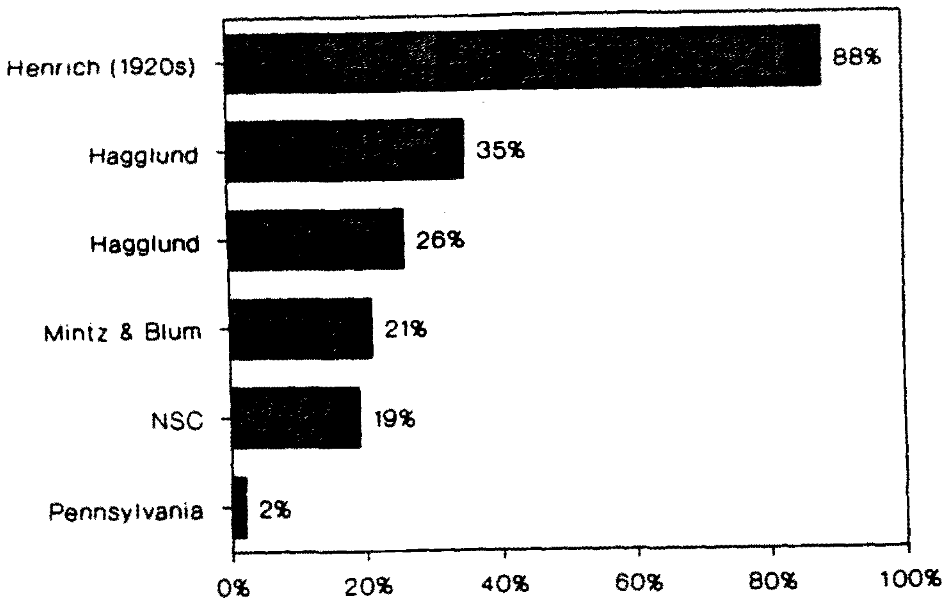
4) What controls do you think the union should ask for in this situation?

5) Think of one situation at <u>your</u> work where you think controls are needed to protect you and your co-workers. What kinds of controls do you think are needed?

A. The Myth of the Careless Worker

Most employers believe that workers get sick or hurt on the job because they are "accident prone." One study done in the 1920s said that 88% of accidents were caused by "unsafe acts." An "unsafe act" was defined as anything a worker does that leads to an injury. So, for example, putting your hand in the way of a saw blade without a guard is an "unsafe act." But five studies done since then show that unsafe working conditions, not "careless workers," cause most accidents.

Injuries Caused By "Worker Error"



The solution to health and safety problems is not for us to "work safe." **We need employers to make the workplace safe for us.** OSHA law says that employers are responsible "for maintaining a workplace free of known hazards." So the law says it's the employer's responsibility to make sure the workplace is safe from dangerous conditions.

(Source: U.S. Office of Technology Assessment, *Preventing Illness and Injury in the Workplace*, 1985 and OSHA General Duty Clause.)

B. The Ladder of Controls

A control is any equipment or method that is used to keep dangerous materials from getting into the air or onto surfaces. OSHA says that employers have to try other controls before workers have to use protective equipment like respirators (masks).

Choosing the Right Control

There is an order or priority when it comes to using controls. The best controls are the ones that focus on the source of the problem. The worst are those that control the exposure when it gets to the workers. The further from the source, the worse the control is. The preferred order is:

- **Best: at the source (for example, substitution or total enclosure)**
- **Second best: along the path (for example, local exhaust ventilation)**
- **Least desirable: at the worker (for example, respirators)**

Each task needs to be looked at separately to find the best control methods. Sometimes several different controls need to be used at the same time.

It may also be necessary to put in controls in several stages. This should start with those which can be put into place quickly and protect workers now while better controls are planned and put in.

B. (continued)

Which control measures are used depends on a lot of things:

- the form of the substance (liquid, dust, or gas)
- how it enters the body
- whether it can damage the environment.

Also, it is important that we understand the advantages and limitations of any control method. This is the only thing that stands between us and a hazard.

Respirators and gloves are often the easiest and cheapest solution (although using them <u>right</u> makes them more expensive). But they require people to do something every time. Humans are not robots, and we will not do it every time. Respirators and gloves also shift the responsibility for a safe workplace from the employer to the worker, which is wrong.

(Source: *Hazardous Materials Workbook*, Oil, Chemical, and Atomic Workers Union, New York: Apex, 1993.)

C. Chemical Substitution

The best solution to problems with hazardous chemicals is to remove them entirely from the workplace. This prevents all exposure. This is often possible, as in using water-based paints instead of oil-based paints. It's important to be sure that the new chemical is significantly safer than the original. Otherwise, you are just replacing one hazard with another.

Some other examples of substitution are:

- Using insulation fluids that do not contain PCBs
- Using citrus-based solutions for cleaning parts instead of kerosene
- Using naphtha instead of benzene, which causes cancer

(Source: *Core Certification Traning Program: Participants Manual*, Toronto, Canada: Workplace Health and Safety Agency, 1992, p. 101.)

D. Redesign or Change the Process

In many cases the problem is with the way the job is set up or the way the work is organized. For example, welding on metal that has just been cleaned with solvents can create deadly phosgene gas. Simply cleaning the parts before lunch and saving the welding until after the solvents have dried can solve the problem. Changing the way work is done can often make work dramatically safer. This can often be done without using personal protective equipment (PPE) or even putting in ventilation.

In fact, employers will often redesign work for reasons of "efficiency" or to include new technologies. So we should also expect them to review and change the way work is organized to improve health and safety.

Some other examples of redesign are:

- Using low-speed buffers on asbestos floor tile
- Painting with a brush or roller instead of a spray gun

(Source: *Fundamentals of Industrial Hygiene*, National Safety Council, Chicago: National Safety Council, 1988.)

E. Enclose the Process

If the hazard can't be removed, then the process should be enclosed. For example, dip tanks should be covered instead of open at the top. Employers should look at this before they decide to use respirators. In fact, this is OSHA law. An enclosure keeps the material out of the air and away from workers. Here are some examples of enclosure:

- Use pump systems for solvents, instead of open containers

- Doing brake work with gloves inside a plastic cage with a special vacuum attached

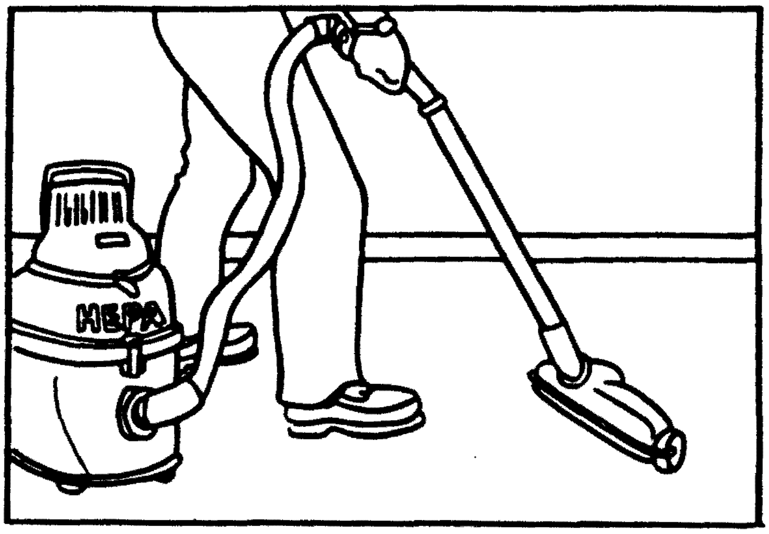
(Source: Thomas J. Smith, "Industrial Hygiene," in Levy and Wegman, *Occupational Health: Recognizing and Preventing Work-Related Diasease*, Boston: Little, Brown, 1983.)

F. Mechanize the Process

Automating an operation may be the best answer to a dangerous job. An example is using pumps to handle solvents rather than manual measuring and dumping.

Some other examples of mechanization are:

- Using an asbestos vacuum instead of a dustpan and broom to clean up dust
- Using pumps to handle paint thinner rather than measuring and pouring by hand.



(Source: National Institute for Occupational Safety and Health, *The Industrial Environment--Its Evaluation and Control*, Washington, DC: NIOSH, 1973.)

G. Move the Work or Limit the Number of Workers in the Area

This can be done in one of three ways:

- Move the process or separate it from other parts of the facility. This would limit the number of people exposed. For example, build a separate building for welding.
- Limit the time during which people are exposed. This means rotating people through the area so that each person receives less exposure than before. For example, limit each worker to 1/2 day spraying pesticides.
- Restrict certain categories of workers from certain areas. For example, tell pregnant women they may not work with lead paint.

All of these solutions are limited -- while they may limit the numbers of people exposed, they **do nothing to lower the actual exposures**. Further, they may be discriminatory and illegal.

H. Local Exhaust Ventilation

Hazardous materials often can be controlled by a duct or hood placed as close as possible to the source. This is called local exhaust ventilation (LEV). LEV also encloses the area around the material. A welding hood is a good example of local exhaust ventilation.

Local exhaust ventilation has to be carefully designed to make sure that the system works well and removes chemicals. Major points to remember when looking at the system:

- Is the opening of the ventilation system located right where the chemical gets in the air?
- Is there a hood that encloses most or all of the emission source?
- Is the ventilation system opening large enough, and is the air flow fast enough, to actually "capture" the chemical?

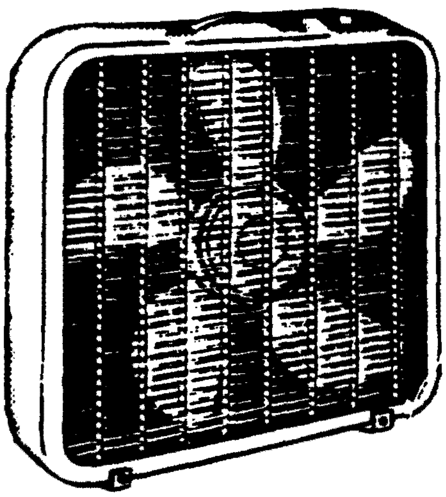
(Source: *Fundamentals of Industrial Hygiene*. National Safety Council, Chicago: National Safety Council, 1988, p. 497.)

I. General Ventilation

This is the type of ventilation that comes from:

- having doors or windows open
- having large ceiling or wall mounted exhaust fans
- having a ventilation system that circulates the air.

General ventilation (also called dilution ventilation) **does not control hazardous materials** because it does not stop them from being made or from getting into the room air. The main use for general ventilation is for offices or in areas where toxic materials are not used. In these areas it is used to circulate fresh air and control temperature for comfort.



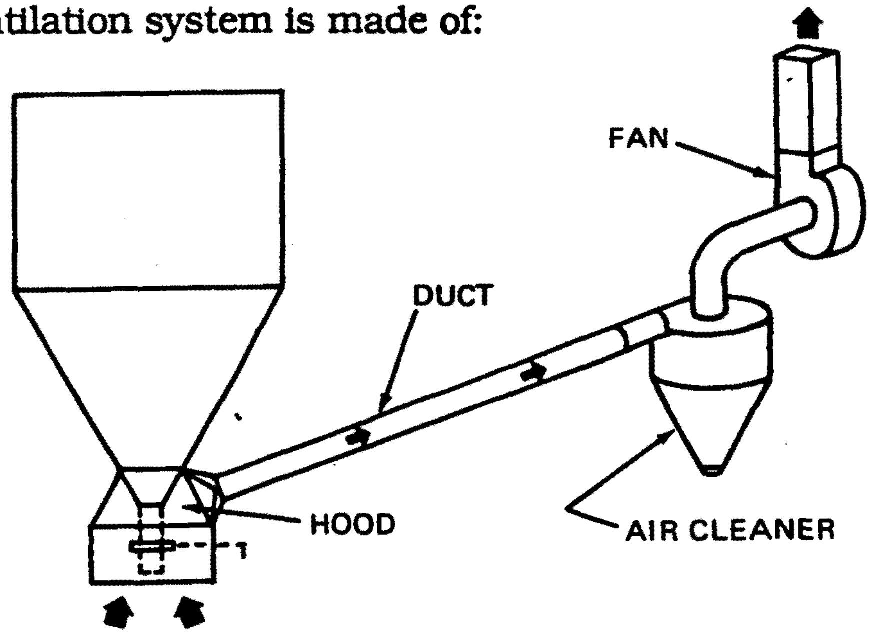
(Source: ACGIH, *Industrial Ventilation: A Manual Of Recommended Practice, 16th Edition*, 1980.)

J. A Note About Ventilation

What is local exhaust ventilation (LEV) and how is it different from general ventilation?

A local exhaust ventilation system is made of:

- fans
- hoods and
- air cleaners.



It is made to remove hazardous materials from the air as close as possible to where they are produced. **Properly designed and maintained, LEV is as effective as controls at the source.** It is a good line of defense when controls like substitution are not possible.

General ventilation means exhaust fans or room air ducts that move or circulate the air. Their goal is to provide comfort, including fresh air and temperature control. **General ventilation is not designed to, nor can it, remove toxic chemicals.**

Advantages of LEV

Local exhaust systems have more individual parts, need more maintenance, and have higher operating expenses than general

(Source: *Hazardous Materials Workbook*, Oil, Chemical, and Atomic Workers Union, New York: Apex, 1993.)

J. (continued)

exhaust systems. However, LEV is far better than general ventilation. The advantages of LEV include:

- Almost complete capture and control of hazardous materials at the source. This only happens if the system is properly designed, working, and maintained.

- LEV costs less than general ventilation because if "sucks" less air out of the workplace. Less heated air needs to be put back in.

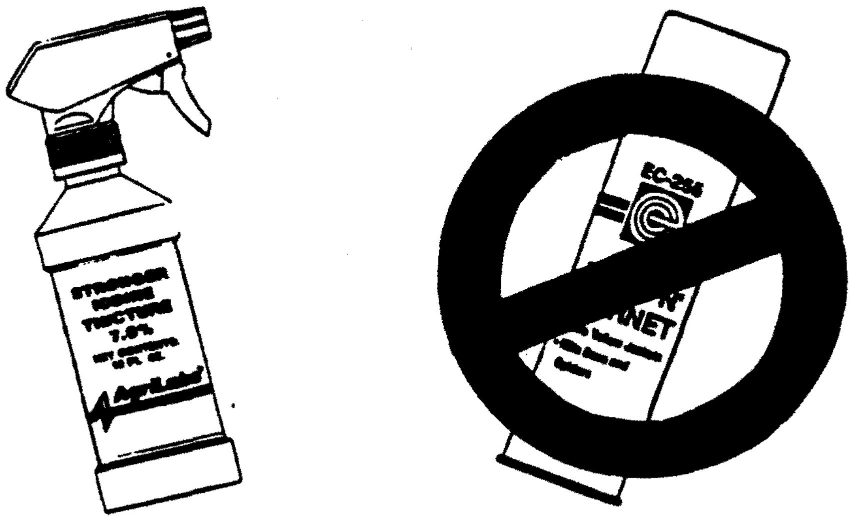
- LEV can be designed to capture dusts and other particles that might otherwise settle on surfaces. This cuts clean-up costs.

- Capture velocity is a measure of how much air flow there is at the point where the chemical is made. "Face velocity" is a measure of air flow at the opening of the ventilation system. "Capture velocity" is the best measure of protection. Employers sometimes use face velocity to argue there is enough ventilation.

K. Special Work Methods

Changing how you do work can make it much safer. For example, if you don't recap needles, no one can get stuck while recapping. But it's very hard to change the way you do your job, especially if you've done it the same way for years. Here are some examples of safer work methods:

- using a pre-mixed pesticide instead of mixing a powder
- scraping paint instead of using a solvent to take it off
- using a squeeze bottle instead of a spray can

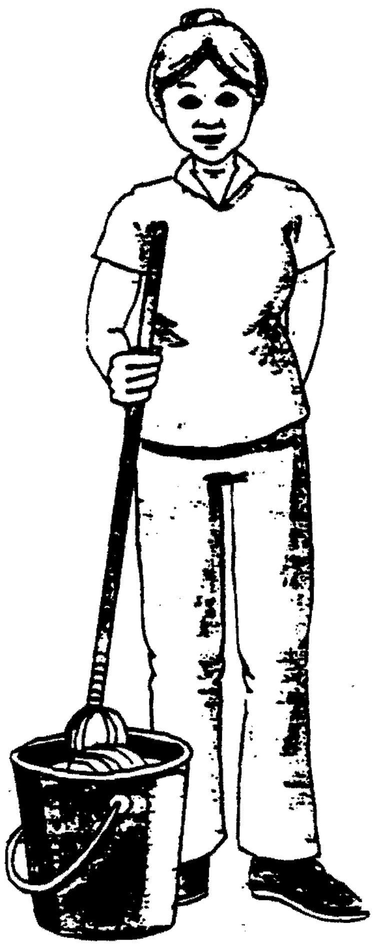


L. Keeping the Area Orderly

Good housekeeping helps keep the work environment cleaner and prevents materials left on walking and working surfaces from getting into the air. For instance, for powdered materials, vacuum cleaners instead of brooms should be used to control dusting and the use of air hoses to blow dust off of surfaces should not be allowed.

Of course, good housekeeping depends on 2 things:

- workers having enough time to do it, and
- workers having the right equipment.



Summary: Controlling Hazards, the Best and Worst Ways

1) Your employer has the power to make your workplace safe, and it's also their responsibility. Putting respirators and gloves on workers shifts that responsibility to workers. That's wrong, and it's also against the law.

2) There is a ladder of controls both in a health and safety sense and in a legal sense (the OSHA law):

   - The best control is **at the source** (substitution, enclosure);
   - The next best control is **along the path** (ventilation, housekeeping); and
   - The worst control is **at the worker** (respirators and other personal protective equipment--PPE).

3) Some examples of controls are:

   - substitute a safer chamical
   - redesign the process
   - enclose the work
   - mechanize the work
   - limit the number of workers in the area
   - local exhaust ventialtion (a hood)
   - general ventilation (a fan)
   - special work methods
   - keeping the work area orderly

4) General ventilation does not protect workers from chemicals. Only local exhaust ventilation protects workers.

5) Local exhaust ventilation is only effective when properly designed for the specific situation.

NOTES

NOTES

NOTES

NOTES

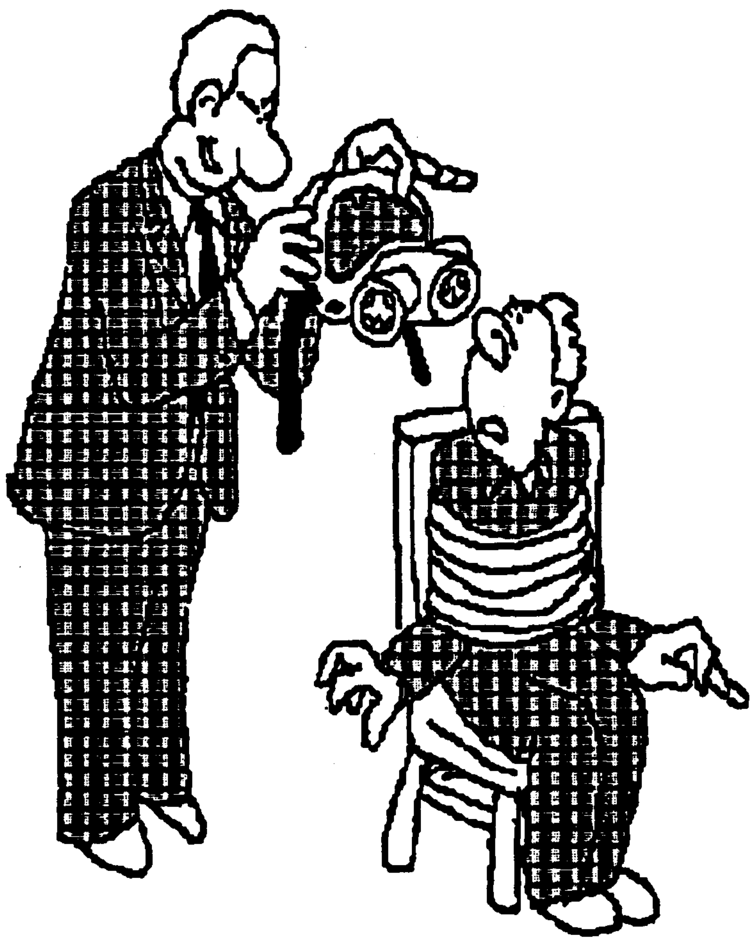


Illustration courtesy of the Oil, Chemical, and Atomic Workers Union. Reproduced by permission.

Activity 8: Respirators and Protective Clothing

Purpose:

To understand why respirators are the worst way to protect workers, even though they sometimes must be used.

Task 1:

In your groups, please review the factsheets on pages 192 - 194 and answer the following questions. Choose someone in your group to write down your answers and report them back to the class.

1) For what tasks do you wear a respirator at work? (Please see page 192 for the definition of a respirator.)

2) Where do respirators control the hazard: at the source, along the path, or at the worker? Are they the best kind of control? (Please see page 193.)

(over)

Task 1: (continued)

3) What are some problems with using respirators as a control? (Please see page 194.)

4) Do you ever wear a dust mask when you should be wearing a respirator?

Task 2:

Please read the case study below and answer the questions as a group. Please use the factsheets on pages 195 - 200 to answer the questions.

> **For the last few months, your employer has had a "Think Safe/Work Safe" campaign. Supervisors are supposed to make sure that workers wear their safety equipment. You sit down to lunch with Joe, one of your co-workers in maintenance, who says he was written up for not wearing his respirator one day. He makes this statement:**
>
> **"Why should I get written up for not wearing this thing? I can still smell the chemicals even when I do wear it. It's so hot with this thing on, and it makes my face itch. How do they know it's protecting me? They never come around when I'm using it. I don't even know if I have it on right.**
>
> **"Besides which, I only use it when we clean parts in the shop and when we cut galvanized fencing on the side of the road. It's not fair!"**

1) What are some problems with the way Joe is being asked to use his respirator? (See page 195.)

Task 2: (continued)

2) If the <u>only</u> way to protect Joe is by wearing a respirator, what does the law say his employer has to do to make sure it protects him? (See pages 195.)

3) What would you say to this worker?

4) Are there similar problems with respirators at <u>your</u> workplace? If so, what are they?

Task 3:

You are the union members of a Joint Labor-Management health and safety committee. Please read the scenario and answer the questions below.

OSHA did an inspection of the DOT garage and the road crews. They found high levels of 2 chemicals:

- **kerosene from the tank where parts are cleaned (the fan above the tank is broken)**
- **zinc oxide from cutting galvanized steel fencing outdoors**

Your employer has decided to use respirators to keep down the levels that workers are exposed to. They put a notice on the bulletin board that said, "Beginning next Monday, we will distribute an MSA half-mask respirator, equipped with organic vapor cartridges, to each employee. These masks come in small, medium and large. Each employee should let the safety officer know which mask you want. Also, each employee will be given 2 new cartridges each week."

