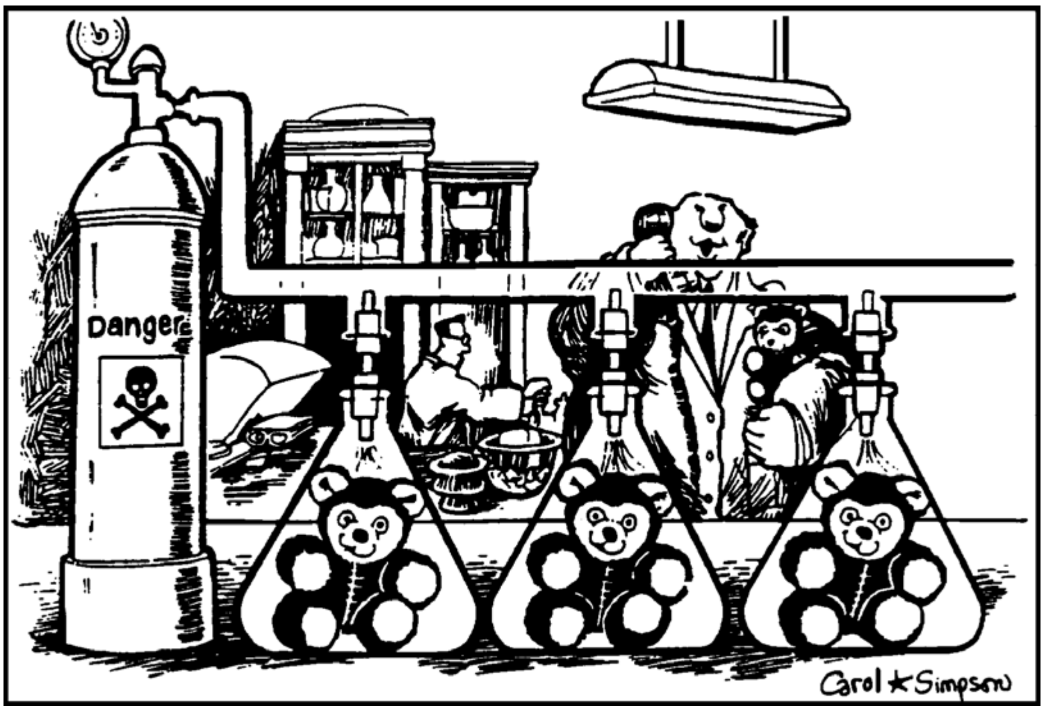
HOSPITAL WORKER

CHEMICAL AND BIOLOGICAL HAZARDS

WORKBOOK



"The stuff's perfectly safe. We tested it on our animal subjects and none of them show any ill effects whatsoever!"

An Awareness-Level
Hazardous Materials and Emergency Response
Curriculum for Health Care Workers

SEIU Education & Support Fund

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

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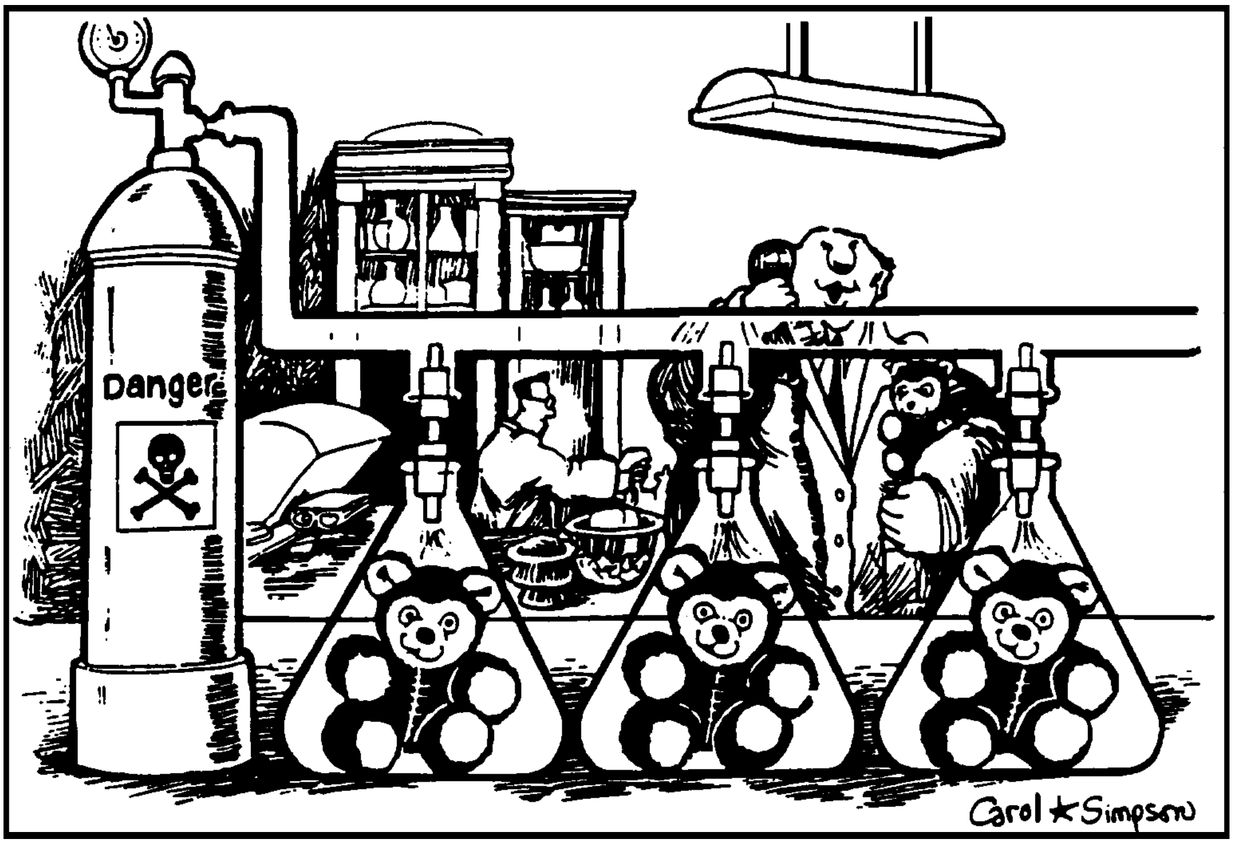

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American Federation of State, County, and Municipal Workers (Activity 3)

International Chemical Workers Union (Activities 3, 6, 8, and 10)

Labor Occupational Health Program (Activity 7)

Midwest Consortium for Hazardous Waste Worker Training (Activities 3, 7, and 16)

Oil Chemical, and Atomic Workers Union (Introduction and Activities 1, 3-11, 13-18, 20)

United Automobile Workers (Activity 17)

University of Alabama at Birmingham (Activity 17)

Table of Contents

Introducing SEIU's Hazardous Materials Worker Training Project

Purpose

To read the goals and objectives of this training program.

Task

Please take a few minutes to read Factsheets A through D (pages 2-7) which explain the goals of this training, and the training technique—the Small Group Activity Method—which will be used.

Once you have read these materials, please write down 3 expectations you have of this training. An expectation could be a specific hazard you want to learn about, a workplace issue you want to talk about with your co-workers, or that you don't want to be bored!

(The worker-trainers may ask you to write your expectations on 3 post-it-notes and stick them on a flip chart to share with the whole group.)

1.

2.

3.

A. Why This Training is Happening

Welcome to the SEIU health care hazardous materials training program. This training is supported by a government grant. The grant comes from the National Institute for Environmental Health Sciences (NIEHS). SEIU applied for money to train workers about hazardous materials (hazmat) and hazmat spills. The training is based on an OSHA standard called the Hazardous Waste Operations and Emergency Response (HAZWOPER) Standard (29 CFR 1910.120).

All of us realize that emergencies can be killers. Health care workers 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.

During this training, we want you to share what you already know about health and safety problems on your job. Through problem-solving activities with your co-workers, you will:

1. analyze the health and safety systems in your hospital,

2. discuss your proper role in responding to emergencies involving hazardous materials, and

3. develop ways to make your workplace safer.

We hope that as we discuss these issues and work together we can develop ways to make our jobs safer.

There will never be enough OSHA inspectors or union representatives. (Currently there are about 1,700 OSHA inspectors and over 6 million workplaces—this means each inspector is responsible for over 3,500 worksites!) So it is vitally important that each and every worker is armed with information about hazardous materials and about their rights. This is the first step we need to take to ensure safety on the job—for ourselves, our co-workers, and our patients. Another step is to join your union's health and safety committee. Or, if there isn't a committee, start one with other concerned workers.

On behalf of your local union, thank you for participating in this program and making a commitment to workplace health and safety.

B. What This Training Will Cover

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 supply 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 identifying:

- ways to recognize hazardous substances
- sources of information about hazardous materials and their impacts on health
- workplace health and safety risks of hazardous materials
- ways to control workers' exposure to hazardous materials
- your role as a person who is first-on-the-scene at a hazardous materials emergency
- your legal rights to a safe workplace

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 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

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

SEIU rank and file hospital workers will conduct these workshops using a method designed specifically for union members called the **Small Group Activity Method (SGAM)**. Using worker-trainers and the SGAM method puts hospital workers at the center of every workshop both as trainers and as learners. Participants work together in small groups during the workshop, solving real-life problems, and building upon our own skills and experiences. 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 2: Health care Work Can Be Hazardous To Your Health

Each activity has four main sections:

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

> **Purpose**
>
> To discuss why health care work can be hazardous to your health.