1. Does OSHA allow your employer to use a respirator in these two cases?

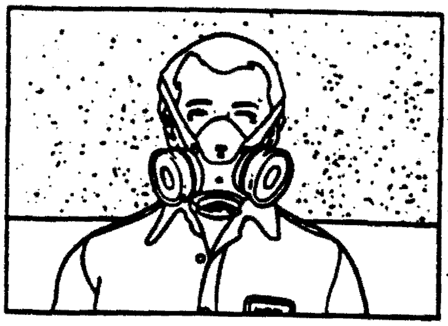
   For kerosene — ☐ Yes ☐ No

   For zinc oxide — ☐ Yes ☐ No

2. Where is the employer not following the OSHA standard? (Please see page 195.)

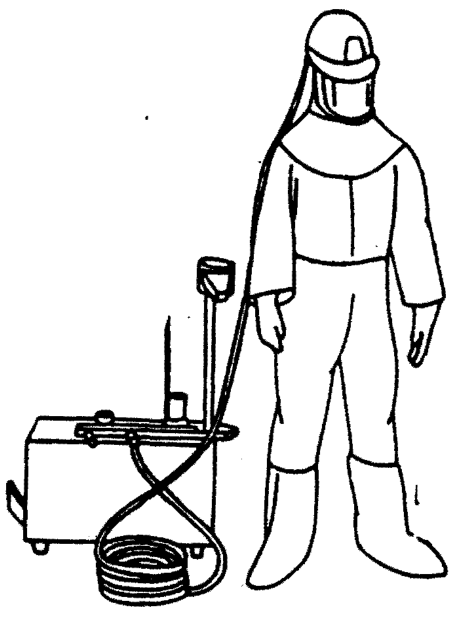
A. What Is a Respirator?

A respirator is a mask that fits your face tightly. It is made to protect your lungs. **A dust mask is not a respirator. Some employers give workers dust masks when they really need respirators.**



A respirator

A dust mask is not a respirator



A sandblasting hood (a respirator)

(Sources:)

B. Don't Forget the Ladder of Controls

It's the law! Your employer has to try everything else before you have to wear a respirator. They can't just put a respirator on you before they try to get the danger out of the air.

For example, your employer could try to:

1) Use a less dangerous product. For example, using latex paint instead of oil paint.

2) Enclose the work. For example, using a spray booth.

3) Use a machine instead of "elbow grease." For example, using an ultrasonic cleaner instead of a dip tank.

4) Put in a hood or fan to pull vapors away from workers. For example, using a welding hood.

If they try all of these things and none of them work,

then they can think about putting you in a respirator.

Health and Safety is your employer's responsibility.

Respirators make it your responsibility, and that's wrong.

(Source: OSHA Respiratory Protection Standard, 29 CFR 1910.134.)

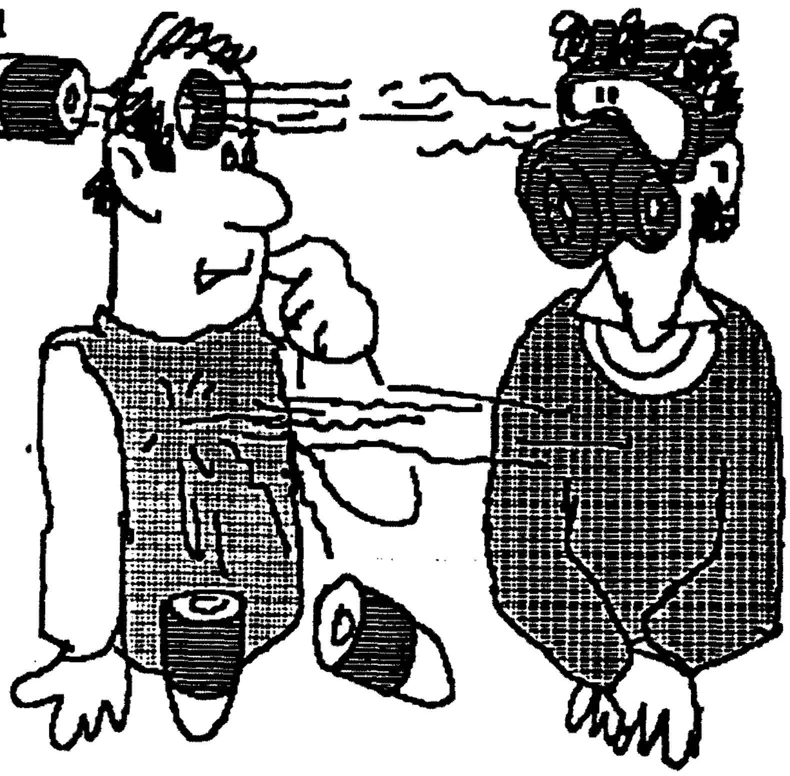
C. Respirators: A Last Ditch Control

Respirators are extremely limited as a control. Their use must be carefully monitored. Here are some of the major problems:

Respirators . . .

- **leak**
- **are hot and uncomfortable**
- **depend on workers doing something every time they work**
- **often fit poorly (allowing the chemical or germ to get in)**
- **make it harder to breathe, which puts extra stress on the heart and lungs**
- **make it hard to talk to co-workers (which can affect safety)**
- **create a lot of work (inspecting, cleaning, maintenance) for management and workers**
- **do not offer any protection at all against many chemicals**
- **are complicated to use right**
- **do not stop the chemical from getting into the environment**
- **do not stop chemicals from being absorbed through your skin**
- **force men to shave in order to wear them**

Also, half-face respirators don't protect your eyes.



(Source: *Hazardous Materials Workbook*, Oil, Chemical, and Atomic Workers Union, New York: Apex, 1993.)

D. What the Law Says About Respirators

Respirators are not a good way to protect your health. Many employers don't know how to keep dangers out of the air, so they use respirators. But they don't know how to make sure the respirators work. So workers end up getting poisoned or sick.

The law says your employer may not give you a respirator unless he or she tries everything else. (OSHA regulation 1910.134) (See Activity 12 for more information on regulations.)

Most respirators leak because they don't fit perfectly. It is very hard to keep a respirator in perfect shape.

Here are 10 steps for making sure a respirator works perfectly:

1) **Your employer must test the air.** When there are high levels of chemicals, you need a better respirator.

2) **Your employer must give you the right respirator for the job.** A professional should use the air samples to decide.

3) **Your employer must get you training and a doctor's exam before you wear a respirator.** It's the law. A respirator puts a lot of strain on your heart and lungs. Be sure they are healthy before you put on a respirator.

4) **Your employer must give you the right filter for the danger.** A solvent filter won't protect you from asbestos dust.

5) **Your employer must let you change the filters when they are full.** No filter lasts forever. If it gets hard to breathe or you smell the chemical, change the filter. Never use a filter respirator for a chemical that has no smell.

D. (continued)

6) **Your employer must give you a mask that fits.** You must have a special test called a "fit test," even for a disposable respirator. It takes about 1/2 hour. Someone blows chemical smoke at you--if you smell the smoke, the mask doesn't fit. You must have another test if your face changes--for example, if you gain or lose more than 10 pounds, lose teeth, or break your nose.

7) **There is no "one size fits all."** Respirators come in different sizes and brands. Your employer must give you "freedom of choice."

8) **Check your respirator every time you use it.** Even a tiny hole, rip, or crack in the rubber can let poisons leak in.

9) **Your employer must be sure your respirator is clean.** Your employer may ask you to clean your own respirator. But they must give you clean water, soap, and time to clean it.

10) **Your employer has to give you a clean, dry place to store your respirator.** It will not last if the only storage space you get is on the floor of the janitor's closet.

See Activity 12 for more about regulations.

E. Testing the Air

Before you put on a respirator, the employer has to test the air. Every respirator has certain limits (called a Protection Factor). The respirator can only filter out so much "stuff" in the air. And if there's too much "stuff," it will leak in through the respirator.

But most employers never test the air. Testing is called "air sampling," "air monitoring," or just "monitoring." Usually you wear a pump on your belt, and a hose with a filter that is clipped to your collar. The filter is sent to a lab, and the answer comes back days later. There are many different kinds of pumps, machines, and badges that can be used to measure chemicals in the air.

An air monitor

(Source: *UAW Health and Safety Training in Hazard Identification*, Detroit, MI: no date.)

F. Air Sampling--What Can Go Wrong

Air sampling is hard to do, and many employers don't know how. Here are 6 things that can go wrong with air sampling:

1) **Measuring the wrong workers.** For example, measuring the truck driver instead of the laborer who is shoveling asphalt. It can be hard to choose exactly who to test.

2) **Measuring at the wrong time.** For example, measuring from 8:00 a.m. to 9:00 a.m., even though you don't use cleaners until after 9:00 a.m. It can be very hard to choose exactly the right time to test.

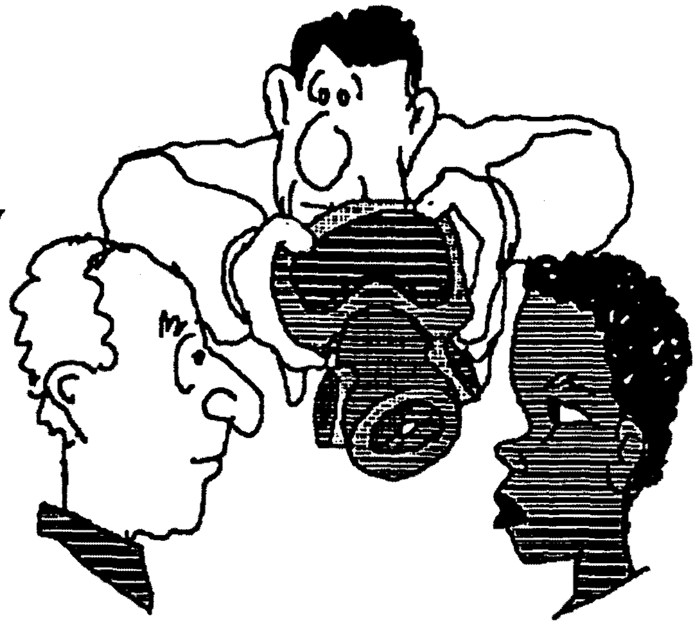
3) **Taking an "average" measurement when there are "bursts" of chemicals.** For example, you may only use Betadine before lunch and at the end of the day. But if the test runs all day, the average will be low, even though there are short periods when levels are very high. It can be very hard to choose exactly the right short periods of time to test.

4) **Measuring for the wrong chemicals.** For example, if you use a stripper with a lot of ammonia and a little alcohol, the test should not just measure the alcohol. It is sometimes impossible to test for mixtures of chemicals.

5) **Using the wrong kind of testing equipment.** There is no "Tricorder," like on Star Trek. Each filter, meter, or badge is made to test certain chemicals. You can't use a chlorine tube to measure carbon monoxide. Some tests are very expensive.

6) **Testing the air when the chemical soaks through your skin.** For example, toluene gets into your body when you breathe it in, but it also soaks through your skin. Testing the air will only measure some of the toluene. It can be impossible to know exactly how much is getting into your body.

G. What Is Fit Testing?



Respirators are not made to fit every kind of face. As a result, OSHA says that employers must make sure the respirators properly fit each of us.

Most respirators are made to fit the **average male face.** Fortunately, only half of us are males, and very few of us have average faces! Scars, dentures, high cheek bones, beards, etc., can make it next to impossible to get a proper fit with a respirator. And remember, **a respirator is only as good as its ability to create a seal with your face.**

Fit testing involves giving a respirator to a worker and instructing him or her on how to wear the mask. The respirator must then be put on and adjusted so it is snug **but comfortable.** To achieve this, the employer may have to offer you a number of respirators made by several manufacturers.

Now you are ready for a **qualitative fit test.** This involves having an irritant like smoke, that will cause coughing, or a chemical with a strong smell, like banana oil, sprayed all around the respirator while you wear it. If the respirator doesn't fit, you'll cough or smell bananas. You must have a fit test for every respirator, even a disposable one.

But remember, **even with a perfectly fit respirator, all it takes is one bump "up-side-the-head" and the seal can be disturbed, causing you to be exposed.**

(Source: *Hazardous Materials Workbook*, Oil, Chemical, and Atomic Workers Union, New York: Apex, 1993.)

H. Right Cartridge, Wrong Chemical?

Respirators come with different filters (cartridges) that filter out different toxic chemicals. No one has invented one that works with all substances. So we have to make certain that the filter we have will protect us from the chemicals we're exposed to. The chart below looks at what filters work with what chemicals.

Toxic	Color of cartridge
Acid gases like hydrochloric acid, sulfuric acid, or sulfur dioxide	White
Hydrocyanic acid gas	White with 1/2" green stripe completely around the canister near the bottom
Chlorine gas	White with 1/2" yellow stripe completely around the canister near the bottom
Organic vapors	Black
Ammonia gas	Green
Acid gases and ammonia gas	Green with 1/2" white stripe completely around the canister near the bottom
Carbon monoxide	Blue
Acid gases and organic vapors	Yellow
Hydrocyanic acid gas and chloropicrin vapor	Yellow with 1/2" blue stripe completely around the canister near the bottom
Acid gases, organic vapors and ammonia gases	Brown
Radioactive materials, excepting tritium and noble gases	Purple (magenta)
Particulates (dusts, fumes, mists, fogs or smokes) in combination with any of the above gases or vapors	Canister color for contaminant, as designated above, with 1/2" gray stripe completely around the canister near the top

* Gray shall not be assigned as the main color for a canister designed to remove acids or vapors.

Note: *Orange shall be used as a complete body, or stripe color, to represent gases not* included in this table. The user will need to refer to the canister label to determine the degree of protection the canister will afford.

(Source: OSHA Respiratory Protection Standard, 29 CFR 1910.134.)

I. Danger Is More Than Skin Deep

There are hundreds of chemicals that can be absorbed by our skin and do damage to our bodies. Respirators alone won't protect you from chemicals that soak through your skin.

OSHA lists about 150 chemicals for which employers must prevent or reduce skin exposure. The American Conference of Governmental Industrial Hygienists (ACGIH) lists even more. In general, about 25 percent of the chemicals for which OSHA or ACGIH lists maximum air concentrations should also be controlled for skin contact.

		ADOPTED VALUES			
		TWA		STEL	
Substance	[CAS #]	ppm[a]	mg/m³[b]	ppm[a]	mg/m³[b]
‡•Acetaldehyde [75-07-0] (1976)		(100)	(180)	(150)	(270)
Acetic acid [64-19-7] (1976)		10	25	15	37
‡Acetic anhydride [108-24-7] (1976)		(C 5)	(C 21)	—	—
•Acetone [67-64-1] (1982)		750	1780	1000	2380
•Acetonitrile [75-05-8] (1976)		40	67	60	101
Acetylene [74-86-2] (1981)		—[c]	—	—	—
Acetylene dichloride, see 1,2-Dichloroethylene					
Acetylene tetrabromide [79-27-6] (1986)		1	14	—	—
Acetylsalicylic acid (Aspirin) [50-78-2] (1980)		—	5	—	—
Acrolein [107-02-8] (1976)		0.1	0.23	0.3	0.69
•Acrylamide [79-06-1]—Skin (1987)		—	0.03,A2	—	—
Acrylic acid [79-10-7]—Skin (1990)		2	5.9	—	—

(Source: *Threshold Limit Values*, Cincinnati, OH: ACGIH, 1983.)

J. The Emperor Has No Clothes

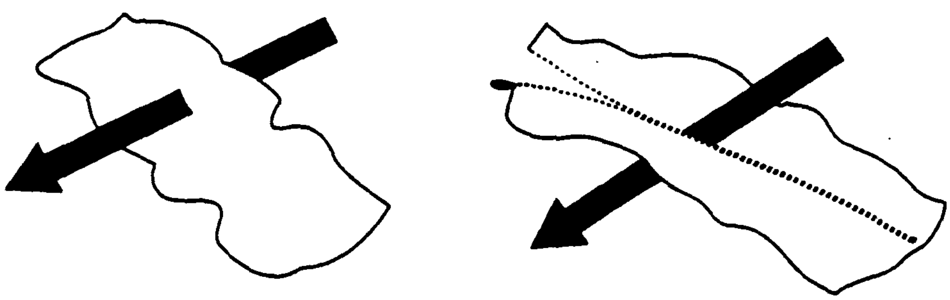
Just as the "emperor" was caught without proper clothing, spill cleanup workers also can be caught without protection. Like respirators, protective clothing can leak. It's difficult to choose the right material to protect workers from a chemical.

This is another reason why you can't clean up large spills without a lot more training. Here are some questions cleanup workers have to answer before they choose a material.

1. Can the chemical pass through the protective material? Keep in mind that even though a rubber glove looks solid, it still has many pores and open spaces. The proper glove will provide a necessary barrier, but some chemicals can eventually passs through.

2. Can the chemical corrode, dissolve or otherwise damage the protective material? If a chemical changes the protective properties of the clothing then it will no longer protect you. Sometimes this is visible--the material may be puckered, brittle and/or eroded. Sunlight and high temperatures can damage protective clothing.

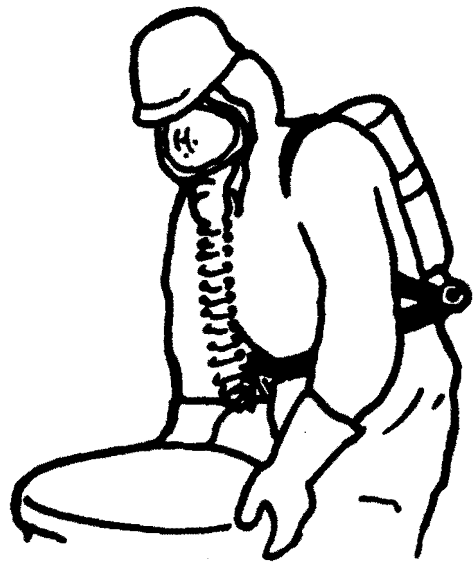
3. Can the chemical pass through a garment/glove by way of holes or imperfections? Holes can occur at zippers or stitch seams or through pin holes or tears in a garment.



(Source: Gary Tokle, *Hazardous Materials Response Handbook*, Quincy, MA: NFPA, 1993.)

K. A Word of Warning: Protective Equipment for Spill Cleanup Workers

Anyone who cleans up spills must wear special protective equipment. These workers often wear "moon suits" and carry tanks of air on their backs. Many hazardous materials can eat through your skin or breathing the tiniest amount can make you sick. Often, workers do not know what chemicals they are handling, so they have to assume the chemicals are very dangerous.



The main reason why you should not handle spills is because you do not have this equipment to protect you. The equipment itself is dangerous. It can actually kill you if you do not know how to use it safely. You need training in how to use it.

(Source: *Health and Safety for Hazardous Waste Site Investigation Personnel*, Piscataway, NJ: New Jersey-New York Hazardous Materials Worker Training Center, 1989.)

Summary: Respirators and Protective Clothing

1) A respirator is a tight-fitting mask made to keep chemicals out of your lungs. A dust mask is not a respirator.

2) Your employer has to try everything else before <u>you</u> have to wear a respirator. They can't just put a respirator on you before they try to get the chemical or germs out of the air.

3) Respirators are a dangerous and usually unsatisfactory control because:

   - They do not stop exposure but rely on a mask to keep chemicals out of your lungs;
   - They are hot and uncomfortable to wear; and
   - They have many other limitations.

4) OSHA has many rules to make sure respirators are used right. These include:

   - training
   - a doctor's exam
   - testing the air
   - using the right filter for the chemical
   - changing the filters when they are full
   - fit tests to make sure the respirator fits perfectly
   - checking your respirator every time you use it to be sure it fits
   - cleaning and storage

NOTES

NOTES

Activity 9: Your Role in Emergency Response

Purpose:

To understand the very limited role of first responders at the awareness level during a hazardous materials emergency.

Task 1:

Over the last few years, several workers at Main Street Department of Public Works have been injured in chemical spills. Local 94 has pulled together a committee to study what happened. They have asked you to come up with ideas to prevent injuries in the future. Your trainer will tell you which of the following case studies to work on. As a group, please read the factsheets on pages 216 - 234 and answer the questions on page 213. **Please refer to at least one factsheet in your reportback.**

Task 1: (continued)

Ammonia Case Study*

On May 20, 1990, Bill opened a valve to drain oil from an ammonia line. There was a sudden surge in the ammonia pressure, and the line blew loose. Oil, ammonia gas and ammonia liquid sprayed into the work area. Bill put on a Self-Contained Breathing Apparatus and entered the area to shut off the valve. He could not shut it off, and was burned by the ammonia. The fire department was called in.

Kate and Fred then entered the area in SCBAs and canvas coats. They received burns to the groin. Kate finally shut off the valve.

Bill and Fred set up ventilation fans to blow the ammonia outside, but the plant's ventilation system sucked the ammonia back into the plant.

All three workers were sent to the emergency room. The employer was fined $600 for not giving the workers the right training or respirators.

*Based on a true story. The names have been changed to protect the innocent.

(Source: OSHA report no. 0751910-S 104255161.)

Task 1: (continued)

Pesticide Case Study*

On November 5, 1990, workers noticed a strong smell coming from a chemical storage room. For almost a week they had smelled a strong odor, had trouble breathing, and felt dizzy. About half of the workers went to the emergency room on November 7th, and the rest the next day.

Finally, Kit's supervisor Jeff sent him to investigate. Kit found an old can of WL-85 herbicide. When he lifted the can the bottom had rusted out. The herbicide burned his right thigh and he had trouble breathing. Jeff called the fire department to care for Kit and deal with the spill.

The fire department came and cleaned up the spill and monitored Kit. The employer was found guilty of violating 10 sections of the OSHA standards. There was no fine because the employer was a government agency.

*Based on a true story. The names have been changed to protect the innocent.

(Source: OSHA report no. 0950614-S 111822805.)

Task 1: (continued)

Oxidizer Case Study*

On August 6, 1993, Cathy and her supervisor Luke smelled a strange odor coming from a storage shed upwind of where they were working. They followed procedure and started to hose down their area. Suddenly, a cloud of smoke started pouring out of the shed and moving toward them.

The plant alarms started to go off, and everyone evacuated. Cathy noticed that her co-worker Will was missing. She ran back through the cloud without any respirator or protective clothing to find him.

Lucy was hospitalized for chemical burns to her lungs. The employer was fined $8,775 for not giving the workers the right training or respirators.

*Based on a true story. The names have been changed to protect the innocent.

(Source: OSHA report no. 0134000 109620831.)

Task 1: (continued)

Ammonia Case Study*

On June 30, 1993, construction workers had removed a valve from a refrigeration unit. That night John, the 2nd shift foreman, turned on the ammonia valves. Ammonia flooded the floor, and everyone tried to evacuate. Maria, a cleanup worker, was killed instantly.

Kate and 4 other workers were sent to the hospital after they tried to rescue Maria, who was already dead. The company was fined $314,400 for not giving the workers the right training or respirators.

*Based on a true story. The names have been changed to protect the innocent.

(Source: OSHA report no. 0751910-S 115057200.)

Task 1: (continued)

Natural Gas Case Study*

On June 28, 1993 Paul was on his way to work when he saw a natural gas leak. He pulled his car over and started directing traffic away from the leak while the fire department was on the way.

A van with two adults and two children pulled into the intersection and stalled. The driver tried to re-start the van and the spark plugs set off an explosion. The explosion killed Paul and injured 6 others.

*Based on a true story. The names have been changed to protect the innocent.

(Source: Santiago O'Donnell and Martin Weil, "Gas Fire Injures 7 on

Task 1: (continued)

1) What was done right in this case study?

2) What was done wrong?

3) What will your committee suggest to prevent this from happening in the future?

Task 2:

In your groups, please answer the fc.)wing questions. Choose someone in your group to write down your answers and report them back to the group.