- the **tasks** and questions to be answered with your group,

> **Task 1**
>
> Imagine that your small group is made up of union stewards from Pleasant Valley Hospital, represented by SEIU Local 94. An LPN

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

> **A. We Have More Injuries and Illnesses Than Mining or Construction**
>
> In 1994, more than 671,000 hospital, nursing home, and other health care workers were hurt or got sick because of their jobs.

- and, a **summary** of the main points.

> **Summary: Health care Work is Hazardous to Your Health**
>
> 1. Health care work is not safe work. Health care has more injuries and illnesses than either mining or construction.

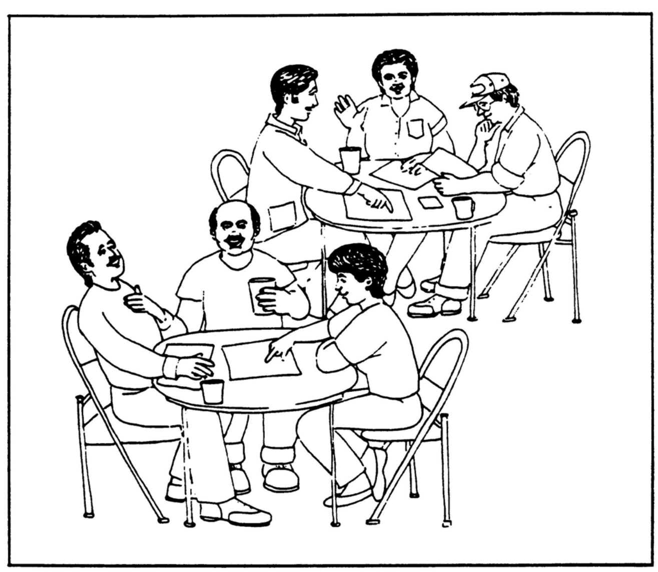
C. (continued)

During the workshop, people will work in groups at tables. The trainers will tell you which activities and tasks to work on. The idea is to work together, not to compete. Each activity goes like this:

Small Group Discussions: Once the trainer has introduced an activity, you will work on the task in your groups. Very often there is more than one right answer. The tasks require that the groups use their experience to tackle the problem, and make judgments on key issues. Part of the task often includes looking at factsheets and reading short handouts.

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: For each task, the group selects a **reporter** whose job it is to take notes on the small group discussion and report back to the workshop as a whole. During the report-back, the reporter tells the entire workshop how his or her group tackled the particular problem. The worker-trainers will record these reports on paper in front of the workshop so that all can refer to it. After each group gives a report, the workshop is thrown open to general discussion about the problem at hand.



The Summary: At the end of the report-back period the worker-trainers will highlight the key points, and bring up any problems and points that may have been overlooked in the report-back.

D. Three Basic Learning Exchanges

The Small Group Activity Method is based on the idea that every workshop is a place where learning is shared. With SGAM, learning is not a one-way street which runs from trainer to worker. Nor is SGAM simply a bull-session where we all sit around and talk. Rather, SGAM is a structured procedure that allows us to share information. It is based on three learning exchanges:

- **Worker to Worker**
- **Worker to Trainer**
- **Trainer to Worker**

Worker to Worker: Most of us learn best from each other. We should never underestimate how much real education takes place worker to worker. SGAM is set up in such a way as to make this worker-to-worker learning exchange a key element of all of our workshops. We do this by first allowing people to learn form each other by solving problems in their small groups.

Worker to Trainer: Lecture-style training assumes that the trainer knows all the answers. SGAM believes that trainers also have a lot to learn. On many subjects, any group of workers will often have as much, or more, collective knowledge as any one expert or teacher. With SGAM the goal is to learn as much as possible from the workshop participants. This is done mainly during the report-backs. Because SGAM allows us to listen to those we are training, we get to learn more and more about the realities people face. Also, because our training method shows genuine respect for workers' knowledge, it helps build confidence among those we are training. Confidence is the key to adult learning and action.

Trainer to Worker: This is the traditional learning procedure of school. It also has its place in SGAM. It comes at the end. This is our chance to clear up confusion and make the points we think are key. By waiting until the summary section, we now know better what people need to know.

NOTES

Activity 1: The Health Care Industry Is Changing Fast

Purpose

To explore the changes in the health care industry taking place across the country and their effect on our health and safety at work.

Task 1

Your hospital administrator has come to you with the following statement.

> **"I know you've all seen a lot of changes around here—the merger, our purchases of doctor's practices, the new sub-acute wing, the new outpatient surgery center, the layoff and workforce redesign which was just announced.**
>
> **I know that some of you are worried about the scope and pace of these changes. I am here to tell you that without these changes we could not be one of the low cost hospitals in this city, and if we are not one of the low cost hospitals we will close.**
>
> **Furthermore, with your support we can make these changes work for the good of our patients and the people who work here. Change is always hard, but I know that together we can make it work."**

In your small groups, please use your own experience and Factsheets A through F (pages 11-17) to answer the questions on the next page. Please choose one person in your group to write down your responses. That person will report the group's findings to the whole class.

(continued on the next page)

Task 1 (continued)

1) What changes have you seen like this in your workplace?

2) What is the impact of these changes on the quality of care you are able to give to patients?

3) Do you agree with the hospital administrator's conclusion that "these changes work for the good of our patients and the people who work here"? Why or why not?

A. Corporate Revolution

Within a few short years, every part of health care will be changed. A few very large corporations (known as "Systems") will own the health care industry in your town or city. Systems own hospitals, group doctor practices, HMOs, clinics, nursing homes, and insurance companies, not just one type of facility. This is sometimes called the "Corporatization of Health Care."

- There will be **fewer hospitals and hospital workers** and more outpatient care (like home care, clinics, and surgery centers).

- **Patients** who stay in hospitals **will be sicker**, and their hospital **stays will be shorter**.

- Our **jobs may be based on small flexible teams** of workers who will do the work that used to be done by specialized workers in many different departments (often for less pay).

The motive for these changes is to lower costs, not to improve patient care. In the 1970s and 80s, health care prices spiraled out of control. Insurance companies would pay for almost any procedure—surgery, time in the hospital, and tests. The insurers simply passed the cost along to their customers.

Most hospitals have changed their way of doing business to increase their profits. They cut costs—mostly on the backs of patients by scrimping on care and workers by scrimping on pay and benefits, increasing workloads and changing skill mix (the percentage of different types of health care workers in a facility).

Source: A. Foster Higgins & Co., Inc, "Health Care Benefits Survey, 1994," New York: A. Foster Higgins & Co., Inc, 1995.

B. How Long You Stay May Depend on How You Pay

In the past, hospitals billed insurance companies for each surgery, hospital day, or test. Doctors and hospitals could make more money by doing a lot of surgery and ordering expensive tests. The old system of paying was called **fee for service** or indemnity insurance.

Now, employers pay the Systems a set amount (or flat fee) for each person, even if they never go to the hospital. This is called **capitation**.

With this new way of paying, hospitals get the same amount of money every month. Their profits are what they don't spend on patient care. In fact, Systems want to get people out of the hospital as soon as possible. This leads to several things:

- **Patients stay in the hospital for a shorter time.**

- Healthier patients are now sent home or to nursing facilities in order to save money. **Patients remaining in hospitals are sicker than ever before.** Doctors call this trend of sicker patients "increasing acuity" (*acuity* means "how serious" or "how severe" the sickness is).

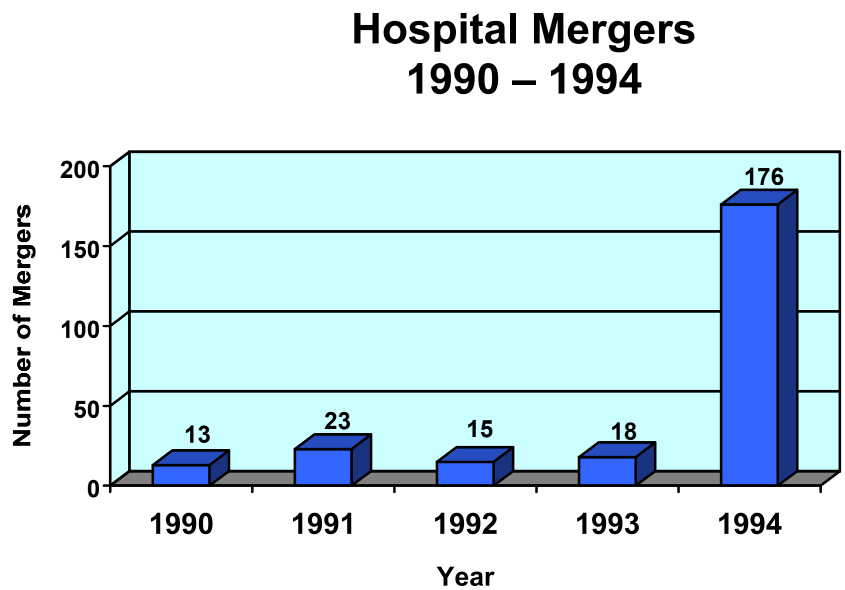
- **Hospitals are closing beds and getting smaller.** Since Systems keep their patients out of hospitals as much as possible, there is less demand for hospital beds.