1) What are you supposed to do at a spill, as an Awareness-level worker? (See page 216.)

2) What are you not supposed to do at a spill?

Task 2: (continued)

3) What do you think are the most important parts of a good Emergency Response Plan? (See page 234.)

4) Does your employer have an Emergency Response Plan?

☐ Yes ☐ No ☐ Not sure

A. Know Your Role

Many SEIU members work in situations where they are likely to be the first to spot an emergency. They are called "Awareness-level first responders."

Sometimes we are expected to do something for which we haven't been properly trained or equipped. If workers are expected to respond to hazardous materials emergencies, OSHA law now says that all employers must divide their workforces into five levels of emergency responders.

The five levels of responders, in order of increasing responsibility, are:

- First Responder, Awareness Level
- First Responder, Operations Level
- Hazardous Materials Technician (Hazmat)
- Hazardous Materials Specialist
- On-Scene Incident Commander (IC)

Training, first.

According to OSHA, you have to be properly trained and equipped **before** your employer can expect you to respond at your designated level. Your employer's emergency response plan should describe in detail in which level everyone fits. See page 304 for more information about the OSHA standard.

(Source: *Hazardous Materials Workbook*, Oil, Chemical, and Atomic Workers Union, New York: Apex, 1993.)

A. (continued)

First Responder Awareness Level: Call Someone and/or Sound the Alarm and Run

You need to know who to notify and where to run. This applies to most SEIU members.

First Responder Operations Level: The Defense Team

They act defensively from a safe distance. They put down mats to keep a spill from spreading. They do not try to stop the leak. They need special equipment to protect themselves. Your employer may choose to train a small crew to the operations level. They will brief the HazMat team that actually stops the leak or spill.

Hazardous Materials Technicians: The Offense Team

They take offensive actions to stop the release and wear special protective equipment. Extensive training is required, far beyond firefighter training.

Hazardous Materials Specialists: The Experts

These people are special assistants to the Hazmat team. They may be specialists in radiation or other topics.

On Scene Incident Commander: The Emergency Boss

The one person authorized to make all key decisions during emergencies.

A. (continued)

OSHA--Awareness level: "First responders at the awareness level are individuals who are likely to witness or discover a hazardous substance release and who have been trained to initiate an emergency response sequence by notifying the proper authorities of the release. They would take no further action beyond notifying authorities of the release."

OSHA--Operations level (firefighters): "First responders at the operations level are individuals who respond to releases or potential releases of hazardous substances as part of the initial response to the site for the purpose of protecting nearby persons, property, or the environment from the effects of the release. They are trained to respond in a defensive fashion without actually trying to stop the release. Their function is to contain the release from a safe distance, keeping it from spreading, and prevent exposures."

OSHA--Technician level (HazMat team): "Hazardous material technicians are individuals who respond to releases or potential releases for the purpose of stopping the release. They assume a more aggressive role than a first responder at the operations level in that they will approach the point of the release in order to plug, patch or otherwise stop the release of a hazardous substance."

OSHA--Specialist level: "Hazardous Materials Specialists are individuals who respond with and provide support to hazardous materials technicians. Their duties . . . require a more directed or specific knowledge of the various hazardous substances they may be called upon to contain. The hazardous materials specialist would also act as the site liaison with Federal, state, local and other governmental authorities in regards to site activities."

OSHA--Incident commanders: "Incident commanders [are individuals] who will assume control of the incident scene beyond the first responder awareness level."

(Source: OSHA Hazardous Waste Operations and Emergency Response Standard, 29 CFR 1910.120.)

B. Your Role in Emergency Response

As an awareness level first responder you should only do 3 things when you see a hazardous material spill or leak.

The 3 things to do:

1) Get out of the area. Stay at least 150 feet away.

2) Report the incident.

3) Try to keep other people out of the area.

There are 2 things not to do.

1) Do not try to rescue anyone.

2) Do not clean up or touch the material.

(Source: "Standard For Professional Competenece of Responders to Hazardous Materials Incidents," NFPA 472, section 2-1.2)

C. Don't Be a Dead Rescuer!!

Our human nature is such that we can't stand by and watch when there's an emergency. Unfortunately, in hazardous material emergencies, this instinct can kill us.

For example, Lee Hodson was killed on April 14, 1987 when a shipment of trichloroethane spilled in his father's warehouse. The chemical was being pumped from one tank into another when the pipe broke. Hodson tried to turn off the valve, but he was immediately overcome by the vapors and collapsed. If he had been trained, he would have known to get out instead of trying to shut off the valve without any protective equipment.

It's hard, but we need to learn to think before we jump in. Sometimes "protecting life first" means your own. Do this by isolating the area and **keeping everyone out until people with proper training and protective equipment arrive**.

(Source: *Hazardous Materials Workbook*, Oil, Chemical, and Atomic Workers Union, New York: Apex, 1993 and "Toxic Chemical Spill in Utah Causes a Death and 6 Injuries," *New York Times*, April 15, 1987.)

D. Identifying Hazardous Materials

When you see a spill or a leak, you need to call in trained emergency teams. But when you make that call, you need to give the teams as much information as possible. You need to identify the materials as much as you can, but look out for your own safety at the same time.

First, think about heat sources that could start a fire, such as:

- sparks (from car engines, cigarettes)
- light switches
- other equipment

Then try to identify the materials. From this training, you know about a few clues you can use:

- what kind of facility the emergency is in (some facilities are likely to use certain chemicals)
- truck, railroad car, and other container shapes
- placards on trucks and railroad cars
- 4" by 4" DOT labels on drums and packages
- anything else written on the truck, car, or container

Do not move closer to see any of these!

(Source: *Hazardous Materials Awareness*, American Federation of State, County, and Municipal Workers, Chapter 3.)

E. Keep a Safe Distance

You know that **you should not use your nose, sense of taste, or touch to identify materials. You could be poisoned, burned, or worse.**

The best place to be in an emergency is:

- at least 150 feet from the spill--if you can smell it, you are too close
- uphill from the emergency (many dangerous chemicals sink and collect at ground level)
- upwind from the emergency

If you see fire, a cloud of gas or dead animals, or if your eyes, nose, or skin itch or burn, <u>move farther away and call trained people immediately.</u>

You and your co-workers should keep an eye on each other. Work in pairs. If you move, make sure everyone knows where you are. Otherwise, you won't know if someone is hurt, or just out of sight.

(Source: *Hazardous Materials Awareness*, American Federation of State, County, and Municipal Workers, Chapter 3.)

F. Reporting the Emergency

After you gather all the information you can, the next step is to call it in. Who you call depends on your emergency plan. Find out who you are supposed to call, and keep the number in your wallet. Carry it with you so that you won't have to spend time looking up important phone numbers at an emergency.

Other people (your supervisor, the trucking company, or the State Environmental Protection Agency or State Police) may have to notify the government about spills. This is not your job, but you should be aware that the calls need to be made.

Try to gather all the information you can. This will help the HazMat team when they arrive later.

Do not get closer to the materials to try to get more information!

(Source: *First-On-The-Scene Awareness Program*, Midwest Consortium for Hazardous Waste Worker Training.)

G. Model Spill Report Form

1) Do not go closer than 150 feet from the spill--farther if there is a fire

2) Stand upwind from the spill

3) Do not go into ditches or low areas

4) Do not try to rescue anyone--you could become part of the problem

1) **Name:** **Phone number you're calling from:**

Your employer: **Date:**

2) **Is it a (circle all that apply):** gas liquid solid

spill leak fire explosion

3) **Where did it happen:** (street address, road, x miles north/south/east/west of x)

4) **Vehicle:** circle the picture on the back and write in the company name and tag number (license plate number) <u>if you can see it</u>.

5) **Containers:** circle picture(s) on the back **Are they damaged?**

6) **Placard on vehicle:** circle the picture on the back and write down the 4-digit number <u>if you can see it</u>.

7) **Where is the driver:** in the vehicle got out don't know

8) **Is the driver ok?**

9) **Do you see any dead plants or animals?**

10) **What is the weather like?**

clear cloudy rain snow sleet

still air breeze windy from north/south/east/west

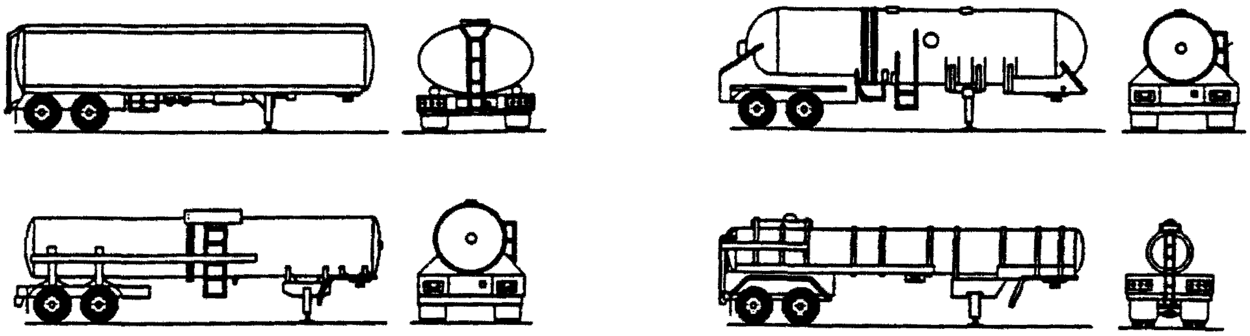
cold (below 50 degrees) moderate (50-70) hot (above 70)

11) **Are any of these nearby?** school hospital houses

drains sewers lake, stream, river, other water

G. (continued)

Truck types--circle the one that looks like the truck and write in the company name and tag number (license plate number)



Circle the type of container:

barrel cylinder cardboard drum cardboard
box tank

placard (on outside of truck)--circle the one that you see and copy the 4-digit number in the middle ___________

Illustration courtesy of the Midwest Consortium for Hazardous Waste Worker Training. Reproduced by permission.

H. Keep Other People Out of the Area

One of your responsibilities at a spill may be keeping other people out of the area. But you have to watch out for your own safety when you're doing this. For example, it is safe to warn bystanders away from a spill, but you shouldn't fight someone who is determined to get in no matter what you say. Likewise, it may be safe to stop traffic. But only if you have a truck with a flashing light, safety vests, cones, and other tools and training.

Here are some guidelines for keeping people out of the area:

- After you call in the spill, go back to a safe location and keep your eyes open for any changes at the scene. When the HazMat team arrives, you need to fill them in on the situation. **Remember that it is not your job to stop the spill or do anything to control it.**

- Try to put up string, cones, or some kind of marker 150 feet (or more) from the spill. **Do not walk out into the road to do this. Do not go near the spill to put up markers.**

- Use **information** to try to convince bystanders to stay away. Tell them that the material may be very dangerous. Ask them to stay upwind and uphill from the incident. Give them as much information as you have. Try to stick to the facts: don't guess or make assumptions about what might happen. Police officers, neighbors, and the media may be very pushy. If you can't convince them not to go in, there's not much more you can do to keep them out.

(Source: *First-On-The-Scene Awareness Program*, Midwest Consortium for Hazardous Waste Worker Training.)

I. Flagging is Hazardous to Workers' Health

We may need to stop traffic at a hazardous Materials emergency. But we have to do that in a way that doesn't put our lives at risk. Putting flaggers in the road is not a good way to protect workers.

To stop traffic with a vehicle, you should have:

- A vehicle with flashing warning lights
- A truck following you with a crash barrier (impact attenuator)
- Cones, to guide traffic at least 150 feet from the spill
- Training in how to work safely in traffic, including training in how to set up signs and cones.

See Activity 10 for more information about traffic control.

J. What Is Emergency Response?

Emergency response is a system for responding to spills that makes sure that the only people who come in contact with hazardous materials are people who are trained and have protective equipment.

Firefighters and federal officials, after years of experience, injuries, and deaths during emergencies, have developed a system of emergency response. OSHA and EPA have very strict rules about who may respond to a spill and what they may do.

Of course, you won't be arrested if you go into a spill to try and rescue someone, but you could be risking your life, and you might not even know it. Most people (bystanders, police, and even fire crews) **do not have the knowledge or equipment to protect themselves from a spill**. HazMat teams (often trained firefighters) do have the training and equipment to protect themselves. **No one** may go near the spilled material unless they have firefighter's respirators (SCBAs) and chemical protective suits. Everyone else at the scene must stay away.

(Source: *Hazardous Materials for First Responders*, Stillwater, OK: International Fire Service Training Association.)

K. Who's On First?

Imagine that a tank of pesticides spills on a highway, and you see the accident as you are driving during work. You have three responsibilities:

- to recognize that there is a hazard
- to call trained people for help
- to keep everyone out of the area.

Do not touch or go near the material.

The fire department may send a fire crew. Their job is to keep the material that has already spilled from spreading. Even they do not have enough protection to touch the material. They may block the entrances to sewers. They may dig ditches or stop the leak with absorbents. They must wear firefighter's respirators (SCBAs) when they do this.

Finally, the HazMat team arrives on the scene. **They are the only workers who may touch the material.** They are the only ones who may go in and stop the leak. They wear firefighter's respirators and chemical protective suits. They use sampling equipment to figure out whether the air is safe to breathe.

Emergency response isn't just a matter of mopping up a spill or calling the fire department. Spilled materials can catch on fire, explode, or cause cancer. You are in this training to make sure that you know what to do, and aren't exposed to hazardous materials.

(Source: OSHA Hazardous Waste Operations and Emergency Response Standard, 29 CFR 1910.120.)

L. The Emergency Boss

If emergency response is done properly, it is similar to a military operation. Only one person makes decisions and is in charge of the incident. Everyone has a very specific role, and stays strictly within her or his role. This is called an **Incident Command System.**

If you are the first person on the scene, you are in charge of the incident until a fire company or police officer arrives. The first officer to arrive takes control of the incident and becomes the **Incident Commander**. The officer hands over control to the HazMat team when they arrive. The HazMat team may hand over control to an EPA, OSHA, or Coast Guard official when they arrive. This system **must be set up in advance**. It must be part of your employer's emergency plan and your community's emergency plan. That way, no one stands around arguing about who's in charge in the middle of an emergency.

Your job is to hand over control to the **Incident Commander** (a firefighter or HazMat team member) as soon as they arrive. You must tell him or her all the information you have about the emergency. Be sure to tell the **Incident Commander** about anything that has changed since you called in your report.

(Source: *Emergency Response Awareness Level Training Manual*, University of Alabama, Chapter 5, p. 3)

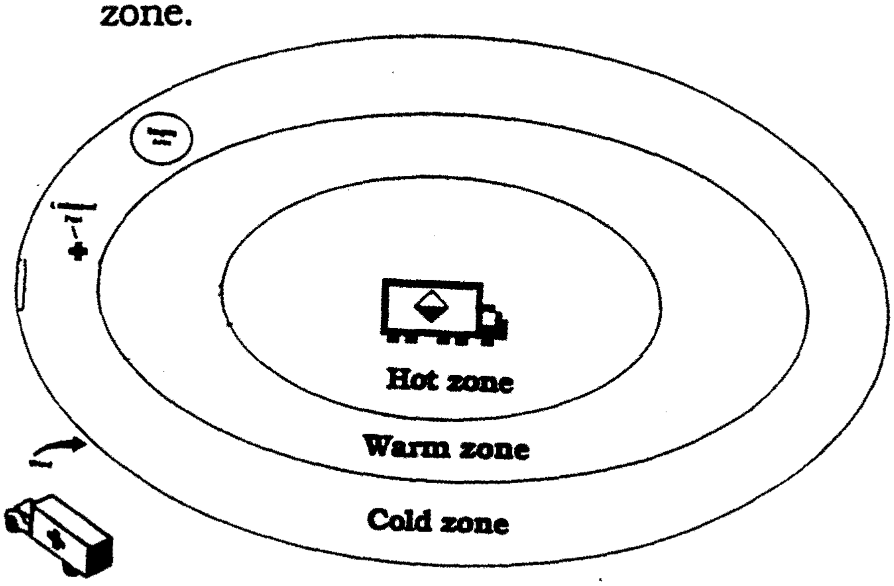
M. Emergency Zones

The **Incident Commander** will set up three **zones** around the spill:

- the **hot** zone — The most dangerous area near the spill (about 150 feet or more)--**only** HazMat teams are allowed in the **hot zone.**

- the **warm zone** — The area where HazMat teams **decontaminate** (wash off chemicals)--only HazMat teams are allowed in the **warm zone.**

- the **cold zone** — A safe area where the command post will be set up. You are only allowed in this area. The Incident Commander may ask you to stay outside the cold zone.



Your job is to **stay out of the warm and hot zones** and do what trained people ask you to do. Do not try to help the HazMat teams. Don't become part of the problem. The **Incident Commander** may tell you to keep bystanders, reporters, and others out of the area. Be sure to tell the **Incident Commander** when you leave the area.

(Source: Warren Isman and Gene Carlson, *Hazardous Materials*, New York: Macmillan: 1980.)

N. If You Are Exposed

If, for some reason, you breathe leaking chemicals or get spilled chemicals on your clothes or skin, **do not leave the area.** Get your clothes off immediately. Try not to touch the chemicals. Wait for the HazMat team to get the chemicals off of your body and clothes. This process is called **decontamination**. The HazMat team may just hose you off with warm water. Or they may use special soaps.

Do not go to the emergency room yet. Most emergency rooms will not know how to decontaminate you. You could make other workers there sick and contaminate the whole emergency room.

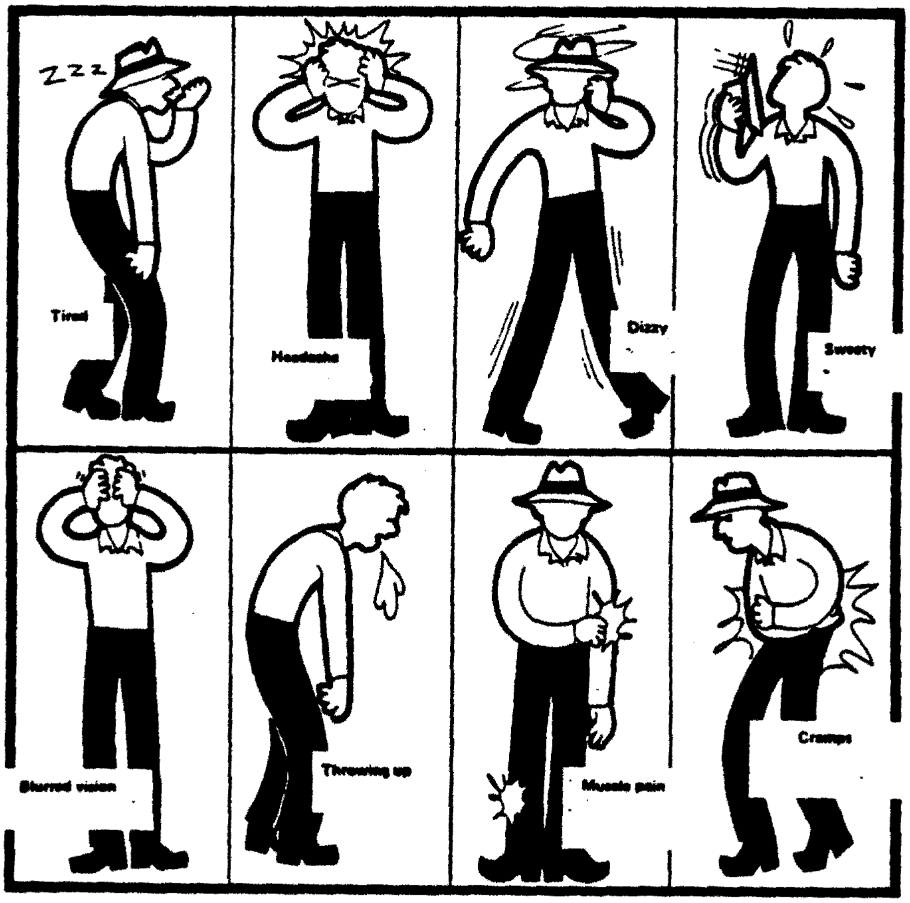
If you take chemicals home with you on your skin and clothes, you can make yourself or your family sick. Some chemicals will not make you feel sick until 6-8 hours after you breathe them. Never wash dirty work clothes with the family laundry. Get your employer to wash them or wash them separately.

If you are exposed to hazardous wastes at high levels, or if you have any signs of illness after you are exposed, **get a medical exam.** The law says you have the right to an exam and your employer (<u>not</u> your health insurance) must pay for it. Watch out for these signs of exposure:

- watery eyes
- dizziness
- feel sick to your stomach
- strange taste in your mouth
- itchy or burning skin
- burning nose or throat
- scratchy throat
- sore throat
- headaches
- feel very tired
- feel "high"
- skin rashes

N. (continued)

These can be signs that chemicals are damaging your health. If you feel any of these signs, get out of the area and get to some fresh air. Wait for the HazMat team to come, and tell the medical officer or paramedics that you think you have been exposed.



(Source: *Firefighter Workbook. First Responder, Awareness Level* Seattle [WA] Fire Department and Washington State Fire Protection Services, 1989.)

O. Your Employer's Emergency Plan

By law, your employer has to plan for emergencies like this one before they happen. The plan has to include the following information:

- The definition of an emergency
- What chemicals are used, and how they could spill
- How spills can be prevented
- If chemicals do spill, who is qualified to respond, and at what level
- How to contact emergency responders
- What kind of training is required for different levels of response
- How your employer will work with the fire department, HazMat teams, and other outside groups
- Who is in charge at the emergency and who reports to who
- How the spill should be cleaned up
- What protective equipment cleanup workers will need
- Whether anyone must be evacuated, and how that will be done
- Safe places to go in an emergency
- How to account for all workers in an emergency
- How to keep bystanders out of the area
- How workers will be cleaned off (decontaminated) if they accidentally get chemicals on them
- Who will give emergency medical care to chemical victims
- How the program will be evaluated for weaknesses and improved

(Source: OSHA Hazardous Waste Operations and Emergency Response Standard, 29 CFR 1910.120.)

Summary: Your Role in Emergency Response

1) In hazardous materials emergencies, awareness level first responders have very limited roles:

   - to recognize that there is a hazard
   - to call trained people for help
   - to keep everyone out of the area

2) You can injure yourself trying to rescue your co-workers. Do not try to rescue workers unless you have more training and the proper equipment.

3) Get out of the area as soon as you can, and stay away. Get as much information as you can from a safe distance.

4) Until other help arrives, you are in charge of the incident. Remember: all you do is sound the alarm, be alert for information, and control the site.

5) After the HazMat team arrives, your role is to stay out of the warm and hot zones. The incident commander may tell you to keep other people out of the area.

6) Your employer must have an emergency response plan and you have the right to get a copy of it. Bad plans put workers at risk.

NOTES

Activity 10: Traffic Control

Purpose

To understand the dangers of using flaggers to protect workers from traffic.

Task 1:

Your group is the Health and Safety Commitee for SEIU Local 94. A new worker has come to one of you with some concerns. As a group, please read the worker's statement below and respond to it. Please use your own experience and the fact sheets on pages 239 - 246 to answer the questions.

> **"We were out patching the interstate and the cars must have been going 75 miles an hour. A couple of guys almost got hit. I don't think the drivers know what they're doing--they don't even notice the signs.**
>
> **I went to my supervisor, but he told me we have hard hats and vests and signs, and if I just used my head, I would be OK. He said, "I've been working this job for 20 years, and I've never been hurt, so get back to work!" Should I be worried or not?"**

1) What would you say to this worker?