Hospitals, which used to be the big money-makers in the health care system, now suck profits away from the Systems.

Source: Eric Eckholm, "A Hospital Copes With The New Order," The New York Times, 1/29/95, p. 3:1; Michael Quint, "Health Plans Force Changes in the Way Doctors Are Paid," *Los Angeles Times*, 2/9/95, p.1.

C. Merger Mania—Birth of the System

Hospitals and doctors that haven't signed up with Systems are losing a lot of business and a lot of money. Hundreds of them are being bought up by large Systems. Some hospitals are just going out of business. The number of hospital mergers skyrocketed in 1994.



Hospital mergers have led to a lot of changes in our hospitals, especially layoffs when Systems "downsize" or close hospitals.

It's not just hospitals that are merging. Insurance companies are merging; home care companies are merging; and nursing home companies are merging. Doctors are banding together in large group practices or other business forms. Some hospitals and insurance companies are buying up doctor practices.

All of these mergers and buyouts mean that our employers are becoming much bigger and more powerful.

Source: Modern Healthcare, December 19, 1994.

D. Cheap at Twice the Price

With hospitals determined to cut costs, job redesign has been sweeping the industry. Job redesign is not just "more work," it is a whole different way of organizing health care work. Management's goal is to do the same work with fewer, less specialized workers. In general, specialized workers are "high skilled," so their wages are higher. After job redesign, the basic work unit is often the team, rather than the department.

Here is how a team might look:

A registered nurse may supervise the other workers. In some plans, the RN does some patient care (like EKGs or respiratory therapy) that used to be done by techs. In other plans, the RN does a lot of paperwork, and hardly ever gets to see patients.

The **"multi-skilled caregiver"** does a lot of Patient care. This worker may take the place of physical therapists, respiratory therapists, and other technicians. This is often a Nurse's Aide or Assistant who gets extra training.

The **"hospitality aide"** cleans the room, serves food, and changes linens. They may also stock supplies and transport patients and lab samples. This worker may take the place of central supply workers, dietary workers, and transporters. This is often a housekeeper who gets extra training

The **administrative worker** may admit patients and keep track of paperwork on the unit. This worker may also draw blood or take specimens. This is often a ward clerk who gets extra training.

E. What Are They Doing to My Job?!

If we let employers take control of job redesign, it can hurt workers in many ways. We need to guard against many pitfalls in job redesign. The main reason for job redesign is to cut worker costs to increase profits.

Layoffs for some

Hospitals usually want to lay off workers. Local unions have been able to fight layoffs that happen because of job redesign. They have made agreements that no workers will be laid off. But, where unions are not strong, employers may try to save money by reducing staffing, or by replacing higher-paid workers with lower-paid workers.

More work, same hours

After job redesign, workers always have more duties. For example, a housekeeper might take food orders, change linens, and give sponge baths, as well as clean floors and take out trash. Housekeepers especially may feel they have to do 2 jobs in the same time they used to do just one.

Less pay for some

Many higher-paid workers lose pay from job redesign, but some lower-paid workers may gain. Usually, these workers gain more in job responsibilities than in pay increases. Again, the main point of job redesign is to save money. So hospitals aren't eager to take the money they save by eliminating high paying jobs and give it to the lower-paid workers whose job duties are expanded. Only with a strong union can workers hope to see their wages increased to balance their job responsibilities.

Problems with patient care

Many people are not sure that teams have enough staff and enough skills to take care of patients. Hospitals were under-staffed before job redesign, and they have even fewer staff now.

(continued on the next page)

E. (continued)

Another problem is that the new skill mix is a "one size fits all patients" approach. The new skill mix should match how sick the patients are (patient acuity).

Jobs also may not be designed in a way that is safe for patients. For example, a "Hospitality Services Aide" may scrub toilets one minute, and feed patients the next. Maybe this will be bad for patients, and maybe it won't.

Job redesign is almost always done by an outside consultant. Most of the people who are redesigning our jobs have never worked in health care. Some consultants even use stopwatches to measure exactly how long it takes to bathe a patient or clean a room. **All of these changes can lead to increased stress on health care workers.**

Sources: The Healthcare Forum, "Operational Restructuring: 19 Pioneering Models," San Francisco: Healthcare Forum Journal, 1992; Heywood Hospital, MA, "Job Description/Performance Evaluation: Patient Service Representative"; Kaiser Permanente Medical center-Fresno, "Service Partner Skills Assessment," 10/27/94 version; California Board of Registered Nursing, "Unlicensed Assistive Personnel," no date; and SEIU, "Patient Focused Care Job Redesign at Kaiser Bellflower," April, 1995.

F. Union Principles for Redesign

Employers want to redesign jobs to save money on labor costs. But we have a chance to really make "patient-focused care" live up to its name. SEIU feels that job redesign plans must include these 7 core principles to really improve jobs and patient care:

1. **No layoffs because of job redesign**—employers have done job redesign without laying off workers. We will not sacrifice the workers' jobs for small cost savings to employers.

2. **Seniority**—experience counts. Hiring, layoffs, and training need to be based on seniority, not favoritism.

3. **Unity**—we will not let employers set one group of workers against another. An injury to one is an injury to all.

4. **Better jobs**—redesigned jobs must be an opportunity for our members to learn new skills, have more variety and control in their work lives, and have a safer workplace.

5. **Real worker influence**—we will not allow outside consultants to control our work lives. We have the right to design our work so that it is better for patients and for us.

6. **Living wages and benefits**—we will not stand for health care workers who have no health insurance themselves.

7. **Quality patient care**—job redesign should improve patient care, not make it worse.

Task 2

In their frantic rush to cut costs health care systems are making big changes in the way our work is organized. No one is paying much attention to the effect of these changes on our health and safety at work.

You are at a union meeting to discuss management's new plan for Happy Valley Hospital. Happy Valley Hospital is being purchased by WalMark, a huge health care system. The basic elements of management's plan are:

- 20% of the beds will be eliminated
- 20% of the staff will be laid off
- the least acute patients will be moved to WalMark's skilled nursing facility
- the old job classifications will be eliminated and replaced by the four classifications described in Factsheet D (page 14)
- most departments will be drastically downsized and their duties assumed by workers on the wards
- there will be two weeks of training to prepare you for your new responsibilities

Look at Factsheets G through M (pages 20-26) and use your own experience to answer the questions on the following page.

Task 2 (continued)

1) How might these proposed changes affect your health and safety?

2) Have you seen workers' health and safety hurt by changes like these at your facility? If so, how?

3) How can health care workers get enough power to win the changes we need to protect ourselves and our patients?

G. Health Care Workers Face an Epidemic of Injuries and Illnesses on the Job

Health care workers are facing what one expert in the field has described as an epidemic of injuries and illnesses on the job. While the rate of workplace injuries and illness has been declining in most sectors of the economy, it has been growing in health care.

Between 1980 and 1995 the rate of workplace injuries and illnesses for the private sector economy as a whole fell 6.9%. During the same period the rate of injuries and illnesses in the hospital industry rose 26.6%.

A study of Minneapolis/St. Paul hospitals found that between 1990 and 1994 the number of RNs employed dropped by 10%, while the number of injuries suffered by RNs was up 65%. During the same period injuries to unlicensed hospital personnel rose over 116%. The authors documented a number of mergers, layoffs, closures and other actions associated with restructuring during this period.

Is there a connection between health care restructuring and an increasing number of injuries and illnesses suffered by health care workers? The next few Factsheets will explore some of the reasons why this might be so.

Source: Occupational Safety & Health Reporter, Bureau of National Affairs, Volume 26, No. 40, p.1368; "Epidemiological Analysis of Occupational Injury and Illness in Hospital and Health Care Workers, 1980 - 1990", David Makofsky, in Essentials of Modern Hospital Safety, Vol. 3, William Charney, ed., Lewis Publishers, 1994; Findings of Minnesota Nurses Association Research Project on Occupational Injury/Illness in Minnesota between 1990-1994, Elizabeth Shogren, R.N., B.S. and Andrew Calkins, B.A., Minnesota Nurses Association, 1997.

H. Speed Kills

One study has found that health care workers are dealing with sicker patients, and yet these patients are staying in the hospital for a shorter period (the average length of hospital stay has declined 11.9% over the first four years of this decade).

Elizabeth Shogren, R.N., one of the authors of the study, stated that the rising rates of health care worker injuries she found can be tied to cost control measures brought in with managed care. Under managed care only the sickest patients remain in the hospital, since Systems save money whenever they can treat someone outside of the hospital setting.