(over)

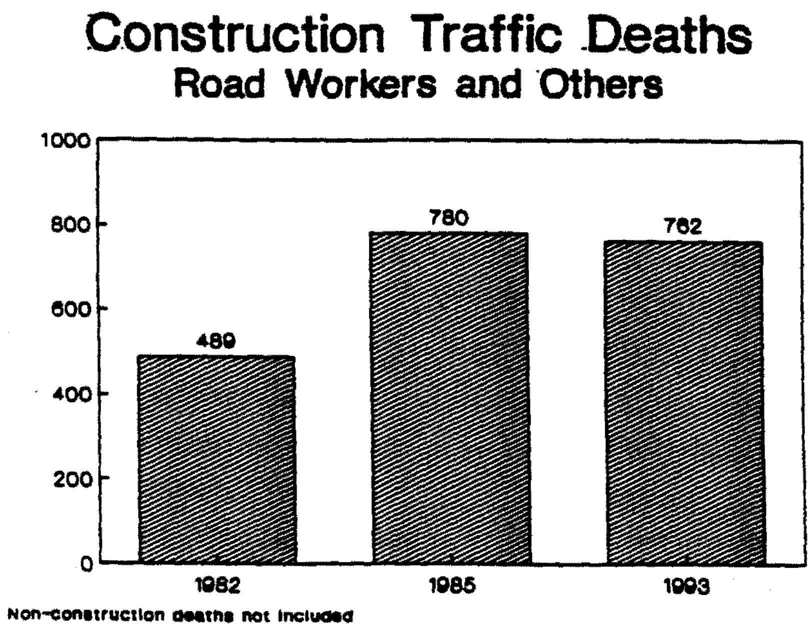
Task 1: (continued)

2) What would you recommend the union do to solve some of these problems?

A. Deaths on the Road Have Been Going Up

About 750 workers die every year on the roads. Thousands more are injured, and many of these injuries are disabling. Some of the workers include:

- construction workers
- road maintenance crews (patching, mowing, painting)
- surveyors
- police officers



- When there is more construction, there is more danger to workers. President Clinton's economic program includes even more road construction and repair. According to the National Transportation Safety Board:

> "Growth in traffic volume has required that roadway capacities be increased to provide a more desirable level of service to motorists. . . . Unless additional efforts [are] made to reduce work zone accidents, the number of fatalities [will] continue to increase."

(Source: National Highway Traffic Safety Administration)

B. All or Nothing

Traffic dangers are an all-or-nothing proposition. It's rare to get hit, but if you are hit, you will probably die or be seriously injured.

18 THE BOSTON HERALD, THURSDAY, FEBRUARY 4, 1993

Union urges safety focus after highway worker's death

. . . . Steve McNally, 34, of Franklin was one of three crew members patching potholes along the northbound side of Interstate 95 in Sharon when the truck hit him about 10 a.m. Tuesday. An autopsy performed yesterday revealed that McNally died of "multiple injuries due to trauma," according to the Suffolk County medical examiner's office. . . .

McNally's three supervisors were suspended without pay while the department continues its investigation. . . .

A co-worker, who spoke on condition of anonymity, said that not only should there have been cones, signs and lights set up, but also more men working at the site.

"Twice as many guys should have been in that crew," he said. "The lack of manpower is the reason that poor kid is dead."

. . . . A wake for McNally, who is survived by his mother, Elizabeth, his father, Charles, two sisters and one brother, will be held tomorrow at the Oteri Funeral Home, 33 Cottage St. in Franklin. He will be buried tomorrow in St. Mary's Cemetery.

C. Why Are The Numbers Going Up?

Road crew workers are more likely to die from traffic for a lot of reasons:

- some drivers don't understand they are a danger to workers
- politicians pass lots of laws for drivers' convenience, but almost no laws to protect workers
- many employers spend lots of money on roads, but almost no money on worker safety
- many employers don't even know about the regulations that should protect workers
- troopers are sent to places where they can write a lot of tickets instead of to our work areas

D. Living in Fear

You live in fear for your life every day at work, and it takes its toll on your health. Most road crew workers know someone who has been hit by a vehicle at work. But even if you don't, you are always afraid it's going to happen to you. And you're right to be afraid.

Stress is a real danger to your health. It causes:

- ulcers
- more colds and infections
- problems in family life
- high blood pressure, which can cause
- strokes and
- heart attacks

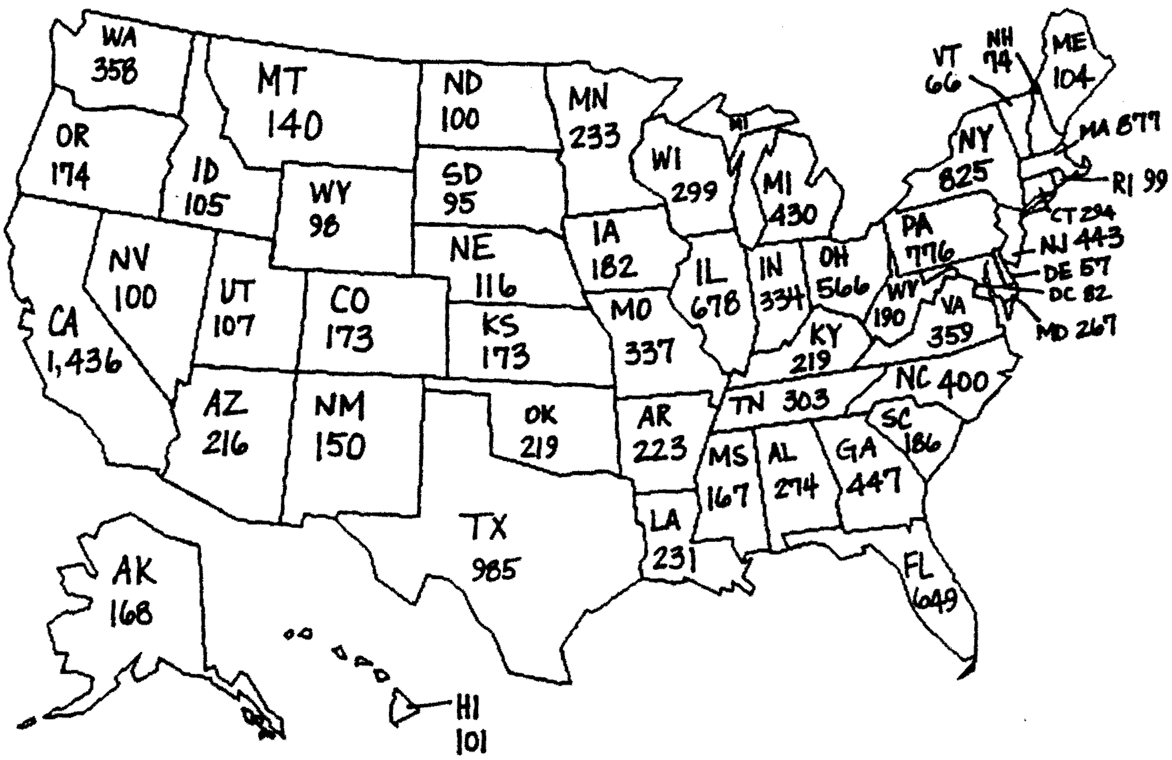
Some employers tell you to "relax" and "be careful." But it's impossible to relax when cars are racing past you.

E. A Dollar for the Road, But Hardly a Penny for the Worker

In many states, the Department of Transportation (DOT) is one of the best funded state agencies. But very little of that trickles down for worker safety.

The Highway Trust Fund (a government program) will give almost $17 billion in 1993 to state DOTs. This money is for maintaining, repairing, and building new roads. When private contractors get Trust Fund money, the states say they <u>must</u> follow their safety plan. Even though state DOTs usually write safety plans for their own workers, often they don't follow them.

Here is how much money each state gets from the Highway Trust Fund, in millions of dollars:



Note: States receive dfferent amounts because of population, miles of interstate highway, and other reasons.

F. The Motoring Public Comes First

The real goal of regional traffic plans, government funding, and road signs is the convenience of drivers. Employers have the tools to make the job safer for workers, but they are not used if they will slow down traffic.

For example, the Connecticut State DOT Safety Handbook gives this advice:

> "An important item in any patching operation is getting traffic through the work zone. . . . [The objective] is to move traffic through the work area with as little inconvenience to the public as possible."

Even Federal DOT seems to feel that driver safety is more important than worker safety:

> To deal with the everyday threat of the DWI driver, it is imperative that . . . the work area present no surprises . . . . [This] should result in . . . safety enhancement for the legally drinking driver.

G. OSHA Has Few Standards for Protection from Traffic

Out of hundreds of pages of safety standards, this is all OSHA has to say about traffic hazards:

§ 1926.200 Accident prevention signs and tags.

(a) *General.* Signs and symbols required by this subpart shall be visible at all times when work is being performed, and shall be removed or covered promptly when the hazards no longer exist.

• • •

(g) *Traffic signs.* (1) Construction areas shall be posted with legible traffic signs at points of hazard.

(2) All traffic control signs or devices used for protection of construction workmen shall conform to American National Standards Institute D6.1-1971, Manual on Uniform Traffic Control Devices for Streets and Highways.

• • •

§ 1926.201 Signaling.

(a) *Flagmen.* (1) When operations are such that signs, signals, and barricades do not provide the necessary protection on or adjacent to a highway or street, flagmen or other appropriate traffic controls shall be provided.

(2) Signaling directions by flagmen shall conform to American National Standards Institute D6.1-1971, Manual on Uniform Traffic Control Devices for Streets and Highways.

(3) Hand signaling by flagmen shall be by use of red flags at least 18 inches square or sign paddles, and in periods of darkness, red lights.

(4) Flagmen shall be provided with and shall wear a red or orange warning garment while flagging. Warning garments worn at night shall be of reflectorized material.

• • •

§ 1926.202 Barricades.

Barricades for protection of employees shall conform to the portions of the American National Standards Institute D6.1-1971, Manual on Uniform Traffic Control Devices for Streets and Highways, relating to barricades.

H. Industry Standards Are Not Law

Besides OSHA law, employers have some guidelines they can choose to follow:

- industry standards
- manufacturers' instructions
- their own policies or standard operating procedures (SOPs)

All road signs must follow special rules. These are in the Manual of Uniform Traffic Control Devices (MUTCD). The handbook spells out:

- what the signs look like
- what order they must be in
- how far in front of the job they must be

The Manual says that every job must have a traffic control plan. You have the right to get a copy of that plan, and to make sure your employer follows it.

Task 2:

In your small group please read the scenario and answer the questions below. Please use your experience, the traffic control plan, and the fact sheets on pages 250 - 261 to answer the questions.

> **Your group is a the Health and Safety Committee for SEIU Local 94. One of your co-workers (a flagger) was hit by a car when his crew was called in to a large gasoline spill. Your job is to investigate the accident and come up with recommendations to management to prevent this in the future. The district engineer's traffic control plan for the job is on page 249.**

1) What do you like about the plan?

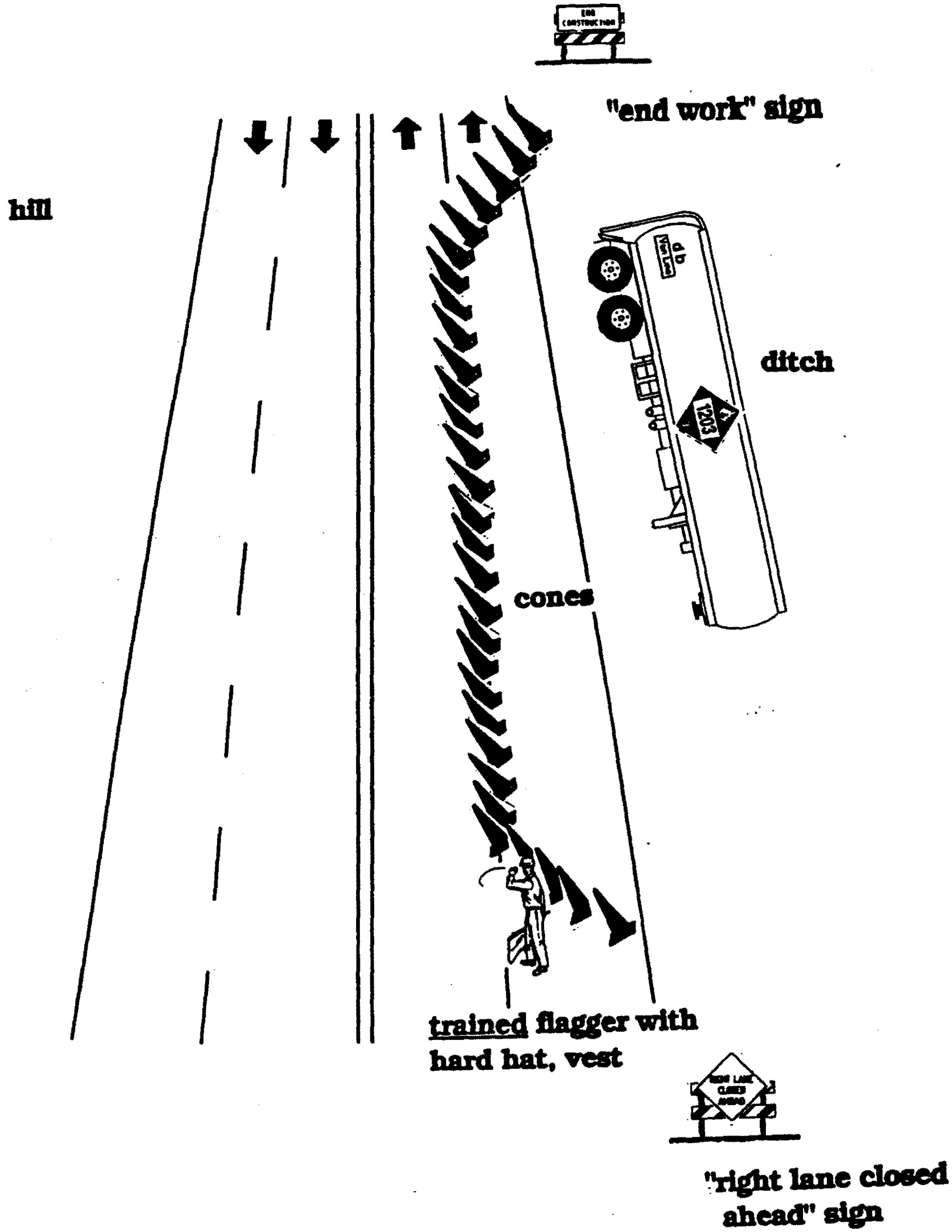
2) What would you do differently?

Task 2: (continued)

3) What should the commitee recommend to management?

4) How do your recommendations apply to other road work that is not a HazMat spill?

Task 2: (continued)



I. Traffic Control at a Hazardous Materials Emergency

About 5:15 a.m., on August 3, 1989, a southbound truck, with its lights on, loaded with 2,000 pounds of liquid nitrogen, was approaching the construction zone. Upon entering the construction zone, the southbound truck went off the pavement. The right front tire rode on the 8-inch-wide ledge (a 6.5-inch dropoff) while the right rear tires rode outside of the ledge (a 13-inch dropoff). After travelling a short distance, the truck came back onto the pavement, crossed the southbound and northbound lanes, and hit a drainage culvert on the east side of the roadway. The truck then rolled over 360 degrees and came to rest in the ditch. The truckdriver sustained a broken leg.

What happens when you are in charge of traffic control at a hazardous materials emergency? All of the regular traffic rules apply, but you also have to be aware of the chemical hazards.

For example, if a car drives through your cones into a gasoline spill, the car engine could start an explosion. The gas truck will become a 10,000 pound missile. You can't just run out of the way, as you might on a construction site.

Remember that you only have 3 jobs as an awareness-level worker:

- **Try to identify what has spilled (without exposing yourself)**
- **Notify trained workers who can stop the spill (a HazMat team)**
- **Keep people out of the area (without getting hurt yourself)**

If you do not have all of the training and equipment you need, do not try to control traffic at a spill. Get away as fast as you can and call in other DOT workers or troopers with equipment.

J. Some Controls Are Better Than Others

There are many ways to control traffic, some are better and some are worse. (See Activity 7 for more information on controls.)

Best: At the source

- closing the road for major road work
- avoiding road work during rush hour
- limiting the size of trucks on the road
- driver education
- passing strict traffic laws
- increasing traffic fines in work areas
- enforcing traffic laws

Second Best: Along the path

- concrete barriers (Jersey barriers)
- trucks with crash barriers (attenuators)
- keeping workers away from the road unless their work must be done there
- rumble strips
- signs, including
  - -trucks with lighted arrows
  - -digital traffic signs
  - -road work ahead signs
  - -people working signs
  - -lane closed signs
- new lane markers (lines)
- cones

Least Desirable: At the worker

- training workers and supervisors
- hard hats
- vests
- flaggers
- "work safe" campaigns

Hard hats and vests are important, but <u>they are not enough by themselves</u>.

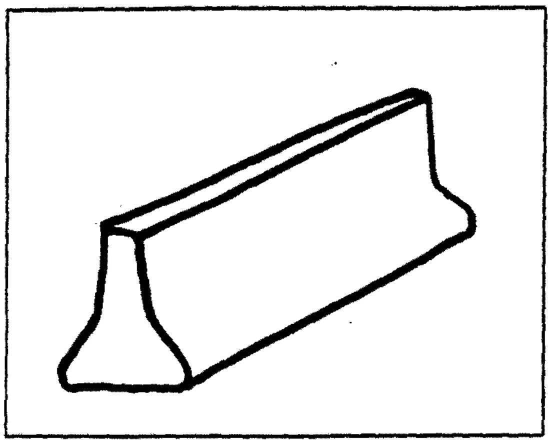
K. Barrier Protection

The one best way to protect workers is to put up a solid barrier between the traffic and the worker. This can be

- a concrete barrier (a Jersey barrier) or
- a truck with crash pads (called attenuators)

Jersey barriers

> "The portable concrete barrier is often the most costly but provides the greatest protection from potential collisions."--National Transportation Safety Board (NTSB)



Jersey Barrier

Jersey barriers can also protect drivers. When a car hits a Jersey barrier the car is supposed to roll over instead of being crushed.

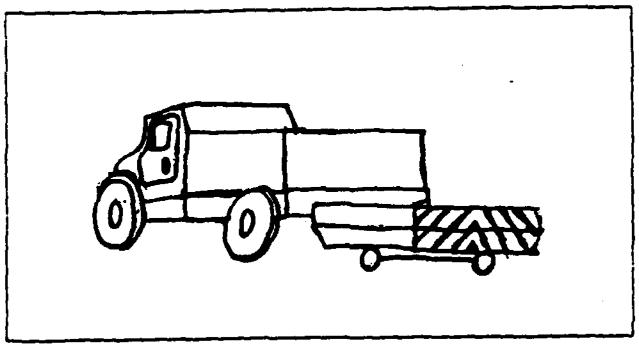
The trucks that set up Jersey barriers are very expensive. Your employer may only own one truck for the whole region. It may be hard to get Jersey barriers when you need them.

Islands, railings, wood barricades, and cones do not protect you like Jersey barriers. They are not heavy enough to stop a vehicle. Also, Jersey barriers will not stop heavy trucks.

K. (continued)

Crash trucks

Crash trucks are trucks with plastic barrels attached to the back of the truck. They drive slowly behind workers on the road. The barrels have water or foam in them. If a vehicle hits the crash truck, the barrels are crushed, and this slows down the vehicle. Crash trucks are good for smaller jobs where Jersey barriers are not practical. Crash cushions should also be used with Jersey barriers on large jobs.



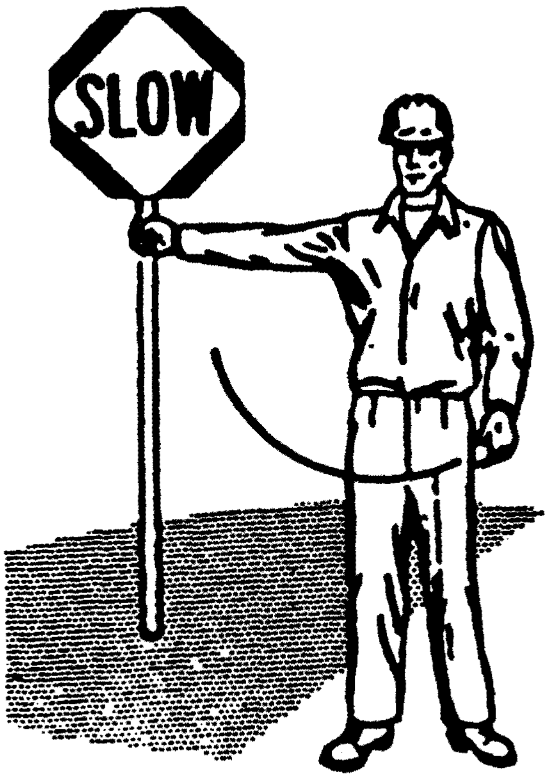
Crash Truck

Crash trucks save lives. In 1989 there were two similar accidents in Illinois and California. In Illinois, no crash trucks were used, and three people were killed. In California, crash trucks were used and no one was killed. According to DOT, "Had [crash trucks] been in use on barrier vehicles immediately behind the workers . . . far more protection would have been provided to workers, and the accidents might not have resulted in fatalities."

One problem with crash trucks is that **someone has to drive them**. The worker who is driving the crash truck can easily get hurt in a crash. Like a flagger, the worker's body is part of the control.

The driver should get out of the crash truck whenever he or she can. If there is a crash, there is a chance the worker may not be in the truck to get hurt. Crash trucks should always have headrests, seatbelts, and airbags, and workers should use them.

L. Using Workers as Barriers



Flagging is the worst way to protect workers because it means using another worker's body as a barrier. Flagging is probably the most dangerous work any road crew worker will ever do. Often the least experienced workers get the most dangerous jobs. Flagging should <u>never</u> be done unless it is absolutely necessary. Flaggers are needed:

- when 1 lane of a 2-lane road must be closed
- when trucks are entering or leaving a road and can't be seen

Flaggers should <u>never</u> be used just because:

- it's convenient
- instead of cones and signs
- a lane is closed (arrow boards should be used instead)

If flaggers must be used, just "paying attention" is not enough. Flaggers need:

- **training** (see page ???)
- a whistle to warn co-workers if a vehicle enters the work area
- to be <u>at least</u> 500 feet from the work area so vehicles have time to change lanes before they get to the work area

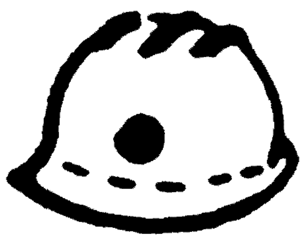
Sometimes flaggers need to be <u>farther</u> away from the work area, such as:

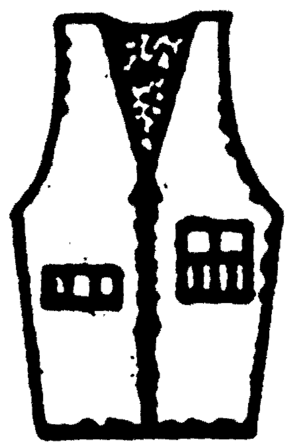
- on curves
- in bad weather
- on hills
- in high speed areas

M. The Magic Vest?

How can a vest protect you from a 10,000 pound truck traveling at 75 miles an hour? It can't. It is important (and it's the law) to wear a vest and hard hat, but it's not enough.

The only reason for wearing a vest and hard hat is to make it easier for drivers to see you. They will do nothing to protect your body in a crash. In fact, most hard hats aren't even made to protect your head when it is hit from the front or side.





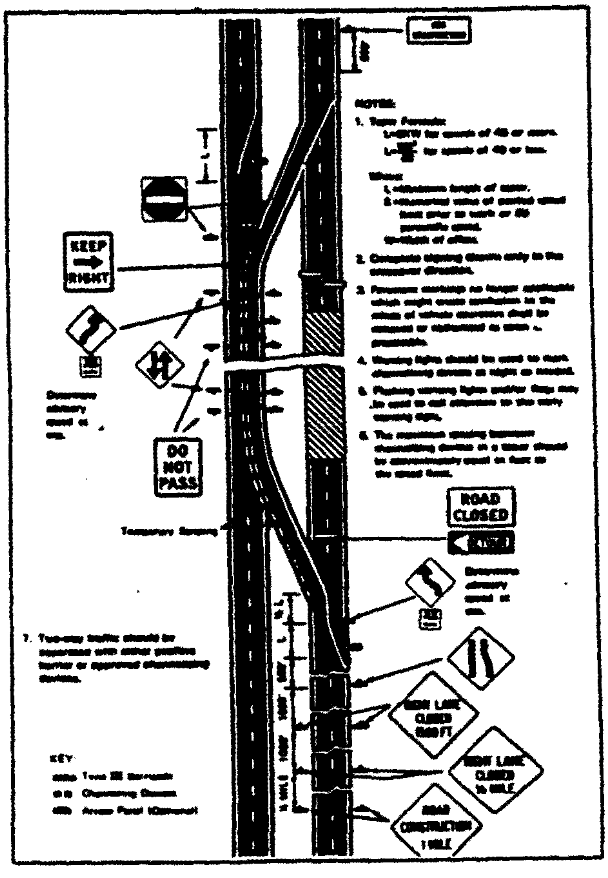
N. Different Jobs Need Different Controls

You will not use the same controls on every job. For example, if you are patching one pothole, it doesn't make sense to put up Jersey barriers. On the other hand, if you are doing a major maintenance project that will take a week, cones, hard hats, vests, and a few prayers are not enough.

The Manual of Uniform Traffic Control Devices (MUTCD) explains how to set up different controls in different situations. You do not need to learn the MUTCD, **but your employer must have an engineer who does know how to use it**. It is not your job to design traffic control. But you do need to make sure that there is someone in charge of it. This needs to be written down in a **traffic control plan** for each type of routine job and for every major job.

Some things that need to be in the plan:

- can drivers see the signs?
  - are they orange and black?
  - are they high enough?
  - are they away from hills or bends in the road that hide them?
- are signs and cones far in front of the work, so that drivers have time to react?
- are signs in the right order (CONSTRUCTION 1/2 MILE AHEAD has to come before LEFT LANE CLOSED 1/4 MILE AHEAD)
- will the plan be checked every day to see if weather or traffic have changed?



The MUTCD can be very complicated

O. Training

This class will not teach you how to set up traffic control. It is to make you aware that you need more training. You need training before you work in traffic.

Training should include:

- learning about the traffic control plan
- understanding what each of the controls are for (cones, different signs)
- understanding why different controls are used in different situations
- understanding how many workers are needed to carry out the plan
- actual practice in setting up cones and signs
- flaggers signals
- practice in flagging with actual vehicles (cars and trucks)
- what to do if equipment is not available

P. Troopers and Their Cruisers

One of the best ways to protect workers is to really enforce traffic laws in work areas. Troopers can write tickets for speeders or impaired drivers. They can also slow everyone down. After 6 accidents in 7 months at one construction site, Alabama posted a trooper at the site. The officer issued 59 tickets in one month, and there were no accidents.

At least 7 states have posted Troopers at construction sites--Connecticut, Indiana, Kentucky, New York, Massachusetts, Michigan, Missouri, New Hampshire, and Wisconsin. Troopers need to be visible, and they need to be at the worksite. In some states, troopers are always sent to private jobs, but not to state jobs.

Speed limits should always be lowered in work areas. In a few states (Delaware, Pennsylvania, Maryland, and Wisconsin), speeding fines are doubled in work areas. Some areas are using sign boards that display the vehicle's speed as it passes.

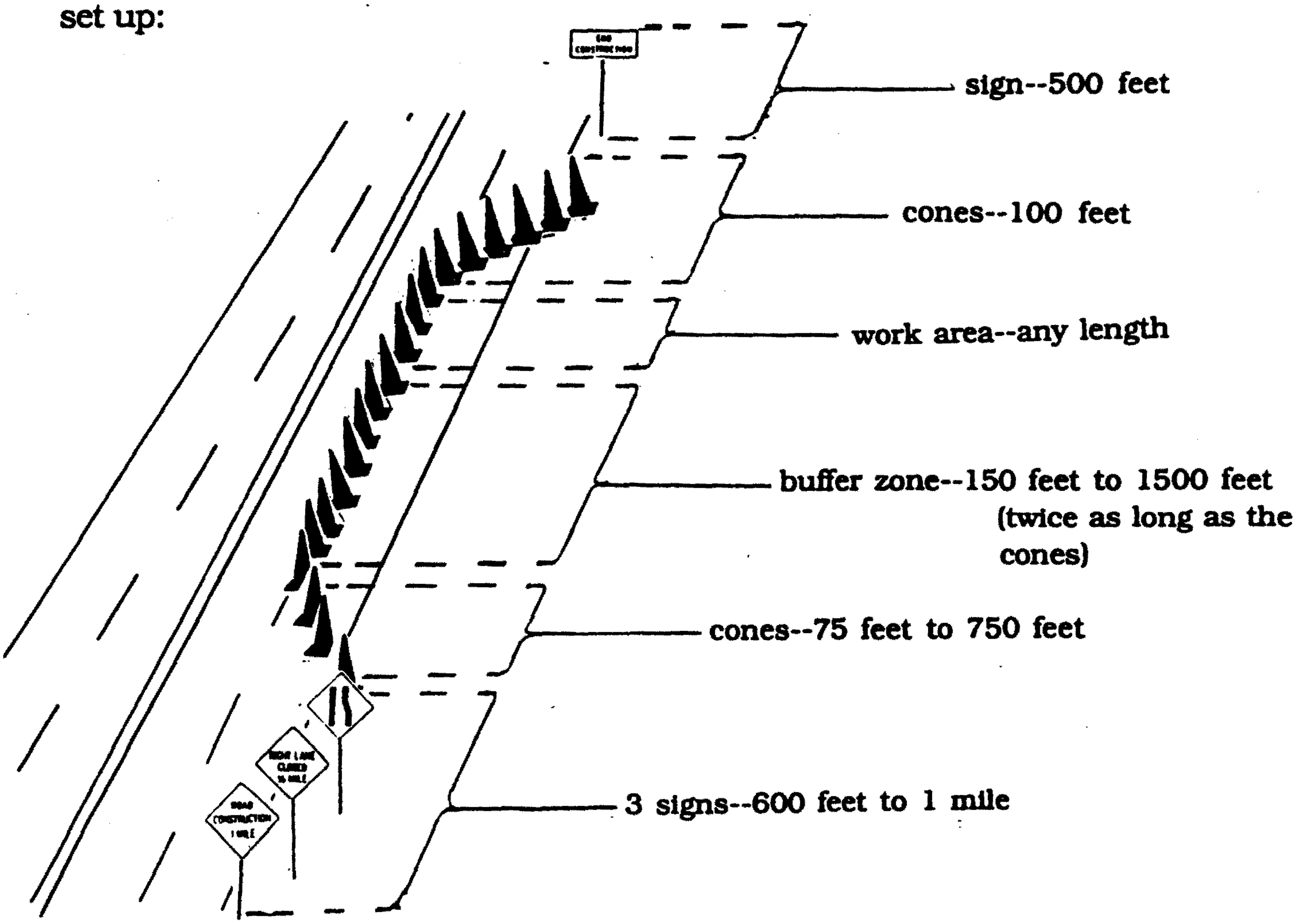
One of the problems with using police to control traffic is that it's dangerous for the troopers themselves. Traffic is one of the highest causes of death and injury for police. Troopers need training on traffic safety as well as highway workers.

Q. "What's Your Sign?"

Signs don't stop drivers, they just direct them. Signs alone are not a good way to protect workers. But they are used more often than any other control. Signs must be used right if they are going to protect workers. Signs are hard to use right because:

- There are complicated rules for setting them up
- They must be taken down as soon as they don't apply, or drivers won't take them seriously
- Spacing is based on the speed limit, not the speed people actually drive

The layout of signs on a job should be done by an experienced engineer. Here are some things you should look for when signs are set up:



R. One of These Signs Is Not Like the Others

In an ideal world, the signs at every site would be in the same order:

- the first sign gets the driver's attention--CONSTRUCTION 1/2 MILE AHEAD
- the second signs tells them they will need to do something--RIGHT LANE CLOSED
- the third sign tells them what to do--SHIFT LEFT

Unfortunately, signs are often very different from job to job. They may be:

- dirty
- faded or scratched
- use different words (WORK AHEAD, MEN WORKING AHEAD, CONSTRUCTION AHEAD)
- different sizes
- in a different order from job to job
- not available
- knocked over

In the end, the public gets used to confusing signs and just ignores them. The best kind of sign is the new type of digital sign with a changing message. These are called variable message signs. Drivers pay more attention to them because the message changes.

S. The Driving Public

Many drivers are not aware of the dangers they can create for road crew workers. States have tried to make drivers more aware with:

- driver education
- driving restrictions for drivers with limited vision or other disabilities
- tough laws for impaired drivers
- tough work rules for truck drivers
- public awareness campaigns, even for children

There are many reasons why drivers do not drive well. They may be:

- sleepy, tired, or overworked
- in a rush because of understaffing
- drunk or on other drugs
- angry
- have limited vision
- have other disabilities
- have an unruly pet in the car...

The single largest cause of accidents for truck drivers is fatigue (even more than drinking or other drugs). About 20% of accidents in work areas involve alcohol.

Some road workers are concerned about older drivers. It is important to remember that only <u>some</u> older people drive poorly. Enforcement of laws will keep drivers with limited vision or other problems off the roads without banning older drivers just because of their age.

48 out of 50 states have had ad campaigns with the slogan "Give 'em a Brake." Ads make the public more aware of the dangers to road workers and have slowed down traffic in some areas.

Summary: Traffic Control

1) About 750 workers die every year on the roads. The number is going up.

2) Lack of respect for our work is a serious threat to our lives.

3) Even the <u>fear</u> of getting hit causes stress, which can damage our health.

4) State DOT's get plenty of money for road work, but they don't spend it on worker safety.

5) There are laws to protect workers, but they are not enforced.

6) The best way to protect workers is to put a solid barrier between them and vehicles. This can be a concrete barrier (a jersey barrier) or a crash truck.

7) Flagging is one of the most dangerous jobs a road worker can do. Flaggers should not be used unless there is absolutely no other way to do the work.

8) Signs, vests, and hard hats are important, but they are not enough to protect us.

NOTES

Activity 11: Strengthening the Health & Safety Committee

Purpose:

To help understand how to set up effective joint labor-management health and safety committees.

Task 1:

In your groups, think about the health and safety committee at your workplace (if you have one) and answer the following questions. Please use the factsheets that follow this page and your own experience and knowledge about your workplace.

1) In general, what are the pitfalls that health and safety committees have to overcome?

2) What improvements could you recommend to your health and safety committee?

3) If you were on the health and safety committee, what would be the top 2 problems you would tackle first? Why did you choose those 2 problems?

Task 2:

Please read the scenario below. Your small group is the health and safety committee for SEIU local 94. Using the factsheets that follow this page and your own experience and knowledge about your workplace, make a list of recommendations for the leadership of Local 124.

> **SEIU Local 124, another SEIU local in the same state, recently organized a unit of city workers. Health and safety issues were among the concerns expressed by workers during the organizing drive. The newly organized unit includes road maintenance workers and sewage treatment plant workers in all job classifications, and general maintenance workers who maintain buildings and other city property.**
>
> **The leadership of Local 124 have asked your local leadership for advice and recommendations on how to set up a health and safety committee in this unit. The President of your local assigned your committee the job of helping Local 124 set up their new health and safety committee.**

Your group's recommendations for SEIU Local 124:

A. The Committee Structure

The potentially best structure for a health and safety committee is a joint labor-management (JLM) committee.

Effective JLM committees bring together the people who are exposed to the hazards on the job (labor) and the people who have the power to correct them (management). Active JLM committees aggressively identify problems and develop solutions that make the workplace safer. Effective JLM Committees that conduct a range of activities have the potential to save lives.

JLM committees can be very ineffective as well. Committees that have no real power to change things, that focus on "think safety" campaigns, or that conduct no regular activities are very frustrating and dangerous for healthcare workers.

How can you avoid having an ineffective JLM committee? Here are a few keys:

- Get the committee written into your contract, and make sure you use the language! Get language on the points discussed below.
- Only the union should name the worker representatives to the committee.
- Make sure there are equal numbers of union and management representatives. The chair of the committee should rotate regularly between the union and management representatives.

A. (continued)

- The union members of the joint committee need to meet among themselves on a regular basis to discuss problems and strategies, to educate themselves, and to prepare for the JLM committee meetings.

- Effective JLM committees meet on a regular basis. These can be weekly, monthly, or whatever, but they should be regular.

- Worktime should be provided for all committee activities. This includes time for committee meetings, regular workplace inspections, attending and conducting health and safety training programs, and other activities.

- The committee should meet regularly, work from an agenda developed by both sides, and have minutes reviewed and approved by both sides. Any decisions or actions the committee decides to take need to be clearly stated, assigned to a specific person, and be given a timeline.

- The management side of the committee should include people with influence or real decision making power. If the committee doesn't have this, you will constantly be playing the game of, "I'll have to get back to you on that."

- The union side of the committee needs the backing-- moral and financial--of the local union leadership.

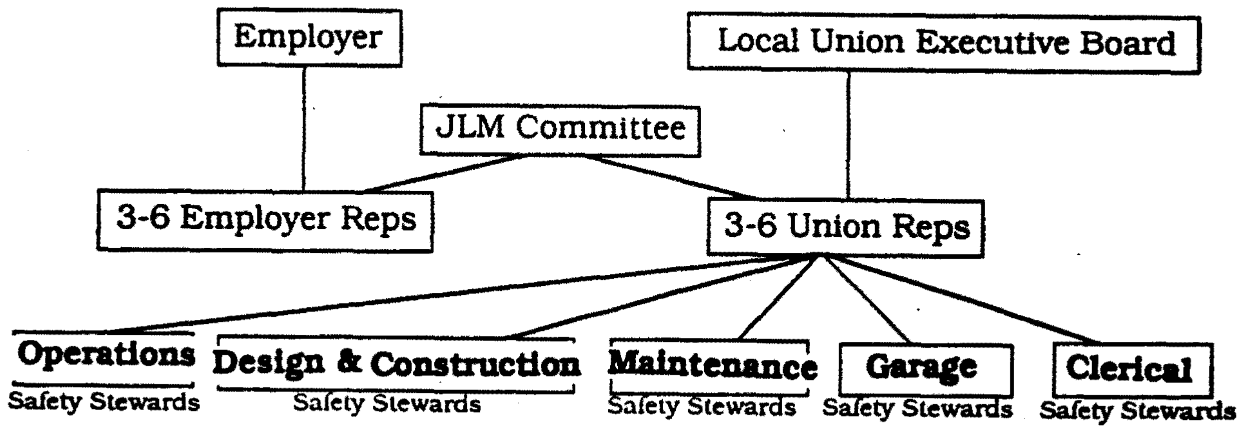
- The union members of the safety committee need to keep in communication with the group chairperson and/or the local union officers.

B. Eyes, Ears, and Voices

The joint labor-management committee should be relatively small, perhaps three to six members of labor and an equal number of management representatives. The size of the committee depends on the number of workers employed and how the workplace is organized. However, to make sure that the concerns of all workers reach the committee, the union will need to build its own health and safety committee structure. **The union committee should have representatives from all major departments, shifts, and work groups.**

A small union committee will not be able to effectively address the concerns of workers employed in different departments. This is not a new problem. The local union has stewards or delegates throughout the facility to help enforce the contract. This structure can be adopted for the health and safety committee. The local union can appoint "**safety stewards**" who would function as the eyes, ears, and voice of the union's safety committee. The stewards already in place can also be trained to perform this task.

For example, here is how the structure of a municipal Department of Transportation union health and safety committee might look:



C. No Free Lunch

The local union will need to invest in its safety committee if it is to work. Investment can be money and time, but most importantly the local union will need to back up the union safety committee. **Health and safety concerns will at times need the full backing and moral support of the local union.**

Investment in the committee is essential to the education of the committee. Simply put, information is power. An informed committee will be able to fulfill its role better in the JLM committee. Health and safety concepts, health and safety language in the contract, and OSHA standards are among the areas that the local union will need to educate its members of the committee.

Some ideas for investment:

- Use your contract to have the union safety committee chairperson be paid up to 40 hours per week by the company to conduct health and safety activities.
- Send committee members to training programs given by the SEIU Health and Safety Department or by area universities and technical colleges.
- Use the Health and Safety Libraries at SEIU Headquarters and Regional Offices. Create a library at your local (the SEIU Health and Safety Department has recommendations).
- Join your area "COSH" group. These are community-based "Coalitions for Safety and Health." See the list on page 344.
- Gain access to resource materials your employer has.
- Subscribe to safety magazines and/or newsletters (some of these are free or low cost).

D. Common Reasons Why JLM Committees Fail

JLM Health and Safety Committees are sometimes ineffective for a variety of reasons. Below are some of the most common reasons:

1) The List-making Committee

If a JLM Committee spends a lot of time in their meetings talking about repairs that may or may not have been completed, or about specific workers breaking safety rules, then it is probably not very effective. While it is important that repairs be completed and that workers follow established health and safety rules, these are activities that should be conducted routinely.

Try to solve problems at the lowest possible level through the safety stewards, just as you would grievances. If it cannot be solved there, it goes to the joint committee.

JLM Committee meetings should be times to discuss broader issues such as employer health and safety policies, accidents and near misses and how to prevent them, examining monitoring reports, discussing test results, and other activities that can't be done at any other time. These types of activities can have a broad impact reducing hazards in the workplace and should be the focus of JLM Committee work.

D. (continued)

2) The Employer-dominated JLM Committee

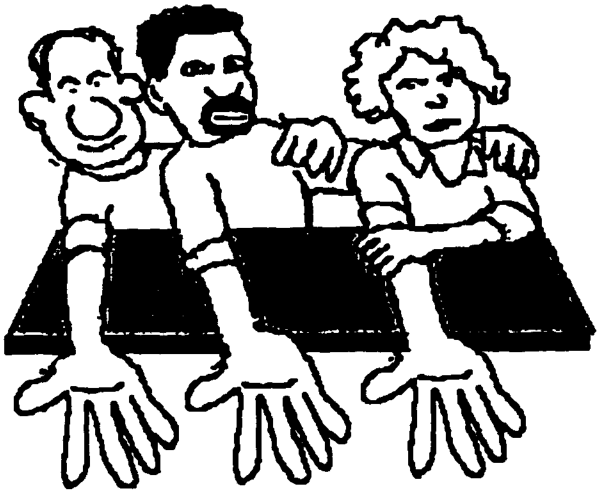
If the union participates in a joint labor-management committee, then it should be truly "joint" and cooperative, not dominated by one side. If the employer picks the worker representatives, always sets the meeting agenda, always chairs the meetings, and always makes the recommendations then the committee will not be effective. There must be involvement on the part of the workers beyond just listening and receiving the employer's opinion.

3) The Case of Two Employer Committees

Often there will be two employer committees at work; the one that sits at the table at the JLM Committee meetings and the one that doesn't attend the meeting but makes all the decisions for the employer side. The employer representatives on the JLM committee may be well intentioned or sympathetic to problems raised by the union, but they have no power to make decisions. To be effective, the employer representatives on the JLM Committee must include people who have the power to make decisions.

E. Road Map for Health and Safety Committees

An effective health and safety committee's primary purpose is to improve the work environment. To accomplish this, the committee will need to think of this activity as an on-going process. There are several elements to this process.



1) Reach out to your co-workers.

When tackling any workplace problem, it's important to find out what your co-workers think. The best way to find this out is to ask them! Take the time to talk with your co-workers one-on-one and listen to their concerns.

In addition to talking to your co-workers, one way to find out more information is to conduct a survey (see the sample survey used by SEIU Local 790 on pages 274 - 275). **Written surveys shouldn't replace talking to your co-workers face-to-face, but they can be done together.** Surveys are a good way to involve your co-workers in solving the problem. They are also a good way to document the problem.

The committee needs to represent the membership. This can only be done through actively seeking their input as to what issues the committee should be working on.

E. (continued)

Local 790 Blue Collar Safety Survey

Please return to your Local 790 Field Representative by April 30, 1992

Hazardous Chemicals

1. What are some of the chemicals you work with or around? (For example, cleansers, disinfectants, chlorine, degreasers, pesticides, paints.) List as many as you can think of.

2. Has your employer provided you with training on these products? ____ Yes ____ No
If Yes, check what was covered in the training.

    ______ You were informed of all the products you work with that contain hazardous chemicals.

    ______ You were informed of the hazards these chemicals may pose to your health.

    ______ You were trained on how to read the labels on the containers and what the labels mean.

    ______ You were told where the employer keeps detailed factsheets (sometimes called "material safety data sheets") on each product and how you can get this information.

    ______ You received training on how to read these facstsheets.

3. If you received some training, do you have any comments on the training?

Emergency Response

1. Have you ever been asked to clean up a spill or leak of chemicals that you knew or thought might be hazardous? (For example, cleaning up spills on the highway, stopping a leak or cleaning up a spill from a barrel of chemicals in your shop, responding to a chlorine leak.)

    ______ Yes ______ No

2. Have you received training in responding to chemical emergencies?

    ______ Yes ______ No

    If Yes, briefly describe the training:

E. (continued)

Confined Spaces

"Confined Spaces" refer to work areas:
* that have little natural ventilation
* that are difficult to get into and out of
* and where lethal levels of toxic gases or other serious health and safety hazards can exist.

A few examples of confined spaces include digesters, sludge pits, trenches, storage tanks, manholes, tunnels, pipes, underground vaults, and lift stations.

1. Does your job require you to go into places you consider confined spaces? ____ Yes ____ No

2. If you said yes, does your employer follow the policies and procedures listed below: (check all that apply)

    _____ Nobody may enter a confined space without written authorization.

    _____ Nobody enters a confined space until the air in the space is tested for oxygen content, explosive gases, and lethal gases.

    _____ Nobody may enter a confined space without a person standing directly outside the opening of the space keeping in constant contact with the person in the space.

    _____ All workers entering a confined space will be attached to a lifeline so that they can be pulled out of the space without another person having to enter the space.