"With sicker patients, workers are asked to work harder…" and with shorter stays "workers are asked to work faster. Both factors increase workers' rates of injury," according to Shogren.

Source: Findings of Minnesota Nurses Association Research Project… Quote is based on an interview with Shogren reported in Occupational Safety & Health Reporter, Bureau of National Affairs, February 5, 1997, p. 1227.

I. Skill Mix and Injuries

Systems are trying to save money by changing the skill mix, by reducing the number of highly trained, highly paid employees and turning over some of their duties to lower paid employees. But are those who take on these new duties receiving the training, protection and time they need to do the new jobs safely?

The author of the Minnesota study suggested that the alarming rise in workplace injuries to unlicensed hospital workers (116% over four years) was due to this change in the skill mix. "With less experienced people taking care of sicker patients, injuries and illnesses are likely to increase…"

Hospitals are going to change the skill mix, but **it is up to us to see that workers taking on new duties are adequately trained**, both on the new work process and on potential health hazards. And **we have to prevent management from simply assigning new duties to employees whose workload is already too heavy.**

Source: *Occupational Safety & Health Reporter*, Bureau of National Affairs, February 5, 1997, p. 1227.

J. Blood, Sweat and Tears— Health Care Restructuring and Increased Exposure

In the Minnesota study, **the type of injury which showed the largest increase was blood and body fluid exposures.** Most of these were needlesticks and sharps injuries.

The number of exposures jumped 205%, from 1990 to 1994.

While the study does not give the reason for such a huge increase, there is clear evidence that workloads were increasing. As workers are being asked to work with dangerous tools under increasing pressure to speed up, more injuries may result.

Most blood exposures could be prevented by safer devices that are already on the market (needleless systems and safety syringes, etc.). But with the drive to cut costs, **many hospitals are reluctant to buy supplies that may be more expensive in the short run but save lives and money in the long run.**

Source: *Minnesota Nurses Association Research Project…*, pp. 8-9.

K. Don't Cut Costs on My Back!

A 1996 study by the Institute of Medicine found "a strong link between nurse staffing… and back injuries." Other studies have tied short staffing to back injuries for other health care workers, such as nurse aides.

As health care systems race to cut costs, labor costs are a tempting target. Yet **every cut in staffing or increase in workload potentially places health care workers at greater risk for back injuries.**

And as hospitals cut costs by keeping only the sickest patients, those patients are less able to move about on their own. This places an even greater burden on the backs of the health care workers who must help them.

Source: Nursing Staff in Hospitals and Nursing Homes: Is It Adequate?, Institute of Medicine, National Academy Press, 1996; Caring Till It Hurts: How Nursing Home Work is Becoming the Most Dangerous Job in America, Service Employees International Union, Washington, D.C., 1995.

L. Is Infection Control Under Control?

Recent studies and articles have raised concerns that downsizing hospital staffs undermines infection control. **One study found that as staffing levels fell, and as temporary personnel replaced regular workers, patients were experiencing more infections while in the hospital.**

According to William Jarvis, MD, of the Centers for Disease Control, “there is no doubt that as managed care, health care reform, and cost containment come into play, one of the major methods of dealing with that is cutting the number of nursing staff… Lapses in infection control are almost inevitable when you reduce staffing.”

While infection control is primarily designed to protect the patient and not the worker, certain aspects of worker’s health and safety are often carried out under infection control programs. One journal concludes that **patients, as well as staff, may be at greater risk as changes in the health care system lead to staffing reductions.**

Source: “Increased Nosocomial Infections May Be Downside To Downsizing”, Hospital Infection Control Vol. 23 No. 6, June 1996, pp. 69-72; “Concerns Mounting About Link Between Nursing Ratios and Infections, Injuries”, Hospital Infection Control Vol. 23, No. 11, November 1996, pp.137-140.

M. …For the Union Makes Us Strong

Hospitals, doctors' groups and insurance companies are not the only players shaping the changing health care industry. Through our unions we can have a voice and help shape the new system. SEIU has identified the following ways to insure that workers' voices are heard.

Organize the City: If union hospitals in your town are forced to compete with a lot of cost-cutting non-union hospitals our union hospitals will either be forced to cut costs, close or merge with non-union hospitals.

Local unions need to organize more health care workers to build our power in <u>all</u> hospitals to save good patient care and protect our pay and benefits.

Organize the System: Another way for local unions to get power is to organize all of the facilities owned by one System. For example, several local unions that represent workers at Kaiser Permanente have formed a Kaiser Council. They work together on training and union contracts.

Win Contracts That Help Us Organize: Organizing new workplaces is tough. Some SEIU local unions have made agreements with employers that make it easier. For example, SEIU Local 4 won promises from an employers' association which agreed not to interfere with organizing in any new nursing homes they bought.

In some cases unions are getting employers to agree to a simpler union election, not involving the government (called a card check or shoe box election).

Build Coalitions: Some SEIU local unions have influenced mergers by building new coalitions. Locals are using politics, consumer groups, and large purchasers to win protections for their members.

Summary: The Health Care Industry is Changing Fast

1. In the 1980s, health care costs rose out of control. Health Maintenance Organizations (HMOs) stepped in with a new way of paying for health care--pre-paid plans.

2. Health care employers are much bigger and more powerful now than in the past.

3. Systems try to keep people out of hospitals as much as possible, which threatens our jobs. Systems also try to make money by lowering labor costs which threatens our salaries and benefits.

4. Health care unions believe the best way to protect workers during these changes is to organize all of the health care workers in a given area.

5. Systems use job redesign to save money. Through their unions, workers can protect themselves and their patients during these changes.

6. The drive to cut costs under managed care may be causing more workplace injuries and illnesses for health care workers. In some cases reduction in staff has been linked to increases in injuries and illnesses.

NOTES

Activity 2: Health Care Work Can Be Hazardous To Your Health

Purpose

To discuss why health care work can be hazardous to your health.

Task 1

Imagine that your small group is made up of union stewards from Pleasant Valley Hospital, represented by SEIU Local 94. An LVN has come to you with the following statement.

> **"I don't think our work is all that dangerous. It's not like we work in a coal mine or anything. After all, it's clean—it has to be so the patients don't get sick!**
>
> **Besides, it must be safe because we have so many people regulating us. The JCAHO inspects us, we have infection control regulations, the State Board of Health, the Nuclear Regulatory Commission, and now OSHA is breathing down our necks. I wish they would just leave us alone and let us do what we know best—taking care of our patients."**

Please use your own experience as health care workers and Factsheets A through L (pages 31 through 44) to answer the question on the next page as a group. Please choose someone in your group to be the reporter and write down the group's response. That person will report your group's findings to the whole class.

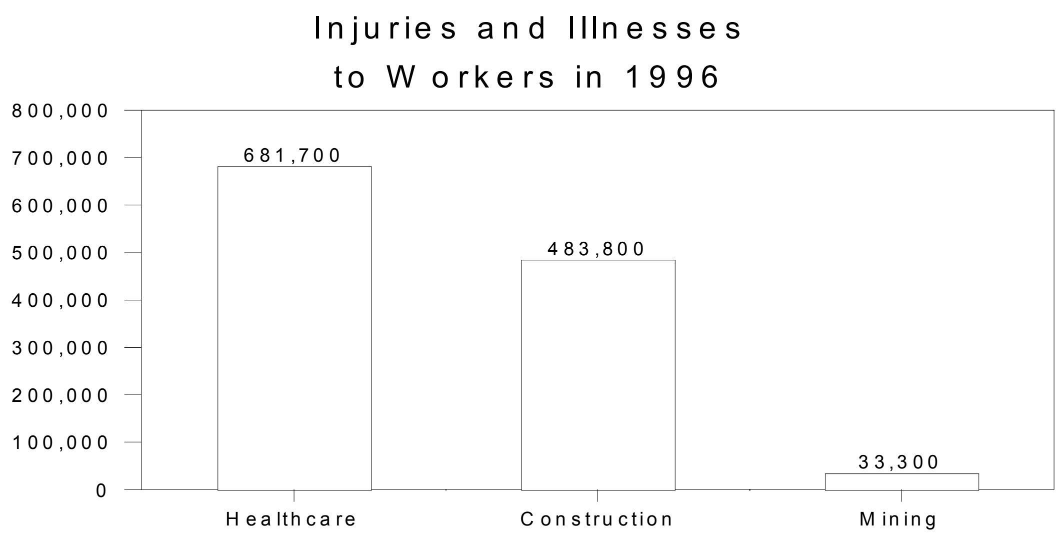
(continued on the next page)

Task 1 (continued)

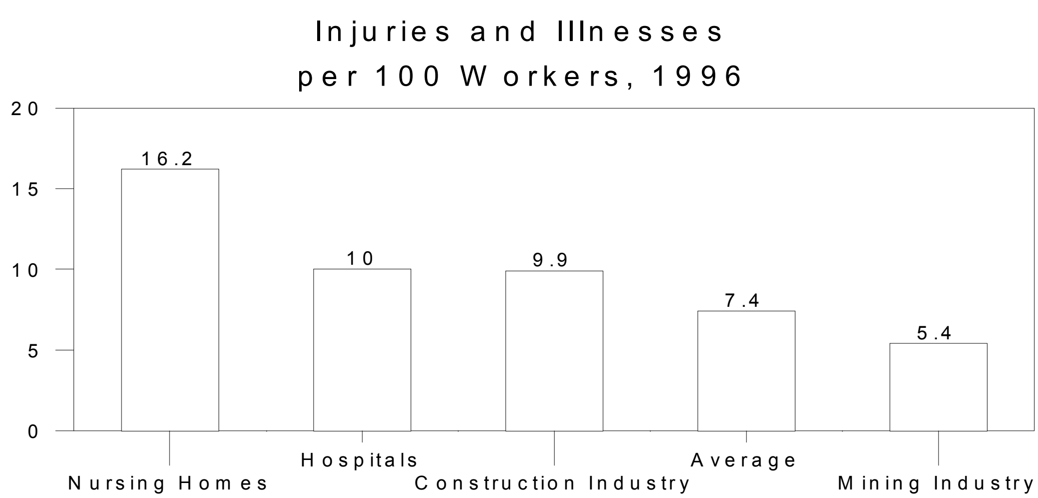
What is your group's response to this worker's statement?

A. We Have More Injuries and Illnesses Than Mining or Construction

In 1996, more than 681,000 hospital, nursing home, and other health care workers were hurt or got sick because of their jobs. More health care workers were hurt than miners or construction workers. Many people think health care work is safe. The numbers show that's not true.



Health care workers are also more likely to get hurt than other workers. Since there are a lot of health care workers, you might expect a lot of injuries. But the number of injuries for every 100 workers is also high.



Source: U. S. Bureau of Labor Statistics, "Workplace Injuries and Illnesses in 1996" (press release), December 17, 1997.

B. A High Risk For Cancer?

Hospital workers work with and around a lot of things that cause or may cause cancer. These include:

- ethylene oxide
- radioactive materials
- formaldehyde
- some cancer drugs
- hepatitis B and C
- HIV/AIDS
- anesthetic gases

Three studies show some evidence that hospital workers have a high rate of cancer.

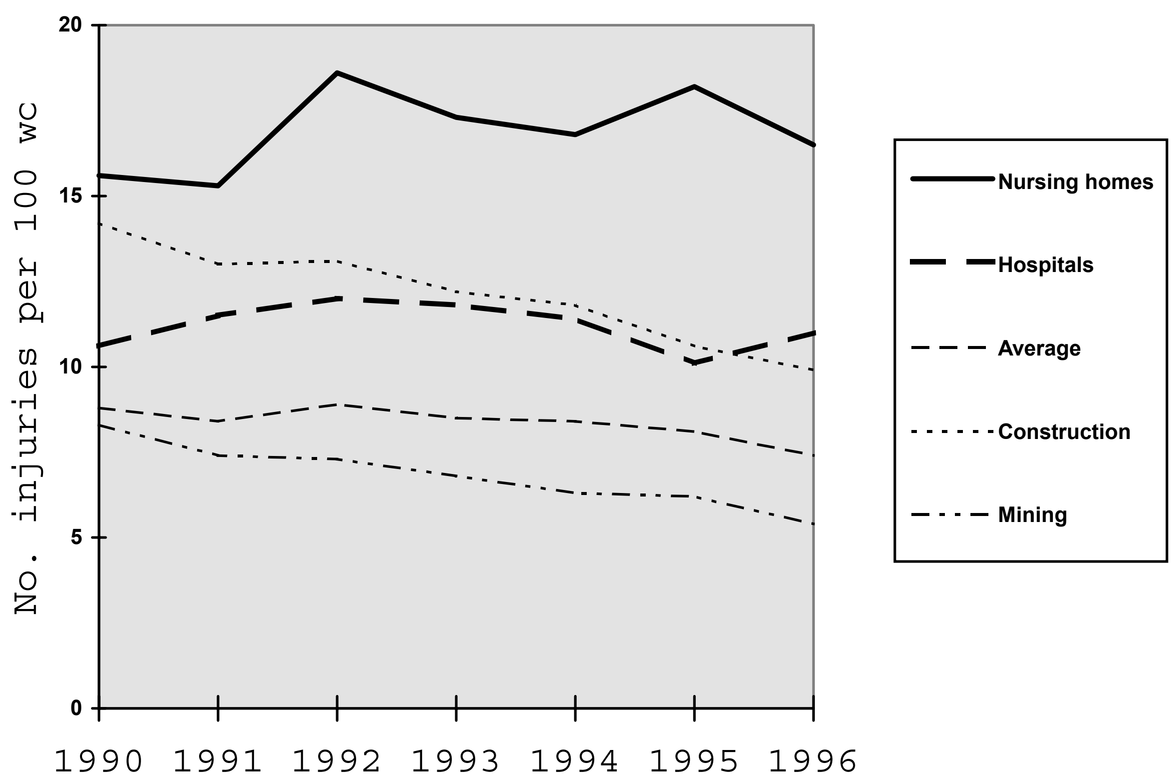
- A study of deaths in California from 1979-1981 showed more deaths from cancer than expected among health care workers (except for registered nurses).
- A 1982 study by the National Union of Hospital and Health care Employees found an unusually high death rate from cancer among 2,565 hospital workers.
- And a 1992 study of leukemia patients showed that nurses are at high risk for this type of cancer.

Source: California Department of Health Services, "California Occupational Mortality, 1979-81," 1987; "Cancer Risks Found For Hospital Workers," *WOHRC Newsletter*, September, 1982; Taylor, Jack A. et al., "ras Oncogene Activation and Occupational Exposures in Acute Myeloid Leukemia," *Journal of the National Cancer Institute*, 84 (21): 1626-1632.

C. Our Jobs Are Not Getting Safer

Health care is a growing industry. But, as many other industries improve their injury and illness rates, the health care industry is staying the same or getting more dangerous. During the 1990s, injuries to hospital workers have hovered between 10-12 per 100 workers; and injuries to nursing home workers have been as high as 18.6 per 100 workers. But, the illness and injury rates for construction workers, miners, and for workers in general have been going down.

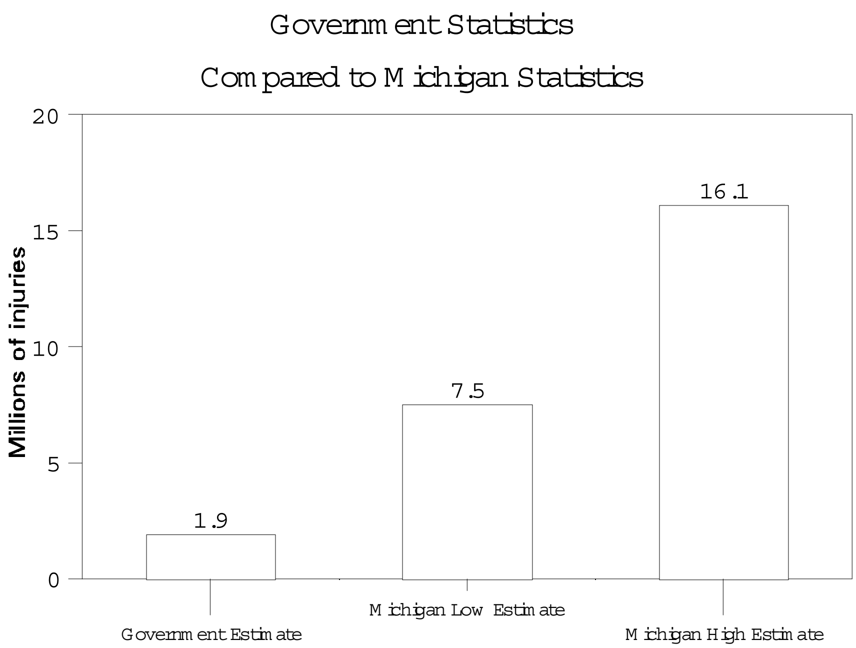
Trends in Illness and Injury Rates
from 1990 to 1996



Source: BLS, "Occupational Injuries and Illnesses in the United States by Industry [1988, 1989, 1990, 1991, 1992, and 1993]" and U. S. Bureau of Labor Statistics, "Workplace Injuries and Illnesses in 1994" (press release), December 15, 1995.