3. Have you received any training regarding confined spaces? _____ Yes _____ No

    If yes, briefly describe the training:

4. If you saw a person in a confined space who was unconscious, what would you do?

    _____ Go into the space to try to rescue the person

    _____ Go for help

    _____ Wonder what to do

Thank you for completing this survey. We will use it to determine whether to request or provide additional training for our members at your work location.

NAME ______________________________

CLASSIFICATION ______________________

EMPLOYER ___________________________

WORK LOCATION ______________________

E. (continued)

2) Develop a list of health and safety problems.

After you have talked with your co-workers and maybe conducted a written survey, write down what you have found out. This will help you choose which issues to address and in what order. It also keeps your membership informed and lets them know that the committee is listening to what they have to say.

3) Select priority concerns.

The committee can't address all problems at once, so you have to choose carefully which ones to address and when. This may be one of the most difficult tasks facing a safety and health committee. Issues that the membership is concerned with may not be the same issues you would tackle first.

Some problems affect a lot of workers, but they may not be life-threatening. Other issues may only affect a few workers but may be very serious. The committee may need to make some visible changes in working conditions quickly in order to show that the JLM Committee can in fact make changes.

4) Build toward larger and more comprehensive changes.

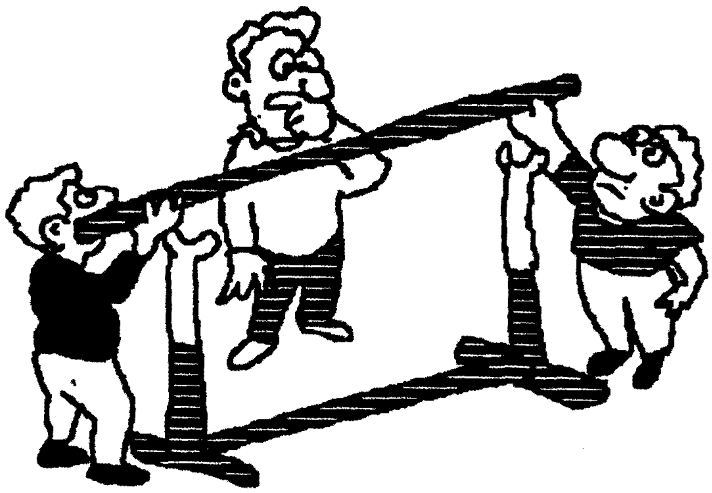
A health and safety committee should try to solve small or easy problems first before they try to make major changes. From the concerns of the members, address the ones that you feel will be solved easily. When starting out, build your committee on small incremental changes. From small beginnings, tougher issues can be solved. Taking an issue on early that is too big can squash the life out of a committee before it gets started.

E. (continued)

5) Understanding Levels of Activity

In order to solve problems on the job, you will need all the help you can get from your co-workers. But not everyone will make the same commitment. The individual worker who cannot commit him or herself in a big way may be willing to help out in some small task.

A group of workers that has no experience sticking together to affect improvements in their workplace health and safety may not be ready to tackle a major issue with dramatic action. But they may be willing to work together in a smaller way to solve a safety concern that bothers all of them.

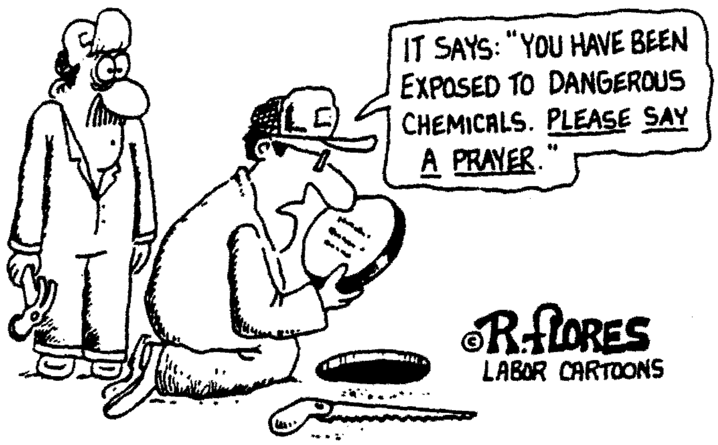


E. (continued)

The point is that there are many **levels of activity** and there are many different ways for people to participate in solving problems around the plant.

The job of a health and safety committee is to find the tasks and activities suited to the present situation and to increase the level of activity as the work group's experience, knowledge and commitment grows.

Start with issues and goals that the work group feels comfortable with.



F. Health and Safety Problem Solving

Step 1. Small group discussions

There is no substitute for getting people together either at lunch, at someone's home or at a special meeting to have a free and open discussion about workplace health and safety problems.

It is very important to get everyone's ideas out and to get everyone involved in giving the health and safety committee direction.

Step 2. Selecting a problem to face first.

You can't solve everything at once. The committee needs to pick one or two problems to concentrate on. Two key points are:

- pick a problem the membership is concerned about
- start small or with an issue you can solve

Be sure to deal with the membership's concerns. In order to make these decisions, you will need to know what issues are important to your co-workers and how much energy the committee and your co-workers can commit to solving the problem.

F. (continued)

Step 3. Developing a plan of action.

This can be simple or more complicated. Sometimes just bringing a health and safety matter to the employer's attention will do the trick. For some issues the committee will have to relay the members' concerns, document the problem, show how it can be solved, and bring in experts to back up the committee's recommendations to solve the problem.

Here it's important to keep the membership informed and to involve as many people as possible. Don't be afraid to share responsibility.

Step 4. Evaluating your activity on a regular basis.

A health and safety committee will only learn by doing and then discussing what worked, what didn't work and why.

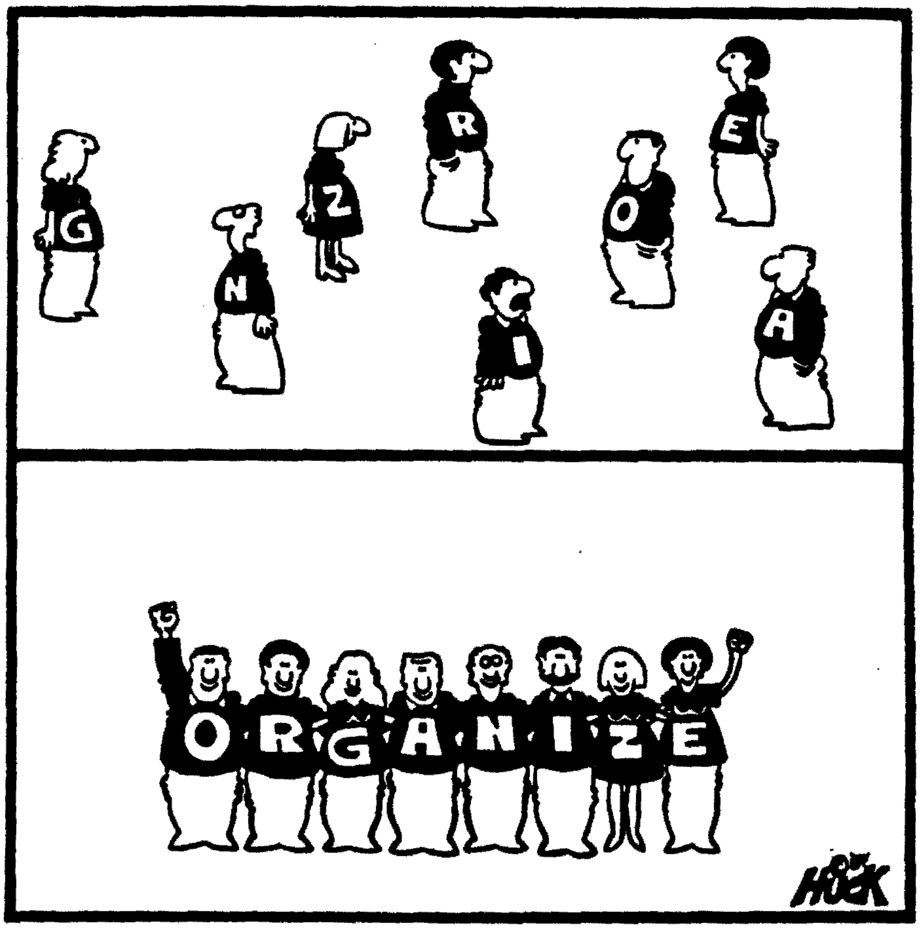
G. Tips on Small Group Meetings at Work

- Choose a comfortable, convenient social setting--lunch time, after work, etc.

- Let people know why you want to meet. Let them know you need their input. Remind them of the time and place.

- Have an agenda--a plan for your meeting. This can be a simple note to yourself jotted down on paper.

- Organize the meeting so that there is "give and take"--two-way communication. You may have information to share, but make sure part of the meeting is to get feedback from the members.



G. (continued)

- When starting the meeting, explain what the meeting is about, briefly and clearly. Of course, make sure you have this figured out before you call the meeting!

- Make sure everybody knows everybody. Don't assume that they do. Go around and have everyone introduce themselves, where they work, and something about the health or safety issue you want to discuss.

- Make sure the discussion moves around and includes everyone. Ask each person what they think about the issue.

- When the meeting is over, sum up and review the main points. Agree on what follow-up plans are needed and how they will be carried out. **If people have volunteered or been assigned tasks to complete, be sure that you review these tasks and set firm dates to have the tasks completed.**

H. Information Is Power

Health and safety committees need to be informed in order to function. Knowledge of the laws, health and safety principles, health effects, legal or accepted industry standards relating to exposure, or chemicals in the workplace will give credibility to the committee. Often this involves having access to resources to help find and interpret information. Some of these resources are described below:

1) **Your Union's Health and Safety Department** (the folks who wrote this manual) can help in many ways. These include providing technical assistance, sharing information about how other SEIU locals have dealt with a similar problem, providing assistance when bargaining for health and safety contract language, and providing training programs on health and safety issues. See the list of SEIU regional offices on page 287 for the office near you.

2) **COSH Groups** are community-based "coalitions on occupational safety and health." They are supportive of workers and unions and can provide help in many ways. See the list of COSH groups on page 288 for the office near you.

3) **Universities** sometimes have programs that provide worker-oriented health and safety services. See the list of University programs on page 289 for the office near you.

4) **NIOSH** is the National Institute for Occupational Safety and Health. They conduct research on workplace health and safety. They have a handy toll free number where you can ask for technical information on specific hazards. Call **1-800-35-NIOSH** (1-800-356-4674).

H. (continued)

5) **Other government agencies**, such as the health department, state OSHA, environmental protection, state and local fire departments, and other agencies may be able to provide assistance on specific issues. Look in the blue pages (government listings) under U.S. Government, State Government, and City Government for the offices near you.

6) **Other community organizations**, such as environmental groups, charitable groups, and research institutes can also be good sources of information. You can get the names of organizations from your local SEIU health and safety representative, COSH group, or university program.

7) **Your employer's written policies on health and safety can be very informative.** Most employers will have written plans for issues such as informing workers about chemicals they work with, emergency response, accident reporting, and many others.

I. Health and Safety Committee Activities

There is no set list of activities for a good JLM Health and Safety Committee. A really effective committee will be limited only by its imagination and energy, and will most likely come up with activities not listed in this workbook.

Here are some activities that have worked for SEIU locals participating in JLM Health and Safety Committees.

1) **Get information from your co-workers** with a survey. See page 273 for more information.

2) **Communicate and educate** your co-workers. Some ways to communicate about health and safety items include:

   - Reports at union meetings.
   - Leaflets or bulletins passed out to all workers.
   - Posters on the bulletin board.
   - Classes conducted by outside health and safety experts, open to all workers.
   - A health and safety newsletter, or article in the union's newsletter.
   - On-the-job meetings on health and safety issues

3) **Keep lists of hazardous substances.** See page 310 for more information.

4) **Product evaluation committees.** These committees review new devices and drugs. Frontline workers at many SEIU locals have been part of these committees. They have convinced employers to buy safer equipment.

I. (continued)

5) **Keep records.** The committee will need facts to make changes. It's crucial that the committee have data about workers' injuries and illnesses. Many times, a series of illnesses will be the only clue that there is a health hazard present.

The committee does not want to get bogged down in accident numbers and government reporting forms. But a smart committee will understand that it needs information in order to get a clear picture of the health and safety situation at the your workplace.

Special Report

RESULTS OF WALK-THROUGH INSPECTIONS/INTERVIEWS

SERVICE EMPLOYEES INTERNATIONAL UNION AFL-CIO CLC

6) **Maintain a library or resource center.** See page 270 for more information.

7) **Do inspections.** This might be done on a departmental basis, or on a plant-wide basis. For the inspections to be worthwhile, they should be complete, should involve both union and management committee members, and questions should be asked of the workers in the areas being inspected.

8) **Investigate accidents and near misses.** Obviously, changes should be made before an accident or near miss happens. But a thorough investigation after the fact can determine the cause of an accident or near miss and steps can be taken to prevent it from happening again.

J. For Help, Call . . .

SEIU Health & Safety Staff

Headquarters

Bill Borwegen/Jamie Cohen/Cathy Sarri/Judie Guerriero
Jennifer Cromley/Marilu Camarena
SEIU
1313 L St., NW
Washington, DC 20005
(202) 898-3200 (202) 898-3491 (fax)

NJ/NY

Laura Kenny/Susan McQuade/Jerry Raymond
SEIU New York Regional Office
330 West 42nd Street, Suite 1905
New York, NY 10036
212/947-1944 212/695-0538 (fax)

CT/MA/ME/NH

Steve Schrag
SEIU New England H&S Office
14 Quentin Street
Waterbury, CT 06706
203/574-7966 (phone & fax)

N. CA

Maggie Robbins
SEIU Western Region Office--San Francisco
240 Golden Gate Ave.
San Fancisco, CA 94102
415/474-2603 415/474-1025 (fax)

J. (continued)

S. CA/NV

SEIU Western Region Office--Los Angeles
3055 Wilshire Blvd., Ste. 1050
Los Angeles, CA 90010
213/368-7400 213/381-7348 (fax)

CO/ID/MT/OR/WA/WY

John Mehring
SEIU Local 6
150 Denny Way, PO Box 19360
Seattle, WA 98109
206/448-7348 206/441-5120 (fax)

OH/IA/IL/IN/KY/MN/WI/WV

Joe Zanoni
SEIU Central Region Office
228 S. Wabash, Suite 300
Chicago, IL 60604
312/427-7637 312/427-7720 (fax)

COSH Groups

ALASKA

Alaska Health Project
1818 W. Northern Light Blvd
Anchorage, AK 99517
907-276-2864/Fax: 907-279-3089

CALIFORNIA

San Francisco COSH
San Francisco Labor Council
Fran Schrieberg-c/o Worksafe
510 Harrison Street
San Franciso, CA 94105
415-543-2699/Fax: 415-433-5077

LACOSH (Los Angeles COSH)
5855 Venice Blvd.
Los Angeles, CA 90019
213-931-9000/Fax: 213-931-2255

SA-COSH (Sacramento COSH)
c/o Fire Fighters, Local 522
3101 Stockton Blvd
Sacramento, CA 95820
916-442-4390/Fax: 916-446-3057

SCCOSH (Santa Clara COSH)
760 N. 1st Street
San Jose, CA 95112408-998-4050/Fax: 408-998-4051

J. (continued)

CONNECTICUT

ConnectiCOSH (Connecticut)
32 Grand Street
Hartford, CT 06106
203-549-1877/Fax: 203-728-0287

DISTRICT OF COLUMBIA

Alice Hamilton Occupational
Health Center
410 Seventh Street, S.E.
Washington, DC 20003
202-543-0005 (DC)/
301-731-8530 (MD)
Fax: 202-546-2331 (DC)/
301-731-4142 (MD)

ILLINOIS

CACOSH (Chicago Area)
37 South Ashland
Chicago, IL 60607
312-666-1611/Fax: 243-0492

MAINE

Maine Labor Group on Health
Box V
Augusta, ME 04330
207-622-7823/Fax: 207-622-3483

MASSACHUSETTS

MassCOSH (Massachusetts)
555 Amory Street
Boston, MA 02130
617-524-6686/Fax: 617-524-3508

Western MassCOSH
458 Bridge Street
Springfield, MA 01103
413-731-0760/Fax: 413-732-1881

MICHIGAN

SEMCOSH (Southeast Michigan)
2727 Second Street
Detroit, MI 48206
313-961-3345/Fax: 313-961-3588

MINNESOTA

MN-COSH
c/o Lyle Krych M330
FMC Corp. Naval System Division
4800 East River Road
Minneapolis, MN 55421
612-572-6997/Fax: 612-572-9826

NEW HAMPSHIRE

NHCOSH
c/o NH AFL-CIO
110 Sheep Davis Road
Pembroke, NH 03275
603-226-0516/Fax: 603-225-7294

NEW YORK

ALCOSH (Allegheny COSH)
100 East Second Street
Jamestown, NY 14701
716-488-0720

CNYCOSH (Central New York)
615 W. Genessee Street
Syracuse, NY 13204
315-471-6187/Fax: 315-422-6514

J. (continued)

ENYCOSH (Eastern New York)
c/o Larry Rafferty
121 Erie Blvd
Schenectady, NY 12305518-372-4308/Fax: 518-393-3040

NYCOSH (New York)
275 Seventh Avenue, 8th Floor
New York, NY 10001
212-627-3900/Fax: 212-627-9812
914-939-5612 (Lower Hudson)
516-273-1234 (Long Island)

ROCOSH (Rochester COSH)
797 Elmwood Avenue, #4
Rochester, NY 14620
716-244-0420

WYNCOSH (Western NY)
2495 Maine Street, Suite 438
Buffalo, NY 14214
716-833-5416/Fax: 716-833-7507

NORTH CAROLINA

NCOSH (North carolina COSH)
P.O. Box 2514
Durham, NC 27715
919-286-9249/Fax: 919-286-4857

OREGON

c/o Dick Edgington
ICWU-Portland
7440 SW 87 Street
Portland, OR 07223
503-244-8429

PENNSYLVANIA

PhilaPOSH (Philadelphia POSH)
3001 Walnut Street, 5th Floor
Philadelphia, PA 19104
215-386-7000/Fax: 215-386-3529

RHODE ISLAND

RICOSH (Rhode Island COSH)
741 Westminster StreetProvidence, RI 02903
401-751-2015/Fax: 401-751-7520

TENNESSEE

TNCOSH (Tennessee COSH)
309 Whitecrest Drive
Maryville, TN 37801
615-983-7864

TEXAS

TexCOSH
c/o Karyl Dunson
5735 Regina
Beaumont, TX 77706
409-898-1427

WASHINGTON

WashCOSH
6770 E. Marginal Way S.
Seattle, WA 98108
206-443-4721/Fax: 206-762-6433

J. (continued)

WISCONSIN

WisCOSH (Wisconsin COSH)
734 North 26th Street
Milwaukee, WI 53233
414-933-2338

CANADA

ONTARIO

WOSH (WindsorOSH)
547 Victoria Ave.
Windsor, Ontario N9A 4N1
519-254-5157/Fax: 519-254-4192

University Programs

CALIFORNIA
Labor Occupational Health Program
2515 Channing Way
Berkeley, CA 94720
510-642-5507
Fax: 510-643-5698

DISTRICT OF COLUMBIA
Workers Institute for Occupational Safety and Health
1125 15th Street, N.W., Room 403
Washington, DCV 20036
202-887-1980
Fax: 202-887-0191

LOUISIANA
Labor Studies Program/LA Watch
Institute of Human Relations
Loyola University, Box 12
New Orleans, LA 70118
504-861-5830
Fax: 504-861-5833

MICHIGAN
Michigan Right-to-Act Campaign
Ecology Center of Ann Arbor
417 Detroit Street
Ann Arbor, MI 48104
313-663-240
Fax:313-663 2414

NEW JERSEY
New Jersey Work
Environment Council
452 East Third Street
Moorestown, NJ 08057
609-866-9405
Fax:609-866-9708

NEW YORK
Tompkins Courtland Labor
Coalition
109 West State Street
Ithaca, NY 14850
607-277-5670

OHIO
Greater Cincinnati Occupational
Health Center
10475 Reading Road
Cincinnati, OH 45241
513-769-0561
513-769-0766

WEST VIRGINIA
Institute of Labor Studies
710 Knapp Hall
West Virginia Universiaty
Morgantown, WV 26506
304-293-3323
Fax: 304-293-7163

Summary: Strengthening the Health & Safety Committee

1) A health and safety committee needs to be rooted on the shop floor. The union committee should represent all departments, shifts, and job classifications.

2) There needs to be a formal, systematic way to communicate with the employer on health and safety issues. This is the joint labor-management (JLM) committee.

3) Local unions need to invest in the health and safety committees-- for example, through seminars, classes and achieving employer-paid lost time for educational purposes.

4) Information is power. You get this information from the membership, SEIU, and other sources.

5) If there are minutes from JLM Committee meetings, there needs to be a mechanism to have input into how the minutes are developed, what is in them, and their distribution.

6) Try to solve problems at the lowest possible level through the safety stewards, just as you would grievances. If it cannot be solved there, it goes to the joint committee.

7) Reach out to the membership and develop a list of health and safety concerns. Select priorities that reflect the membership's concerns, and deal with priority items first.

8) Make smaller, easier changes first and build toward larger and more comprehensive changes.

Activity 12: Regulations

Purpose:

To help understand the regulations that a committee can use to help solve health and safety problems.

Task 1:

Your group is the Local 94 union health and safety committee. Your task is to write a one-page poster for your co-workers explaining how to refuse unsafe work without being punished. Please use the factsheets on pages 294 - 299 and your own experience to draft a poster on a large piece of paper.

A. For The Union Makes Us Strong

The best protection for workers in refusing unsafe work is good language in your union contract. It can keep you from being pressured to do unsafe work in the first place. And if you are disciplined, grievances can often be settled much faster than OSHA complaints.

Here are some examples of contract language that some SEIU locals have bargained:

SEIU Local 511 (Connecticut Employees Union Independent) with the State of Connecticut, Service and Maintenance Unit:

No employee shall work on, with, or about an unsafe piece of equipment or under an unsafe or unhealthy condition. Such equipment shall be tagged until appropriate repairs are made.

No employee shall perform a task for which he/she has not received appropriate training or without qualified supervision when the absence of such training or supervision may make the task unsafe.

No employee will be disciplined for refusal to work or to operate equipment when he/she has reasonable grounds to believe that such would result in imminent danger to life or of serious physical harm.

SEIU Locals 250, 535, and 790 with the City and County of San Francisco:

No employee shall suffer adverse action by reason of his/her refusal to perform hazardous or unsafe tasks or his/her refusal to enter unsafe or hazardous areas. When in the best judgement of the employee, such conditions exist, the employee shall notify his/her departmental safety committee and/or safety officer. If the management and union representative concur that a task or area is hazardous, the employee shall be reassigned until the hazard is eliminated. If there is no concurrence, the matter may be submitted

A. (continued)

to the grievance procedure for final resolution of the matter. The reassignment shall continue until the dispute is resolved. Grievances arising under this section shall be initiated at the Appointing Officer level.

SEIU District 925 and the University of Washington

No employee shall be disciplined for refusal to work or to operate any equipment when he/she has reasonable ground to believe that such action would result in immediate danger to life or safety.