D. The Numbers Don't Show The Whole Problem

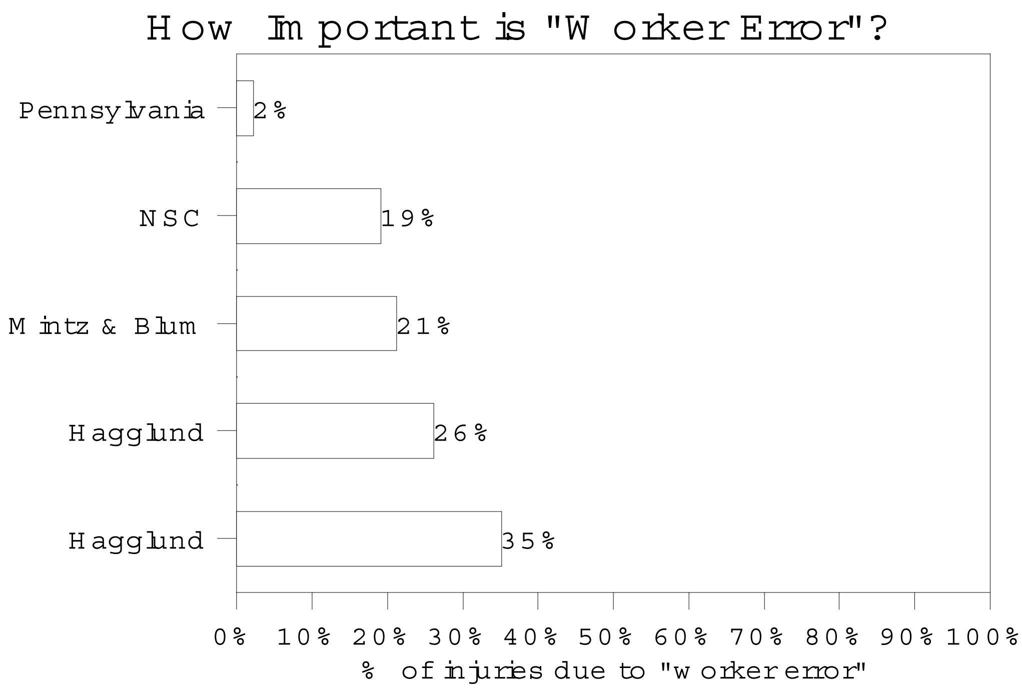
A 1993 study from the University of Michigan shows how the statistics on the last few pages don't count all the workers who get hurt on the job. Government statistics don't fully count lost workdays for injuries that last from one year to another. They also don't count government or agricultural workers. **A study done in Michigan shows that there may actually be 9 times as many lost workdays from workplace injuries as the statistics now show.**



Source: Arthur Oleinick and Jeremy Gluck, "Current Methods of Estimating Severity for Occupational Injuries and Illnesses . . . .," *American Journal of Industrial Medicine*, Vol. 23, No. 2, 1993.

E. The Myth of the Careless Worker

Often when workers get sick or hurt on the job it is blamed on "worker error". But, five studies show that unsafe working conditions—not careless workers—cause most accidents.



Whenever the cause of an injury appears to be worker error we should consider what led that worker to make a mistake. This is called looking for **root causes**. We may find that the pace of work was too fast or that a safer chemical could have been substituted for the one that caused the injury. Unless we identify and correct the underlying cause, mistakes and injuries will continue to happen.

The best solution to health and safety problems is not just for us to "work safe." **We need hospitals to make the workplace safe for us.**

Source: U.S. Office of Technology Assessment, *Preventing Illness and Injury in the Workplace*, 1985 and OSHA General Duty Clause, 29 USC 654 (a)(1).

F. Health Care: Over-Regulated or Under-Regulated?

Hospitals talk a lot about inspections and regulations, but who really regulates hospitals?

Regulatory Agencies with Legally Enforceable Standards

- **OSHA**, or the Occupational Safety and Health Administration, is a government agency that sets enforceable health and safety standards for private and federal employers. The standards that cover most health care workers are listed on Factsheet G (next page).
- **NRC**, or the Nuclear Regulatory Commission, enforces specific regulations about radioactive materials used in hospitals.
- **Fire marshals** and your state and local **departments of health** also enforce safety and health regulations in hospitals.

Agencies with Voluntary Standards

- **JCAHO**, or the Joint Commission on Accreditation of Health care Organizations, is a private group made up of medical industry members like the American Hospital Association and the American Medical Association. JCAHO has a lot of standards. However, these standards are voluntary. They are not the law. Hospitals can choose whether to follow them or not. But, most hospitals do follow JCAHO because they have to be inspected in order to get Medicare or Medicaid money, or in order to be licensed by the health department. Many of us have worked in hospitals that do a lot of maintenance and training just before JCAHO comes to do an inspection. But, workers need a safe work environment year round.
- **NFPA**, or the National Fire Protection Association, also has voluntary standards that hospitals may, or may not, be required to follow.

Sources: I. Donald Snook, Jr., *Hospitals: What They Are And How They Work*, Aspen: Gaithersburg, MD, 1992.

G. OSHA—The Forgotten Agency

Here are a few of the OSHA standards hospitals must follow. The numbers in parentheses tell you where in the Code of Federal Regulations they can be found. Some states, like California, have their own health and safety regulations. The numbers in brackets refer to the section of the California Code of Regulations where each rule can be found.

- **Chemical Right to Know:** training and factsheets (MSDSs) about all hazardous chemicals (1910.1200) [8 CCR 5194]
- **Hazardous Materials Emergency Response:** training and pre-planning for chemical and biological spills (1910.120) [8 CCR 5192]
- **Compressed gases:** safe work methods for gases like oxygen, nitrous oxide, nitrogen, and helium (1910.101) [8 CCR 4650]
- **Ethylene Oxide:** training and protections for central supply, and others who work with the gas (1910.1047) [8CCR 5220]
- **Formaldehyde:** training and protections for lab workers (1910.1048) [8 CCR 5217]
- **Lab safety:** training and factsheets (MSDSs) about all hazardous chemicals in labs (1910.1450) [8 CCR 5191]
- **Bloodborne diseases:** training and protections for people who work around blood (1910.1030) [See next fact sheet for California standard]
- **Radioactive materials:** training and protections for people who work around radioactive materials (1910.1096) [8 CCR 5076]
- **Records of injuries and illnesses:** a list of every injury or illness on the job (called the OSHA 200 log) (1904) [8 CCR 14301]

G. (continued)

- **Access to exposure and medical records:** workers can see and copy their employer's safety and health records (1910.1020) [8 CCR 3204]
- **Advocate for health and safety:** protects workers from retaliation if they act to protect their health and safety on the job (11c) [In California, State Labor Code – Section 6310 – enforcement by the state Labor Commissioner, not Cal/OSHA]

Source: Code of Federal Regulations. California Code of Regulations – Title 8

H. Only In California

The following regulations exist only in California, or are significantly stronger in California. Health care workers everywhere should pressure employers and government to meet the highest standard.

- **Repetitive Stress Injuries:** protects workers from back injuries and injuries like carpal tunnel syndrome [8 CCR 5110]. Federal OSHA is in the process of developing a national regulation on ergonomics. The California standard is weak, but the first one in the nation. Hopefully, the federal government will soon come out with stronger protections against these types of injuries.
- **Injury and Illness Prevention Program:** requires employers to have a comprehensive health and safety program [8 CCR 3203]
- **Bloodborne diseases:** training and protections for people who work around blood (1910.1030) The California standard is much stronger than the federal regulation. It requires employers to use safer needles, keep a detailed sharps injury log and seek more employee input into their safety program. [8 CCR 5193]

I. Missing in Action

Most OSHA standards were adopted to protect workers in factories and construction. So workers in health care don't have OSHA standards for a lot of the dangers they face.

There are no OSHA standards for:

- **indoor air quality:** OSHA had begun to develop an indoor air quality standard, but this was never finalized or proposed for congressional review due to industry resistance.
- **violence in the workplace:** Both Cal/OSHA and Federal OSHA have guidelines on workplace violence in health care. But there is no regulation requiring employers to take specific steps to protect workers.
- **tuberculosis:** In October 1997, OSHA issued a draft standard for TB. It has not yet been put into effect. (See Activity 12: TB) California will follow the lead of Federal OSHA on this issue.
- **heat or cold hazards**
- **computer (Video Display Terminal) hazards:** Cal/OSHA is the only state with an ergonomic standard, which addresses repetitive motion injuries like carpal tunnel syndrome. However, the standard is very weak and there is no regulation for other computer-related issues such as the effect on workers' vision.
- **safe staffing levels**
- **hazardous drugs** (like cancer drugs): OSHA does have a compliance guideline for drugs (CPL 2-2.20B CH-4, April 14, 1995).
- **latex glove allergies:** Workers do have the right to have non-allergenic gloves provided by the employer under the blood-borne pathogens standard.

J. In The Dark

Even doctors get very little information about health and safety on the job. A national medical school study done in 1991 found that doctors got an average of 3 hours—180 minutes!—of health and safety education in 4 years of medical training.

Health care workers, even those with the most education, get very little information about health and safety on the job.

By law, employers must train us if we work with:

- blood (1910.1030) [Cal/OSHA regulations – 8 CCR 5193]
- hazardous chemicals (1910.1200) [8 CCR 5194]
- ethylene oxide (1910.1047) [8 CCR 5220]
- formaldehyde (1910.1048) [8 CCR 5217]
- radiation (in radiation areas) (1910.1096)
- in a lab (1910.1450) [8 CCR 5191]
- tuberculosis (Federal OSHA "Enforcement Policy and Procedures for Occupational Exposure to Tuberculosis," October 8, 1993).
- hazardous materials and other emergencies – covered in this training. (1910.120) [8 CCR 5192]

Source: "Occupational Medicine Training Program Surveys," *Journal of Occupational Medicine*, 35 (8): 768-775.

K. Infection Control Is Not A Cure-all

Infection control is everything you do to keep patients from getting infections they didn't come in with. These types of infections are called nosocomial infections. Infection control should also reduce the risk of infection for workers, but the main goal is to protect patients.

Infection control includes:

- washing your hands
- wearing latex gloves (there are non-latex alternatives if you are allergic)
- using disinfectants to clean up
- having Hepatitis B shots (vaccine)
- having TB isolation rooms under negative air pressure
- using sterile scalpels (instruments) and bandages (dressings)

Some of these things happen to protect workers, but some of them can't. For example:

- TB isolation rooms protect health care workers outside of those rooms. But they can't keep health care workers in those rooms from breathing TB germs. (That's why you need to wear a respirator if you are going into an occupied TB isolation room.)
- Washing your hands and wearing gloves can protect you from some diseases, like salmonella. But they can't keep you from being stuck by a needle with blood in it.

- Sterilizing scalpels can protect nurses from tetanus. But it can't keep them from being cut by a scalpel that has blood on it.

Infection control is important, and hospitals have to do it to protect patients. But we also need worker protections, like needles engineered so we can't get stuck.

Source: Walter W. Williams, "Guideline for Infection Control In Hospital Personnel," *Infection Control*, July/August 1983 (special supplement).

L. Why Do We Have To Get Sick To Make Our Patients Well?

"I think there is a lot of denial [about hospital hazards]. A hospital system appeals to the finest instincts of health care workers, which is to give and give and give. Some of the things that have been coping mechanisms in the past, like denial and detachment, are [getting in the way of] the fright that these people should be feeling. They should be insisting on more protection."

Betsy Monsalve, CIH
Former nurse practitioner

Taking care of patients does not mean giving up our right to a safe workplace. In fact, a safer workplace can lead to better patient care. For example, using gloves and washing our hands protects both us and our patients from diseases. Getting the hepatitis B vaccine also protects both us and our patients.

We know that patients have rights, but we also have the right to a safe and healthy workplace. For instance, a nurse should not have to do rescue breathing on a patient without a face shield "because there isn't time to get one." That is not only wrong, it's against the law.

We also know that patients are not the problem. Our patients are sicker than they used to be, but we can't protect ourselves by blaming them for being sick.

Getting hurt should not be "part of the job." OSHA law gives us the right to a healthy and safe workplace. And, management is legally responsible for making that happen.

Source: "A Healthy Dose of Worker Protection," *Occupational Hazards*, December 1992, p. 22.

M. Out Of Sight, Out Of Mind

Some people think hospital work is safe because it is clean, indoor work, and because some health care workers have a lot of education. This can lead to a false sense of security, since health care work is actually far more dangerous than many jobs where workers get dirty.

According to a 1993 NIOSH study, workers in hospitals thought they faced less danger from chemicals and radiation at work than they actually did. Radiology technicians had the biggest gap between what they thought the danger was from chemicals (low) and what they were actually exposed to (high). Lab technicians and dieticians under-estimated their exposure to radiation more than other workers.

Source: "Potential Work Exposures Underestimated By Construction, Hospital Workers, NIOSH Finds," *Occupational Safety and Health Reporter*, June 9, 1993, p. 46

Task 2

Your group has been asked by your union health and safety representative to make a risk map of your work area. Your rep wants to know where are as many different health and safety hazards as you can think of.

Using your own experience and Factsheets M, N and O (pages 45-50), complete the task below in your group. Choose a reporter to keep track of all the hazards you mention. This person will be asked to review your map in front of the entire group at the end of this task.

1) In your group, choose a work area to map. It could be an entire building, a department, or an area outside.

2) Draw a schematic or floor plan of the area. Use the flip chart paper and markers provided. Label each area on your map.
Please write your names and your work area on your map.

3) In your group, brainstorm the specific health and safety hazards in this work area.

4) On your map, use the color coded dots (or magic markers) to show where each hazard is located. Be sure to use the right color for each hazard.

COLOR	CHEMICAL / AGENT
RED	Biological Hazards (HIV, TB, Hep B/C, etc.)
BLUE	Chemical Hazards (cidex, anesthetic gases, chemo drugs, etc.)
GREEN	Physical Hazards (radiation, heat, lifting, trips, etc.)
YELLOW	Other Hazards (please specify)

(continued on the next page)

Task 2 (continued)

5) Once you have completed your map, please list the top 3 health and safety problems in this work area. Why did you choose these?

6) If you were the union health and safety committee, which problem would you work on first and why?

N. Mapping for Our Health

Health care workers gather around a large sheet of paper taped to the wall. One of them is drawing their department's floor plan and marking where there are certain health and safety hazards. Other workers are giving him guidance. "Don't forget the vapors from the sterilizing unit in central supply." "Remember the huge garbage cans outside of the emergency room." "There's the heat in the laundry, too." Later they will decide where they want to make changes first.

This is one example of what might happen when workers get together to develop a risk map.

> **A risk map is a drawing of where there are hazards in your workplace that could lead to injury, illness, or even death.**

Risk mapping is based on what you and your co-workers know from on-the-job experience. It works best when used with a small group of workers who work in the same area, or have similar jobs.

Source: "Risk Mapping Activity," Oil Chemical and Atomic Workers, NIEHS Grant Technical Meeting, July 1997.

O. It's A Jungle Out There

Health care workers face a wide range of health and safety hazards. They affect all areas of the hospital. These dangers fall into the categories of **hazardous materials, hazardous wastes** and **safety**, and include:

Hazardous Materials in Hospitals

Diseases like HIV/AIDS and hepatitis B or C are in body fluids; germs like staph, MRSA and VRE can be found in wound drainage and body fluids; and TB, German measles (rubella), staph infections, and molds can live in ventilation systems

Chemicals, like anesthetic gases and disinfectants, are used all over hospitals. A 1988 government study found that hospital workers use more than 170 different chemicals. One hospital group in Florida reported using more than 4,000 products. Among these chemicals are **hazardous drugs** like chemotherapy drugs (which can cause cancer themselves) or aerosolized pentamidine and ribavirin.

Some of the most common chemicals used in hospitals are:

- acetic acid
- calcium hypochlorite
- ethylene oxide
- formaldehyde (formalin)
- isopropyl alcohol
- methyl methacrylate
- phenol
- xylene
- disinfectants (quaternary ammonium compounds or QACs)
- anesthetic gases
- chemotherapy drugs
- glutaraldehyde
- iodine (Betadine)
- mercury
- pentamidine
- ribavirin

All of these chemicals can **spill**—ethylene oxide (EtO) leaks from canisters, lab acids and formaldehyde spill, or mercury spills from broken thermometers or blood pressure cuffs.

Radiation which is used in nuclear medicine, emergency rooms, cancer (oncology) wards.

Asbestos which was used as insulation and fire-proofing in most buildings. It causes cancer and lung disease.

O. (continued)

Hazardous Wastes in Hospitals

Many kinds of **hazardous wastes** are made by hospitals:

- **Sharps—**needles, broken glass, scalpels, or anything sharp that has been used with a patient
- **Biological waste or red bag waste—**gowns, dressings, or anything soaked with blood; containers of blood and body fluids; body parts
- **Chemotherapy waste—**cancer drugs, urine or feces (stool) from cancer patients after they have received chemotherapy
- **Radioactive waste—**IV bags from radioactive IVs, plates, cups, urine or feces (stool) from some patients who drink radioactive materials or have radioactive implants
- **Chemical waste—**lab chemicals, formaldehyde from dialysis machines, paint thinner from maintenance, and other chemicals
- **Mixed waste—**wastes that are both radioactive and chemical, or both chemotherapy and red bag

The Joint Commission (JCAHO) says that every hospital must write a policy for handling hazardous wastes. You have the right to get a copy of that policy.

Safety Issues in Hospitals

Safety hazards like slipping on wet floors, tripping, and falling from ladders.

Electrical hazards throughout the hospital can cause shocks and fires.

Ergonomic injuries also affect many health care workers. Back injuries from lifting patients, and repetitive strain injuries have taken their toll.

Violence from patients and visitors, especially in psychiatric wards and emergency rooms, is also a growing safety problem.

Work schedules and staffing **stress**, which causes high blood pressure and is made worse by speedup and short staffing **rotating schedules or shift-work**, which causes sleep problems, family problems, and can affect the ability to have children.

Sources: NIOSH, *Guidelines for Protecting the Safety and Health of Health care Workers*, 1988; "A Healthy Dose of Worker Protection," *Occupational Hazards*, Dec. 1992, p. 22.; "Waste Disposal" (poster), Kaiser Permanente Medical Center—Oakland CA, no date and JCAHO, "1993 Accreditation Manual for Hospitals."

P. Where to Begin?

After you have identified the different hazards in your workplace, you have to choose the ones to try to fix first. There are 3 types of questions that you may want to ask yourself to help prioritize the hazards.

1. How dangerous is a material or hazard? What can it do to me?

You should consider a substance highly hazardous if:

- It is a carcinogen. (There is no safe level.)
- It causes reproductive damage. (There is no safe level.)
- It causes allergic reactions. (There is no safe level.)
- It burns the eyes, nose, throat, skin and/or lungs when you are exposed at moderate levels.
- It is a chemical which causes serious harm, has no warning properties, and you are exposed to it at moderate or higher levels.