B. OSHA "Rights"

Right to Refuse

All workers have the right to refuse unsafe work under OSHA law. But that right is a conditional one. Before refusing to do a job, a worker must be sure of all 3 of the following:

- The worker must fear a serious physical injury (not a long-term illness, like getting cancer from asbestos) and
- The worker must have a reasonable belief that there is a danger (even if it turns out later not to be so dangerous) and
- The danger must be so great the worker could not wait for the employer to fix it or wait for an OSHA inspector

It is important for you to be clear that you are not refusing to work, just refusing to do this one task because it is unsafe. You should volunteer to do any other "safe" job until the dangerous job is made safe. Stay in the work area unless ordered to leave. Also, you should ask for an OSHA inspection when you refuse work.

Non-discrimination

An employer can be fined if they punish a worker for using any OSHA right. Punishment includes:

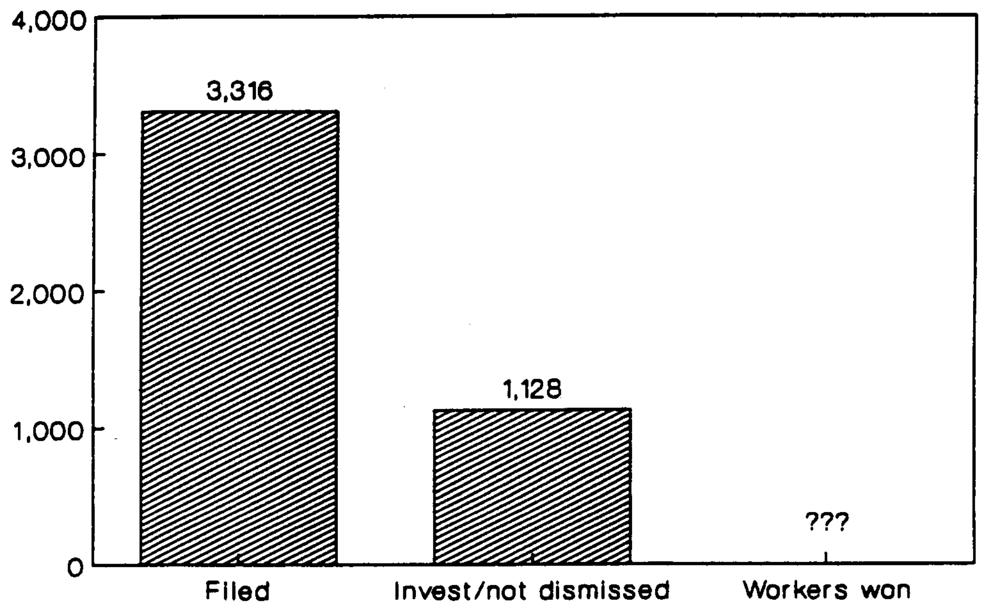
- firing a worker
- disciplining a worker
- demoting a worker
- bad job assignments

for using their health and safety rights. You must file a complaint within 30 days of being punished. About half of the cases are thrown out because they are filed late. If OSHA finds you were punished, you have the right to get your job back, and any pay or benefits you lost.

C. Is It For Real?

In 1993, OSHA handled 3,316 complaints from workers about discrimination. OSHA decided that about 1/3 of these cases did not have enough evidence and dismissed them. Another 1/3 were never investigated. Only 542 cases were settled by OSHA. Of these, we don't know how many cases were won by workers.

OSHA Discrimination Complaints
1993



Since employers often fight OSHA and NLRB, discrimination cases can take <u>years</u>. For example, a worker named James Malek filed a discrimination complaint against his employer in 1985. He was fired when he refused to work on a binding machine that had a bad brake, which could have crushed his hands. Six years later, in 1991, a court ordered the employer to pay him less than $4,000.

(Source: Conversation with Otho Eugene Barron, U.S. Occupational Health and Safety Administration, August 10, 1994.)

D. Tweeeeet!

Several states have laws to protect public workers who compain about conditions on the job. For example, Maine has a whistleblower protection law that protects workers against discrimination for filing complaints about health and safety.

To find out more about laws in your state, contact:

- The SEIU health and safety representative in your area
- Your local COSH group
- The university labor studies program in your area.

See page 287 for addresses.

E. For Private Sector Workers Only

If you work for a private company, you are also protected by the National Labor Relations Board (NLRB). If you work for any part of a state, county, or city government you are not covered by NLRB.

The rules of the NLRB protect the right to take "concerted action," including refusing to work to protest unsafe conditions. "Concerted action" means two or more workers acting to protect other workers. One worker acting to protect others is also protected. Workers are protected even if their co-workers disagree with the action.

Like the OSHA standard, there are some limits:

- The work must be "abnormally dangerous"
- The worker must have evidence which would make other "reasonable" people think it was dangerous (even if it turns out later not to be so dangerous)

You have to file a complaint within 6 months of being punished.

Your state may have a Public Employee Bargaining law that gives you similar rights if you work for any part of government.

F. The Occupational Safety and Health Administration

Federal and state OSHA plans

OSHA is a U.S. government agency. States can set up their own agencies if federal OSHA approves them. State OSHAs must give workers as much protection as federal OSHA. State OSHAs must also cover state, county, and city government workers, who are not covered by federal OSHA. For example, Maine is a federal OSHA state. State workers in Maine have no OSHA protections at all. California has its own OSHA agency. State workers in California have the same OSHA protections as workers in private companies in California.

Federal OSHA monitors all state OSHAs. If a state OSHA does not protect workers, a local union can file a complaint with federal OSHA. Federal OSHA has the right to shut down a state OSHA that is not protecting workers. This happened recently in North Carolina. On September 3, 1991, twenty-five workers died in a fire in a chicken processing factory. North Carolina state OSHA had too few inspectors, so they never inspected the factory. Federal OSHA took over the state OSHA until they hired enough inspectors.

OSHA for Government workers

Federal workers.

If you are a federal worker, you are covered by most parts of the OSHA law. Each agency has to set up its own OSHA. Federal OSHA helps agency OSHAs with their programs. Like state OSHAs, federal OSHA has the right to shut down an agency OSHA that is not protecting workers.

These rules are part of Executive Order 12196 (February 26, 1980) and in Section 19 of the Occupational Safety and Health Act.

F. (continued)

(Copies are available in many libraries, from the Government Printing Office, Washington, D.C. 20402, or from the SEIU Health and Safety Department.)

State, county, and city workers.

If you work for a state, county, or city agency, you may not have any OSHA protection at all. Only 22 states have state OSHAs, which must protect public workers. Two states, Connecticut and New York, have OSHA-approved state plans for state and local workers only. (Private sector workers in these states are covered by the federal OSHAct.)

Six states (IL, ME, NH, NJ, OH, WI) have chosen to set up their own programs for government workers. These plans are <u>not</u> approved by OSHA. They do not have to protect workers as well as federal OSHA.

To find out what kind of OSHA coverage you have, see the map on page 363.

Worker rights and employer responsibilities under OSHA.

All workers and employers have certain rights and responsibilities, including the following:

- Employers must keep the workplace free from health and safety hazards. (This is called the "general duty clause" because employers have the "general duty" to provide a safe workplace. It is like the "general duty" section in many union contracts.)

- Employers must follow OSHA rules (standards).

F. (continued)

- workers have the right to get an OSHA inspection. They must fill out a form and send it to the nearest OSHA office. If the inspector finds the employer has broken an OSHA standard, the company can be fined. This is called a "citation."

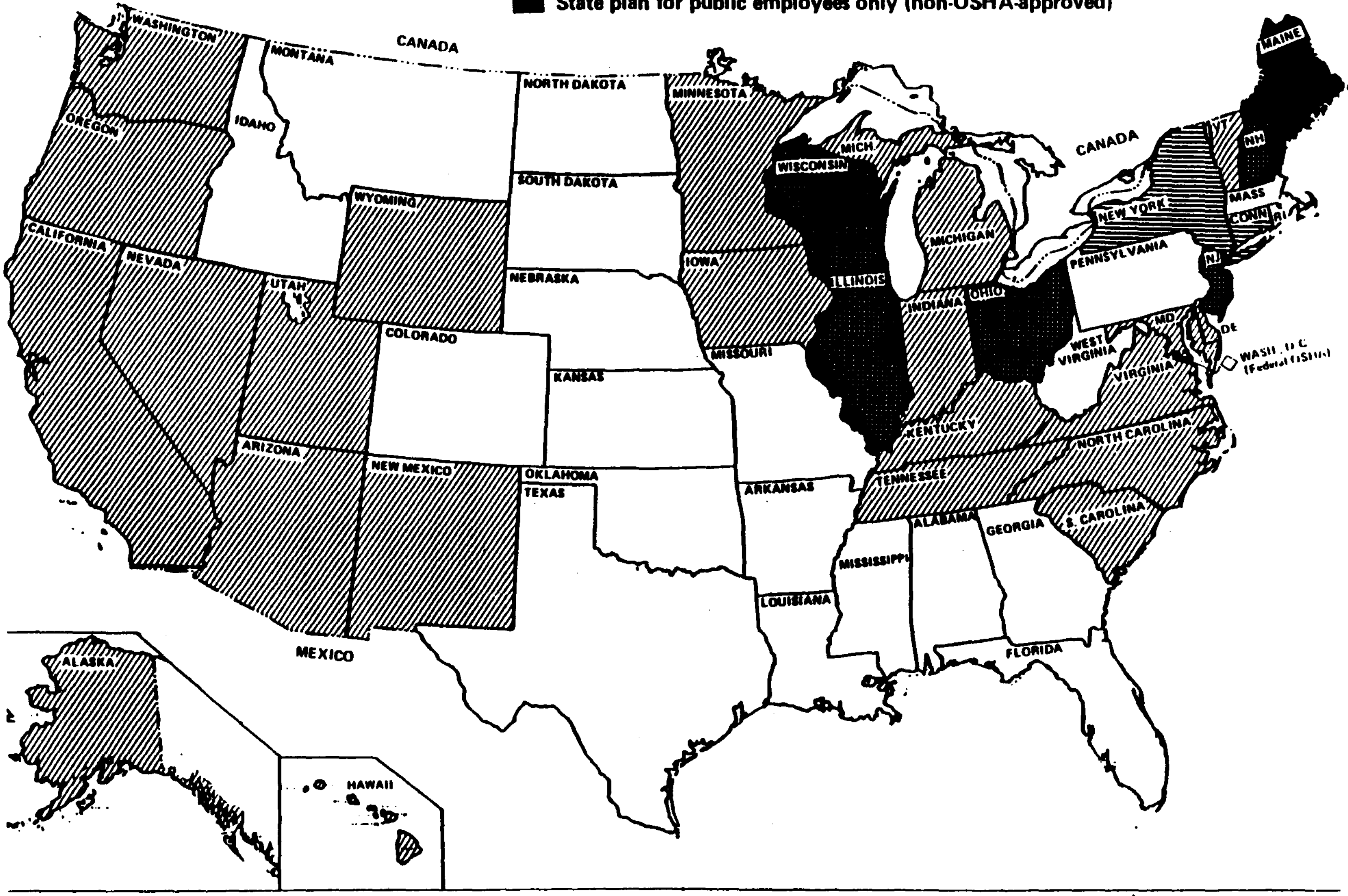
- workers and their unions have the right to be part of the whole inspection. The inspection includes a first meeting (opening conference), the "walkaround" inspection, and a final meeting (closing conference). The employer does not have the right to choose which person is part of the inspection.

- workers cannot be fired, demoted, lose seniority, or in any way be discriminated against for safety and health activities.

- Most employers with more than 10 employees must keep records of who gets hurt or sick from their job. workers have the right to get copies of the records. (Some service-sector companies don't have to keep these records.)

- Employers must provide training on many hazards.

Key:
- Federal OSHA (private employees only)
- State OSHA (public and private employees)
- State plan for public employees only (OSHA-approved)
- State plan for public employees only (non-OSHA-approved)



G. The OSHA/EPA Emergency Response Regulation

Thousands of SEIU members respond to emergencies involving hazardous materials every year. These materials can be dangerous to both workers and communities. OSHA and EPA have developed a new regulation for hazardous materials emergency response. It requires employers to:

- develop plans for responding to emergencies
- provide workers with training on their role in emergency response
- provide workers with training on how to protect themselves while doing emergency response

For example, the regulations require the following workers to be trained:

- A road crew worker who sees a truck carrying gasoline turn over on the highway.
- A sewage treatment plant worker who is forced out of the room by a chlorine leak.
- A garage worker who cleans up a solvent that spilled from an overturned drum.

(Source: Hazardous Waste Operations and Emergency Response Standard, 29 CFR 1910.120/GISO 5192.)

G. (continued)

Training is a vital part of an emergency plan. The employer must decide in advance at what level his or her workers will be involved, and then train and protect them at that level. **If workers have to clean up a spill, they need at least 48 hours of training.** (See Table 1 for more information.)

EPA covers government workers who are not covered by OSHA. So almost all public sector workers exposed to this hazard are covered by the hazardous waste regulations. However, EPA's ability to enforce this regulation less than OSHA's.

What is a hazardous material?

The regulation defines hazardous materials as:

- chemicals that can burn or explode
- chemicals that cause cancer
- biological hazards
- radioactive materials
- poisons

What is an emergency?

Under the law, an emergency is a spill or leak that workers in the area can't handle on their own. This could include spilling a very irritating chemical or spilling a large amount of a chemical ("large" is defined by EPA, not by the employer). For example:

- A chlorine leak in a waste water lab that forces workers out of the room

- Any spill that must be reported to the National Response Center (for example, 1 pound of Chlordane (a pesticide) or 10 pounds of ethylene oxide (a sterilant))

G. (continued)

What is emergency response?

Emergency response is a system for responding to spills. It ensures that the only people who come in contact with hazardous materials are people who 1) have extensive training and 2) are wearing protective equipment.

When workers in the area can't handle a spill, OSHA and EPA have very strict rules about who may respond, and what they may do. Most people (bystanders, police, and even fire crews) **do not have the knowledge or equipment to protect themselves from a spill.** HazMat teams (often trained firefighters) do have the training and equipment to protect themselves. **No one** may go near the spilled material unless they have firefighter's respirators (with air tanks) and chemical protective suits. Everyone else at the scene must stay away.

What emergency response should look like

Imagine that a tank of pesticides spills on a highway, and your members see the accident as they are driving around for work. Their job is to recognize that there is a hazard, call trained people for help, and keep everyone out of the area. From a safe position, they gather information--What is the material? Is anything on fire? Is anyone hurt? They may put up traffic cones. They do not touch or go near the material.

The fire department may then send fire crews. Their job is to keep the pesticides that have already spilled from spreading. Even they do not have enough protection to touch the material. They may block the entrances to sewers. They may dig ditches or stop the leak with absorbents. They must wear firefighter's respirators when they do this.

G. (continued)

Finally, the HazMat team arrives on the scene. **They are the only workers who may touch the material.** They are the only ones who may go in and stop the leak. They wear firefighter's respirators and chemical protective suits. They use sampling equipment to figure out whether the air is safe to breathe.

As you can see, emergency response isn't just a matter of mopping up a spill or calling the fire department. Spilled materials can catch on fire, explode, or cause cancer. Only trained HazMat teams are allowed to touch the material. Awareness training ensures that unprotected workers know what to do, and aren't exposed to hazardous materials.

What do employers have to do?

Employers have to prepare for spills before they happen. They must develop a written plan describing who will respond to emergencies and how. An emergency plan must include the following items:

- What chemicals are used, and how they could spill
- How spills can be prevented
- If chemicals do spill, who is qualified to respond
- What kind of training is required for different levels of response
- How the spill should be cleaned up
- What protective equipment cleanup workers will need
- Whether anyone must be evacuated

Training is one of the most important parts of the emergency plan. Before there is an emergency, the employer must decide how much your members will be involved. **If workers have to clean up a spill, they need at least 48 hours of training.**

G. (continued)

What Kind of Training Must Workers Have?

Employers must train workers in how to respond to emergencies. Even workers who do not handle hazardous materials must be trained in how to recognize spills and who to call in case of a spill. Employers may also choose to train their own workers to stop or clean up the spill. This training takes from 24 to 48 or more hours, depending on what workers are required to do.

TABLE 1

Incident	Training	Protective Equipment
Clean up small spill on countertop	Right-to-know	Gloves Respirator
Witness large spill on highway	Right-to-know + 8 hours Hazardous Materials (Haz Mat) training	**None--worker is not qualified to handle materials in this situation**
Stop gasoline already spilled on the ground from spreading	Right-to-know + 24 hours Haz Mat	Firefighter's respirator
Plug hole in leaking waste oil tank	Right-to-know + 48 hours Haz Mat	Fully-encapsulating chemical protective suit Firefighter's respirator Air sampling equipment

H. Cleanup After Emergency Response

If you are called in to clean up after an emergency, the law says you still must have some training. How much training depends on your role in the cleanup.

If you are . . .	You must have . . .
Cleaning up after being part of the emergency response	At least 48 hours of training under the emergency response standard
Using a shovel or any equipment that an emergency responder could operate and you are at your own worksite and 1) Air samples have been taken and levels are below the legal limit and 2) The chemical will not soak through your skin and make you sick and 3) You are supervised by someone with 40 hours of training in hazardous waste cleanup	3 types of training (taking at least 4 hours): • training in your employer's emergency action plan • training in chemical hazards (Hazard Communication) • training in any other hazards at the site (for example, heat or cold, what to do if you are explosed to chemicals, or standard operating procedures).
Operating a crane, backhoe or other specialized equipment for temporary support work	A short briefing on hazards, how to use protective equipment, and duties.

(Source: Hazardous Waste Operations and Emergency Response Standard, 29 CFR 1910.120/GISO 5192)

I. OSHA's Chemical Hazard Communication Standard (Right-to-Know Law)

In 1986, OSHA gave workers the right to information about the chemicals they use on the job. This standard is called the Hazard Communication Standard, more commonly known as the Right-to-Know law. Employers have to 1) make a list of all products in the workplace that contain hazardous chemicals, and 2) train workers in how to protect themselves from these hazardous chemicals. Employers must do the following:

Written Hazard Communication Program

Employers must write a policy detailing how they will gather information and get it to workers. workers and to the union have the right to see the policy.

Container Labeling

All products that contain hazardous chemicals must have a label on the container. This label must list all the hazardous chemicals in the product. The label must have the name under which its MSDS if filed. The label must also describe all the health and safety hazards posed by the product.

Material Safety Data Sheets (MSDS)

MSDS's are factsheets that give specific hazard and other information on a product. Each product must have an MSDS on file in the work area. Under the law, the MSDS's must be "readily accessible" to workers during the work shift. Use the sample letter on page 312 to get copies of MSDSs from your employer.

(Source: OSHA Hazard Communication Standard, 29 CFR 1910.1200/GISO 5194.)

I. (continued)

Worker Education and Training

This is probably the most important part of the law. Employers must tell workers abiout the various parts of the Right-To-Know law. Employers must inform their workers about all the hazardous chemicals they work with. They must also train them in using the chemicals safely and how to obtain and use MSDS's.

Many government workers are covered by OSHA or by a state Right-To-Know law. Public Employees in twelve states (AL, AR, CO, ID, KS, LA, NE, OH, OK, MI, MS, SD) are not covered by any Right-To-Know law.

I. (continued)

Sample Request Letter to Employer for MSDSs
[Print on union letterhead]

[Date]

[Employer]

[Address]

Dear [**Name of plant manager**]:

In order to protect the health and safety of our members employed by [**Employer**], we hereby request copies of Material Safety Data Sheets (MSDSs) for [**Choose one: all products used in the facility; all products used in one shop or area; specific products**]. We are requesting these records under the rights provided to us by the OSHAct (29 CFR 1910.20) and the [**Choose one: federal Hazard Communication Standard or State Right-To-Know law**].

[If private sector employer, add] In addition to the OSHAct, we are requesting this information under the National Labor Relaions Act so that we can ascertain working conditions in order to represent our members.

It is our understanding that under 1910.1200, you have one workshift to provide the MSDS's.

Sincerely,

J. OSHA's Respirator Standard

When OSHA inspects a job for health problems, more than one-third of the problems are in the company's **respirator program.** The law says your employer has to have a very strong respirator program. You can think of this as the "workers respirator bill of rights".

The Respirator Bill of Rights

What Your Employer Has to Do

Before your employer hands you a respirator, he or she has to do a lot of things. The employer has to find out if you can wear a respirator. Who will pick the respirators? Who will maintain them? These things have to be written down in a respirator program.

1. **Your employer must assign one person to be in charge of the respirator program.** Find out who this person is. He or she can help you if you have a problem with your respirator.

2. **Your employer must have written procedures for choosing and using respirators.** Get a copy of this program from the person in charge of the program.

3. **Your employer must check the whole respirator program regularly.** Is it as good in reality as it is on paper?

4. **Your employer must offer medical exams to everyone who wears a respirator**. No one is allowed to wear a respirator without permission from a doctor.

(Source: OSHA Respiratory Protection Standard, 29 CFR 1910.134/GISO 5141 and 5144.)

J. (continued)

5. **Your employer must have you trained about respirators.** Before you put on a respirator, you have to be trained. You need training on each respirator you work with. You have to learn about all the parts of your respirator. You have to learn how your respirator works. You need to know what a respirator can do for you. You need to know what a respirator can't do for you. You have to be trained in how to clean, inspect, and store your respirator (see below).

6. **Your employer must use approved respirators.** Respirators have to be approved by two agencies: the **Mine Safety and Health Administration (MSHA) and the National Institute for Occupational Safety and Health (NIOSH).**

7. **Your employer must choose a respirator based on the hazard.** A gas filter won't protect you from a dust. A dust filter won't protect you from a gas. A filter respirator won't protect if there isn't enough oxygen in the air.

8. **Your employer must be sure your respirator fits you.** When you first get a respirator, and every six months after that, the fit must be tested. Remember that a respirator is only as good as its fit. The fit tests are called a **qualitative fit test** or a **quantitative fit test**. The tests take from one-half hour to an hour.

   In a **qualitative fit test**, you stand in a bag or booth and the tester blows irritating smoke around the edges of the respirator. (Sometimes banana oil or saccharine is used.) If the material leaks into the mask, you will smell it or taste it. The mask does not fit well enough to keep poisons out of your lungs.

J. (continued)

In a **quantitative fit test**, you go into a booth. The tester puts a computer probe inside your respirator. The tester sprays a mist of salt or mineral oil into the booth. If the mist leaks inside your respirator, it does not fit well enough to protect your lungs. The computer measures how much mist leaks in.

You must have a fit test on every respirator that is given to you for protection. You must have another fit test every six months if you have a negative pressure respirator. You must also have a fit test if the shape of your face changes. This could happen if you:

- gain or lose more than 10 pounds
- lose teeth or get new dentures
- have surgery on your face
- break your nose
- get pregnant

9. **Your employer must check respirators and fix them.** If there is anything wrong with your respirator, your employer has to fix it before you can wear it. Your employer has to check the respirators to make sure they are in perfect shape. Your employer has to have trained people fix your respirator.

10. **Your employer must give you a safe place to store your respirator.** Your employer has to give you a clean, dry place to keep your respirator.

K. Respirators: Points to Consider

1) **Respirators are a dangerous control method.** Using respirators means that management is admitting that health care workers are exposed to dangerous levels of chemicals, and they are going to continue to allow it and protect people by using respirators. You better hope they don't fail!

2) **Respirator use is politically dangerous for a union.** The problems respirators create for a union include:

   - Violation of personal freedom with respect to facial hair;
   - They are hot and uncomfortable; and
   - Because they stress the heart and lungs, all workers must have an exam from a doctor to make sure they can safely wear the respirator. This type of situation may allow management to get rid of "un-fit" workers.

3) **Most respirator use is in violation of OSHA law.** Respirators can only be used if the employer meets the OSHA Respiratory Protection Standard 29 CFR 1910.134. This standard has many requirements, all of which must be implemented by an employer who wants to use respirators to control worker exposures.

   Management almost never implements all pieces of the OSHA standard. They are, therefore, breaking the law. A detailed and specific knowledge of the standard by unions can allow the union to effectively fight management's attempt to use respirators.

4) **Respirators don't stop absorption through the skin.** Many chemicals affect the skin directly. Others pass right through the skin to cause damage inside the body. Since respirators only limit what you are inhaling, they are essentially useless where skin contact continues.

K. (continued)

5) **Respirators are no good without "adequate warning properties."** According to the law, respirators may only be worn as protection against chemicals that you can smell. This is called an "adequate warning property." This means that if your respirator leaks, you would be able to smell or taste the chemical at a safe level. If the chemical does not have good warning properties, then the law says you are not allowed to wear a respirator. For example, carbon monoxide (CO) is colorless and odorless--it does not have adequate warning properties. If it leaked through the respirator and exceeded the OSHA limit of 50 ppm you would never know it.

6) **Respirators should not be used as protection against cancer-causing agents because there is no safe exposure level for these chemicals.** Since respirators are not fool-proof, there is no way to guarantee that no exposure will occur.

7) **All wearers of respirators must be "fit tested."** All respirators must be "fit tested" to ensure that it will not leak in the field. Every individual's facial shape is different. Many people have scars, or missing teeth, or wear dentures. Respirators are designed for the average male worker's face. So it is often difficult to be properly fitted.

   Fit testing itself requires the wearer to put the respirator on and to have a test chemical sprayed around the seal of the respirator. The person moves his/her face, smiles, talks, etc. If he or she detects the chemical, then the mask doesn't fit. Management must have many different sizes and makes of respirators available in order to ensure that everyone can be properly and safety fit. Even with a respirator that fits, one hit to the head and it doesn't fit anymore.

K. (continued)

8) **Respirators place a stress on the heart and lungs.** They cause resistance to breathing because air must pass through a filter before entering the body. Each worker be evaluated for fitness to wear a respirator by having a physician check the heart and lungs.

If a worker has medical problems wearing a typical negative pressure cartridge respirator, there are alternatives. For example, a Powered Air-Purifying Respirator (PAPR) is much less stressful to the heart and lungs. (This medical fitness situation is extremely sticky from a labor viewpoint since it can be used by management to get rid of "unfit" workers--particularly those with seniority.)

L. Access to Exposure and Medical Records

Under this rule, workers have the right to see and copy any safety and health records the employer keeps, such as:

- Test results showing levels of noise, vibration, dust, chemicals, radiation, heat or cold, or tests that indicate the amount of a chemical that has been absorbed into a worker's body.

- Studies done by or for the employer in which these records are analyzed.

- Copies of medical records if the company paid a doctor to do the exams.

- Names of chemicals or other harmful materials. This includes access to Material Safety Data Sheets (MSDSs) or other similar forms provided to the employer by the manufacturer of a chemical. (See the Hazard Communication Standard section in this activity for more information on MSDSs).

The "Access to exposure and medical records" standard does <u>not</u> say the employer has to get Material Safety Data Sheets, take air measurements, or do medical tests. But it does say that employers who have those records must keep them for 30 years. Employers also have to make the records available to workers and their unions. Union representatives need written permission from workers if they want to look at individual files.

The employer must let you see records within 15 days. They must either let you photocopy them for free or lend them to you so you can photocopy them elsewhere.

(Source: OSHA Access to Medical and Exposure Records Standard, 29 CFR 1910.20/GISO 3204.)

L. (continued)

Sample Request for Information From Employer
[Print on union letterhead]

[Date]

[Employer]

[Address]

Dear [**Name of plant manager**]:

In order to protect the health and safety of our members employed by [**Employer**], we hereby request the following information, as provided for under the OSHAct (Section 1910.20):

1. All employee exposure records, including all environmental monitoring or measuring (personal, area, grab, bulk, wipe, or other form of sampling) for

- any chemical substance (including asbestos),
- biological agent (bacteria, virus, fungus, etc.), or
- physical stress (noise, heat, cold, vibration, repetitive motion, and ionizing or nonionizing radiation) and

2. Related collection and analytical methodologies, calculations, and other background data relevant to interpretation of the results obtained.

We request the above information for the past [number] years. Persuant to 29 CFR 1910.20, this information must be copied and provided within a reasonable time, but in no even later than fifteen (15) working days after the request for access is made.

[If private sector employer, add] In addition to the OSHAct, we are requesting this information under the National Labor Relaions Act so that we can ascertain working conditions in order to represent our members.

Sincerely,

M. OSHA Form 200 (OSHA Log), Injuries and Illnesses

Employers must keep a log of all job-related injuries and illnesses. This form is called a 200 Log (shown on the next page). Records must be kept of injuries or illnesses that result in:

- death
- lost workdays
- transfer to another job, medical treatment, unconsciousness, or light duty

Management must make this log and an annual summary available upon request to any past or present workers and their representatives for examination and copying. (See the sample request letter on page 382.) A summary of the log must be posted by February 1 of each year and must remain up for one month. These are not medical records, so the union has the right to get a copy without getting permission from every person on the log.

Not all employers have to keep these records. Private sector employers with fewer than 11 employees don't have to. Neither do finance, real estate, insurance, and some service industries. They may still be required to keep records by a state OSHA. State and local governments are also exempt from keeping these logs (except where there is a state OSHA). However, hotels, auto shops, repair shops, recreation, and healthcare employers must keep a log.

It is important for unions to review the log to know how and where workers are being injured. Injuries, and especially illnesses, are not always recorded. The union should check the log whenever there is an injury in order to be sure that it is recorded properly.

(Source: OSHA Recordkeeping Standard, 29 CFR 1904.7/Califrnia Labor Code §6410.)

322

...reau of Labor Statistics
...g and Summary of Occupational
...juries and Illnesses

U.S. Department of Labor

For Calendar Year 19 ____ Page 5 of 7

Company Name: Blue Ridge Haven West
Establishment Address: 770 Poplar Church Rd Camp Hill PA 17011

Form Approved O.M.B. No. 44R 1453

Case No.	Date of Injury	Employee's Name	Occupation	Department	Description of Injury or Illness	Injury: Lost workday check (2)	Days away (4)	Days restricted (5)	Without lost workdays (6)	Illness columns
							117	275		
71	9/2?/90	Robertson, K[illegible]	NA	nursing	L/S Strain	✓		5		
72	9/?/90	Ray, K[illegible]	LA	nursing	L/S Sprain/Strain	✓	[illegible]			
73	9/?/90	[illegible]	LA	nursing	Wrist sprain	✓		7		
74	9/2/90	Martin, [illegible]	NA	nursing	back sprain				✓	
75	9/7/90	Mitchell, Yolanda	NA	nursing	back strain	✓		5		
76	9/5/90	Fredrick, K.L.	NA	nursing	wrist sprain (L)	✓		5		
77	9/12/90	Crayer, Angela	NA	nursing	[illegible] hand	✓				
78	9/12/90	Greer, Tammy	NA (auto)	nursing	Contusion of L foot	✓		5		
79	9/5/90	Walker, [illegible]	NA	nursing	L/S Sprain	✓		5		
80	9/?/90	[illegible], Adam	NA	nursing	Shoulder sprain	✓		3		
81	9/2?/90	[illegible], Steve	NA	nursing	Back sprain	✓		1		
82	9/24/90	Stephens, [illegible]	NA	nursing	Contusion of foot	✓	2	5		
83	10/2/90	[illegible], Tina	NA	nursing	Back sprain	✓		1		
84	10/9/90	[illegible]	NA	nursing	Back strain	✓	35	31		
85	10/11/90	[illegible]	NA	nursing	Back strain	✓	[illegible]	[illegible]		
86	10/?/90	Stapp, [illegible]	NA	nursing	L/S Strain	✓	3	4		
87	10/17/90	[illegible]	Maintenance	dietary	Back strain	✓	5	3		
88	10/1?/90	[illegible]	RN	nursing	Hematoma				✓	
							521	401		3

INJURIES

ILLNESSES

Certification of Annual Summary Totals By: Aley Gibson Title: Ast Adm Date: 1-31-91

OSHA No. 200 U.S. GOVERNMENT PRINTING OFFICE 1978

POST ONLY THIS PORTION OF THE LAST PAGE NO LATER THAN FEBRUARY 1.

N. (continued)

Sample Request for Employer's
Injury Log
[Put on union letterhead]

[Date]

[Employer]

[Address]

Dear [**Name of plant manager**]:

This letter is to request that you arrange for the union to see and copy the complete "Log of Injuries and Illnesses" (OSHA 200 forms) or equivalent reports covering the past five years. We make this request as our right under OSHA 29, CFR 1904.7(b)(1) and [if private sector employer] the National Labor Relations Act.

Please contact me to discuss a time and place for examining and copying the logs. Thank you.

Sincerely,

Local Union Representative

Summary: Regulations

1) OSHA gives workers the right to refuse imminently hazardous work, with some limits. The worker has to ask the employer to fix the problem first. There must not be enough time for OSHA to come.

2) Many public sector workers are not protected by and OSHA regulations. A few states have whistleblower protection laws for public sector workers.

3) For private sector (non-government) workers, the NLRB gives workers some more rights. Workers must act together to protest unsafe working conditions to be protected by NLRB. Some states have similar laws for public sector workers.

4) Workers can get their jobs back, along with wages or benefits they lost if they win their cases.

5) In reality, OSHA accepts very few cases, and workers win very few of those.

6) Even when workers win, it can take years and years.

7) The best protection for workers is to get good language in your union contract.

NOTES

NOTES

13: Glossary

Note: Words on **bold** are defined elsewhere in the glossary.

absorption	When a chemical soaks through the skin and into the blood.
ACGIH	See American Conference of Governmental Industrial Hygienists
acute	The type of health problem that happens right after a chemical gets into your body, like coughing or dizziness. The opposite of **chronic**.
air monitoring	Measuring or testing how much of a chemical is in the air.
American Conference of Governmental Industrial Hygienists (ACGIH)	A private group that sets limits for chemicals in the air.
awareness-level first responders	Workers who are trained about the dangers of spills, but are not trained to clean them up.
capture velocity	How much **ventilation** there is at the point where a chemical gets into the air. A better way to measure ventilation. See **face velocity**.
carcinogen	Something that can cause cancer, like benzene or x-rays.
cardiovascular system (CVS)	The heart, blood, arteries, and veins.
cartridge	See filter
caustic	A chemical, like lye, that can burn the skin. Causes the same damage as an acid.
central nervous system (CNS)	The brain and spinal cord.
chemical names	A specific name (like 1,3-butadiene) given by a chemist or a general (generic) name given by a manufacturer (like FX-105 or Vesphene)

chronic	The type of health problem that happens years (or days) after a chemical gets into your body, like cancer or bronchitis. The opposite of **acute.**
CNS	See central nervous system
cold zone	An area far away from a spill where protective equipment is not needed.
combustible	A chemical that can burn. See flammable.
Committees on Occupational Safety and Health (COSH groups)	Local groups made up of unions, doctors, and others who can help with health and safety problems.
compressed gases	Gases like oxygen or acetylene that are shipped in **cylinders** at very high pressures.
concentration	The amount of something in the air. 10 parts per million is a concentration.
contact	When a chemical damages the skin, but does not soak through. See **absorption.**
contaminant	Anything that pollutes.
contract	A written agreement between an employer and a union that sets wages, vacations, and other rules.
controls	Anything that helps keep chemicals from getting in the air or on surfaces. Some examples are building **enclosures** (better), **isolation**, or **personal protective equipment** (worst).
corrosive	A chemical that can burn the skin. Could be an acid or a base.
CVS	See cardiovascular system
cylinders	Large metal containers used to store **compressed gases.**
decontamination	Washing chemicals off the skin and clothes after a worker has been in a spill.
dermatitis	Red, flaky skin. Caused by many chemicals that dry out the skin.
dose	The amount of something (like a chemical or drug) that a person takes into their body.

emergency response	A set of steps to make sure that the only workers who go into spills are people with special training and equipment.
engineering controls	The best type of **controls**--ones that use barriers or different tools to control chemicals. Different from **personal protective equipment**.
emergency plan	A written policy for what to do during a spill. It lays out who does what, and how they will get the special training and equipment they need.
emergency	A spill or leak of a **hazardous material** that workers in the area can't control without special training and equipment.
enclosure	Building a box around a machine or chemical area, so that it can't hurt workers.
Environmental Protection Agency (EPA)	A U.S. government agency that covers pollution.
EPA	See Environmental Protection Agency
epidemiology	The science of studying <u>groups</u> of people who get sick, and figuring out what causes that sickness.
exposed	Getting chemicals or germs on your skin or in your body. Includes being in an area with chemicals, even if you are wearing protection.
face velocity	How much **ventilation** there is near a fan. A worse way to measure then **capture velocity**.
FDA	See Food and Drug Administration
fetotoxic	A chemcial that can hurt a child in the womb (a fetus).
first responder	A worker who is trained about the dangers of spills, but is not trained to clean them up.
fit test	A way to check whether a **respirator** leaks. See **qualitative fit test**, **quantitative fit test**.
flammable	Able to burn.
fume	For a respirator--a tiny speck of metal. <u>Not</u> the same as a gas or vapor (as in "diesel fumes").

gastrointestinal system	The mouth, throat, stomach, and guts.
general ventilation	A fan or central air system. Does not protect workers from chemicals.
grievance	A complaint against an employer when a worker feels that the union **contract** is not being followed.
grounding	Attaching a container to the ground with a wire when pouring a flammable chemical. Prevents sparks that could start a fire.
hazardous waste	Garbage or waste that has dangerous chemicals, germs, or radioactive materials in it. The term is used by **EPA**
hazardous material	Any chemical, germ, or radioactive material that can hurt workers. The term is used by **OSHA**
HazMat team	Hazardous Materials team--a group of workers who have special training and equipment to stop or clean up spills.
health and safety committee	A group of workers who work together to help fix health and safety problems. A joint labor-management commitee includes the employer too.
health hazard	Anything that can make workers sick. Different from a safety hazard, like fire or a slippery floor, that can cause an injury right away.
HEPA	See High Efficiency Particulate Air
hepatitis B	A sickness that causes liver damage and cancer. It is carried in the blood.
High Efficiency Particulate Air (HEPA)	A special kind of filter that can catch very small pieces of dust. Used in **respirator** filters and air cleaning machines.
hood	A box with a fan used to protect workers from chemicals. The work is done inside the box so that chemicals won't get out.
hot zone	The most dangerous area right around a spill. Only **HazMat teams** are allowed in.

IARC	See International Agency for Research on Cancer
International Agency for Research on Cancer (IARC)	An international government group that studies chemicals that cause cancer.
immune system	Your body's defenses aginst germs (and some chemicals). Made up of many different parts of the blood.
incident commander	The one person in charge during **emergency response.**
incompatible	Chemicals that will catch on fire, explode, or cause problems when mixed together.
ingestion	Eating or swallowing chemicals. Chemicals on the hands can get onto food and be swallowed by accident.
inhalation	Breathing in chemical vapors, gases or dusts.
latency	The time between getting a chemical or germ in your body (exposure) and getting sick. Can be 10 to 40 years for some cancer-causing chemicals.
leukemia	Cancer in the blood and bones.
local exhaust ventilation	Putting a fan and hose right where poisons get in the air. Better than **general ventilation.**
Material Safety Data Sheet	A fact sheet that explains the health and safety problems caused by a chemical or product. Also explains how to protect workers.
Mine Safety and Health Administration (MSHA)	A U.S. government agency that tests **respirators.**
MSDS	See Material Safety Data Sheet
MSHA	See Mine Safety and Health Administration
mutagen	A chemical that damages the genes (the body's blueprint). May lead to cancer.
National Institute for Occupational Safety and Health (NIOSH)	A U.S. government agency that studies health and safety problems.

National Fire Protection Association (NFPA)	A private group that writes guidelines (standards) used by many employers.
National Institute for Environmental Health Sciences (NIEHS)	A U.S. government agency that studies the health problems caused by chemicals.
National Toxicology Program (NTP)	A U.S. government group that studies chemicals that cause cancer.
National Response Center (NRC)	Part of the Coast Guard. All spills must be reported to the NRC.
NFPA	See National Fire Protection Association
NIEHS	See National Institute for Environmental Health Sciences
NIOSH	See National Institute for Occupational Safety and Health
NRC	See National Response Center
NTP	See National Toxicology Program
Nuclear Regulatory Commission (NRC)	A U.S. government agency that covers radioactive materials.
Occupational Safety and Health Administration (OSHA)	A U.S. government agency that covers worker health and safety.
operations level	Workers who are trained to stop spills, but do not have the equipment to clean them up.
OSHA	See Occupational Safety and Health Administration
OSHA 200 log	A list of all worker injuries and sicknesses that employers must keep.
oxidizer	A chemical that includes oxygen. Can burn without air. Can start a fire if mixed with a **flammable** chemical.
parts per million (ppm)	A measure of how much "stuff" is in the air. Can be gallons, pounds, or any other measure. One part per million can be one gallon of "stuff" in a million gallons of air.

PCBs	See polychlorinated biphenyls
peripheral nervous system (PNS)	The nerves in your body. Does not include the brain and spinal cord (see **central nervous system**).
personal protective equipment (PPE)	Anything that a worker wears to protect his or her health and safety. Includes **respirators**, gloves, lead aprons, and other equipment.
PNS	See peripheral nervous system
polychlorinated biphenyls (PCBs)	A group of chemicals that cause cancer. They were used to insulate transformers.
polyvinyl acetate (PVA)	A material used for gloves.
polyvinyl chloride (PVC)	A material used for gloves.
PPE	See personal protective equipment
ppm	See parts per million
protection factor	A way to measure how well a **respirator** can protect the lungs. A large protection factor (above 100) is better than a small one.
pulmonary edema	Drowning in your own fluids. Caused by chlorine and other chemicals that burn the lungs. Can happen hours after the chemical is breathed in.
purified protein derivative test (PPD test)	A test for the tuberculosis germ. A shot is given under the skin. The skin around the shot will harden if a person has the germ in their body.
PVA	See polyvinyl acetate
PVC	See polyvinyl chloride
qualitative fit test	A way to check whether a **respirator** leaks. A tester blows chemical smoke at a worker wearing the respirator. If the respirator leaks, the worker will smell the smoke and cough. Not as good as a **quantitative fit test.**
quantitative fit test	A way to check whether a **respirator** leaks. A tester blows drops of oil at a worker wearing the respirator. A computer measures how much of the oil leaks in. Better than a **qualitative fit test.**

regulator	Lets gas out of a **cylinder** at a safe pressure. Part of a **compressed gas** setup.
reportable quantity (RQ)	A spill larger than the reportable quantity must be reported to the **National Response Center**.
reproductive problems	Problems having healthy children. Can be caused by chemicals. Includes impotence, sperm damage, not being able to get pregnant, miscarriage, birth defects, and other problems.
respirator plan	A written policy for how to choose, use, and maintain respirators.
respirator	A mask used to protect the lungs. A surgical mask will not protect the lungs. It is not a respirator.
respiratory system	The mouth, throat, and lungs.
Right to know	An OSHA rule that says workers have the right to training about the chemicals they work with. See **Material Safety Data Sheets**.
RQ	See reportable quantity
safer work methods	Different ways of doing work that can cut down on the amount of chemicals that get in the air or on surfaces. For example, using a squeeze bottle instead of a spray can.
safety solvents	**Solvents** that do not burn easily. They may cause cancer, liver, kidney, or nerve damage.
SCBA	See self-contained breathing apparatus
self-contained breathing apparatus	The kind of **respirator** that firefighters wear. It has a big cylinder of air that is carried on the back.
SGAM	See small group activity method
sharps	Needles, scalpels, broken glass, or other sharp things that may have blood on them.
small group activity method (SGAM)	A union style of teaching adults. Includes exercises (tasks) that are done in small groups, a report to the large group (reportback), and a summary.

solvents	Chemicals that can dissolve things. Many products, including all paints, thinners, and cleaners have solvents in them. Most solvents can damage the nerves or cause brain damage.
specialist, HazMat	A worker who has special training and equipment to stop or clean up spills <u>and</u> knows about radiation, pesticides, or other special dangers.
stewards, union	Workers who represent the union in the workplace. They have special training in solving problems and sometimes write **grievances**.
teratogen	A chemical that causes birth defects.
threshold limit values (TLVs)	Limits for chemicals that are set by **ACGIH**. They are not the law, they are recommended.
TLVs	See threshold limit values
toxic	Poisonous. A chemical that can damage people's health.
vaccine	A shot that protects against a disease.
valve	The knob that lets gas out of a **cylinder**.
ventilation	Using fans to blow in fresh air or pull out dirty air.
warm zone	An area near a spill where **decontamination** is done.

Activity Evaluation

Activity Number: ________ Title: ____________________________________

1. How important is this Activity for SEIU rank-and-file workers? Please rank on a scale of 1 to 5. (5 is the most important, 1 is the least important.)

Not important				Very important
1	**2**	**3**	**4**	**5**

2. Which factsheets are the most important to share with your co-workers? (Please list the page numbers.)

3. How could we improve this Activity?

Activity Evaluation

Activity Number: _______ Title: ______________________________

1. How important is this Activity for SEIU rank-and-file workers? Please rank on a scale of 1 to 5. (5 is the most important, 1 is the least important.)

Not important				Very important
1	2	3	4	5

2. Which factsheets are the most important to share with your co-workers? (Please list the page numbers.)

3. How could we improve this Activity?

Activity Evaluation

Activity Number: ________ Title: ____________________________________

1. How important is this Activity for SEIU rank-and-file workers? Please rank on a scale of 1 to 5. (5 is the most important, 1 is the least important.)

Not important				Very important
1	2	3	4	5

2. Which factsheets are the most important to share with your co-workers? (Please list the page numbers.)

3. How could we improve this Activity?

Activity Evaluation

Activity Number: _______ Title: ______________________________

1. How important is this Activity for SEIU rank-and-file workers? Please rank on a scale of 1 to 5. (5 is the most important, 1 is the least important.)

Not important				Very important
1	**2**	**3**	**4**	**5**

2. Which factsheets are the most important to share with your co-workers? (Please list the page numbers.)

3. How could we improve this Activity?

Activity Evaluation

Activity Number: ________ Title: ____________________________________

1. How important is this Activity for SEIU rank-and-file workers? Please rank on a scale of 1 to 5. (5 is the most important, 1 is the least important.)

Not important				Very important
1	2	3	4	5

2. Which factsheets are the most important to share with your co-workers? (Please list the page numbers.)

3. How could we improve this Activity?

Activity Evaluation

Activity Number: ________ Title: ____________________________________

1. How important is this Activity for SEIU rank-and-file workers? Please rank on a scale of 1 to 5. (5 is the most important, 1 is the least important.)

Not important				Very important
1	**2**	**3**	**4**	**5**

2. Which factsheets are the most important to share with your co-workers? (Please list the page numbers.)

3. How could we improve this Activity?