2. Is there any exposure occurring? How many workers are exposed?

Information on toxicity and level of exposure should be collected for each chemical in the workplace. Then you consider the number of workers affected in deciding which problem to address first. For example, Solvent A might only cause skin irritation but you might place it on your priority list for action if a lot of workers work with it, have extensive contact with it, have developed skin rashes, or you have heard a lot of complaints about the solvent.

3. Are your co-workers concerned? Can you fix the problem?

To build support for helping to reduce hazards, you might want to consider what hazards your co-workers are most concerned about. Setting priorities means making tough choices, and choosing problems that you can improve is always a good way to start. Once you have solved the easier problems, you may get more help tackling the more difficult ones.

Summary: Health care Work is Hazardous to Your Health

1. Health care work is not safe work. Health care has more injuries and illnesses than either mining or construction.

2. Often health care workers get very little training about the hazards they face.

3. Infection control for patients may reduce exposure to workers but its main purpose is not to keep workers from getting sick or hurt on the job.

4. Taking care of patients does not mean giving up our right to a safe workplace. In fact, a safer workplace can lead to better patient care.

5. Health care workers face a wide range of dangers, including:
   - diseases, like hepatitis B and TB
   - drugs, including chemotherapy
   - violence
   - back injuries, made worse by under-staffing
   - chemical spills
   - radiation
   - shift-work

6. Service and maintenance workers handle more hazardous materials in hospitals than other workers. Everything that other workers handle is passed on to service workers as waste.

7. Workers have valuable knowledge about their workplaces.

8. Risk mapping gives a visual way of identifying the workplace hazards that could lead to injury, illness, or even death.

NOTES

NOTES

Activity 3: What Are Hazardous Materials?

Purpose

To explore what hazardous materials are used in hospitals.

Task 1

OSHA's emergency response regulation defines hazardous materials as:

- **chemicals that cause cancer**
- **poisons**
- **biohazardous or infectious material (germs)**
- **chemicals that can burn the skin or eyes on contact (corrosives)**
- **radioactive materials**
- **chemicals that can catch fire or explode**
- **chemicals that can cause violent chemical reactions**
- **unknown chemicals**

In your group answer the following questions. (Use factsheets A through D on pages 57 through 62.) 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 or materials that you work with fit OSHA's definition of hazardous materials?

2) What chemicals or materials that you work with do not fit OSHA's definition of hazardous materials? Why don't they fit the definition?

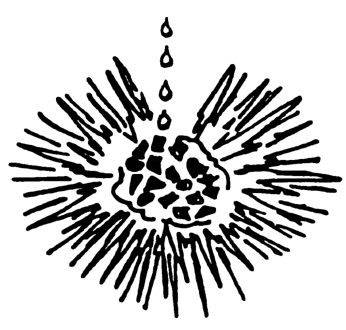
3) What specific work tasks do you think may expose you to hazardous materials?

A. What Are Hazardous Materials?

"Hazardous material" is a legal term. OSHA has many definitions for hazardous materials. Materials with the dangerous properties shown below are some examples. The definitions are sometimes borrowed from other laws such as EPA regulations, so material that could be harmful if spilled on the road or released into the air, land or water is a kind of hazardous material. Biological material that could infect you is another kind. If a safe material is mixed with hazardous material, the whole mixture is called hazardous. If a safe chemical is leaked or spilled, it is not a hazardous material emergency.

Biohazard
(germs, blood and body fluids that contain HIV, hepatitis, etc.)

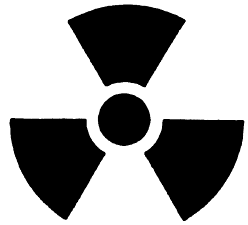
Poison, cancer
(chemotherapy drugs, medications, pesticides, etc.)



React violently with water

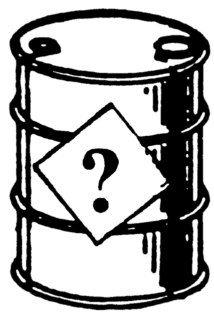
A. (continued)

Corrosives



Radioactive
(radioactive medications,
urine from patients on radioactive med, etc.)

Fire



Unknown chemicals

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

B. If You Don't Know What 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 radiation in an X-ray room.
- You can't see nitrous oxide in an operating room.
- You can't smell ethylene oxide in central supply until there is a dangerous amount in the air.
- You may be able to smell glutaraldehyde. But it can also soak through your skin and you can't feel it.
- You can't see the germs in blood, but they can still make you sick.

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 what the dangers are, don't go near it.

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

C. Coming Face to Face with Hazardous Materials

Many of our tasks as health care workers bring us into close contact with hazardous materials. Sometimes this is just a "normal" part of our jobs—when we administer chemotheraphy drugs, when we mix cleaning solutions to mop the floor, when we take a blood sample from a patient, when we change the linens on a patient's bed, when we handle canisters of gases…the list goes on and on.

Sometimes we have to deal with these same materials in unusual situations. For example, when a blood bag breaks or a can of pesticide spills. Often in these situations we are faced with a large quantity of a material that we come into contact with daily, and so don't really think of it any differently than we usually do.

And sometimes, we don't even know that we're dealing with a hazardous material—when we clean a patient's room we don't always know if something was spilled, or when we handle a patient we don't always know if he or she is contaminated.

Because anything can happen in a hospital, workers must always be aware of the hazardous materials around them. You can never be too safe.

D. "Chemicals Can't Hurt Me…Can They?!"

Your first instinct when there is an accident is probably to jump in and help. But instincts are dangerous when it comes to hazardous materials. Even though you handle the chemical or materials every day doesn't mean you are immune!

Here are a few examples of what hazardous materials have done to health care workers:

Hospital Explosion Claims Three Lives

Three people were killed when a respirator supplying oxygen to an elderly woman exploded at Maimonides Medical Center in Borough Park, Brooklyn, the Fire Department said.

Hospital engineers had worked on the machine several hours before the explosion, after nurses and other workers complained that it was giving electrical shocks, a fire official said.

(continued on the next page)

Source: *New York Times*, September 2, 1993, p. A1.

D. (continued)

IMPROVING MEDICAL RADIATION PROTECTION GARNERS ATTENTION FROM NRC, CAPITOL HILL

Protecting health care workers and patients from accidental radiation overexposure during cancer treatments is the focus of upcoming regulations from the Nuclear Regulatory Commission as well as hearings on Capitol Hill.

Attention from regulators and Congress was prompted by a Nov. 16, 1992, accident at the Indiana, Pa., Regional Cancer Center involving a machine called an Omnitron Model 200 High Dose Afterloader. While delivering radioactive iridium-192 to a tumor inside the patient, a wire broke, leaving the iridium inside the 32-year-old patient. The iridium is supposed to be drawn back into the machine.

The incident ultimately exposed 55 workers to small doses of radiation, including clinic staff who ignored a monitor that indicated radiation was present and that something was amiss. The clinic allowed the woman to return to her nursing home where more workers were exposed.

Radiation levels for the six health care workers who provided the treatment ranged from 0.1 rem to 0.86 rem, below NRC's limit of 1.25 rem for occupational exposure, according to an NRC report released earlier this year.

The highest doses, however, may have been received by the nine nurses and nine nurses assistants who cared for the patient at the nursing home. Dose estimates ranged from 0.55 rem to 22.3 rem, NRC said in the report.

Others exposed include the ambulance drivers, maintenance workers at the nursing home, and waste haulers who picked up a radioactive catheter from the nursing home. The patient died five days after receiving a dosage of radiation 1,000 time greater than intended, according to NRC.

Source: *Occupational Health and Safety Reporter*, May 5, 1993, p. 2080.

Summary: What Are Hazardous Materials?

1. Hazardous materials include:
   - chemicals that cause cancer
   - poisons
   - biohazardous or infectious material (germs)
   - radioactive materials
   - chemicals that can burn the skin or eyes on contact (corrosives)
   - chemicals that can catch fire or explode
   - chemicals that can cause violent chemical reactions
   - unknown chemicals

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. Health care workers handle hazardous materials in lots of different situations. You must always be alert to the dangers of hazardous materials.

NOTES

Activity 4: Knowing Your Role in HazMat Emergencies

Purpose

To explore the very limited role of health care workers at the awareness level during a hazardous materials emergency.

Task 1

Please read OSHA's definition of a hazardous material emergency on Factsheet A (page 67). Also read factsheets B through D (pages 69 – 71). Then, in your groups answer the following questions. Please choose a new person from your group to write down your answers below. That person will report back your group's findings to the whole class.

1) How would you explain the difference between a spill that you can clean up, and one that's an emergency?

(continued on the next page)

Task 1 (continued)

2) In your group, describe a hazardous materials emergency that happened at your workplace.

What happened?

Who was involved?

What material(s) was(were) involved?

Where did it happen?

When did it happen?

How or why did it happen?

3) What made the hazardous materials emergencies you described dangerous to health care workers? Please list 3 characteristics of the emergencies that made them dangerous.

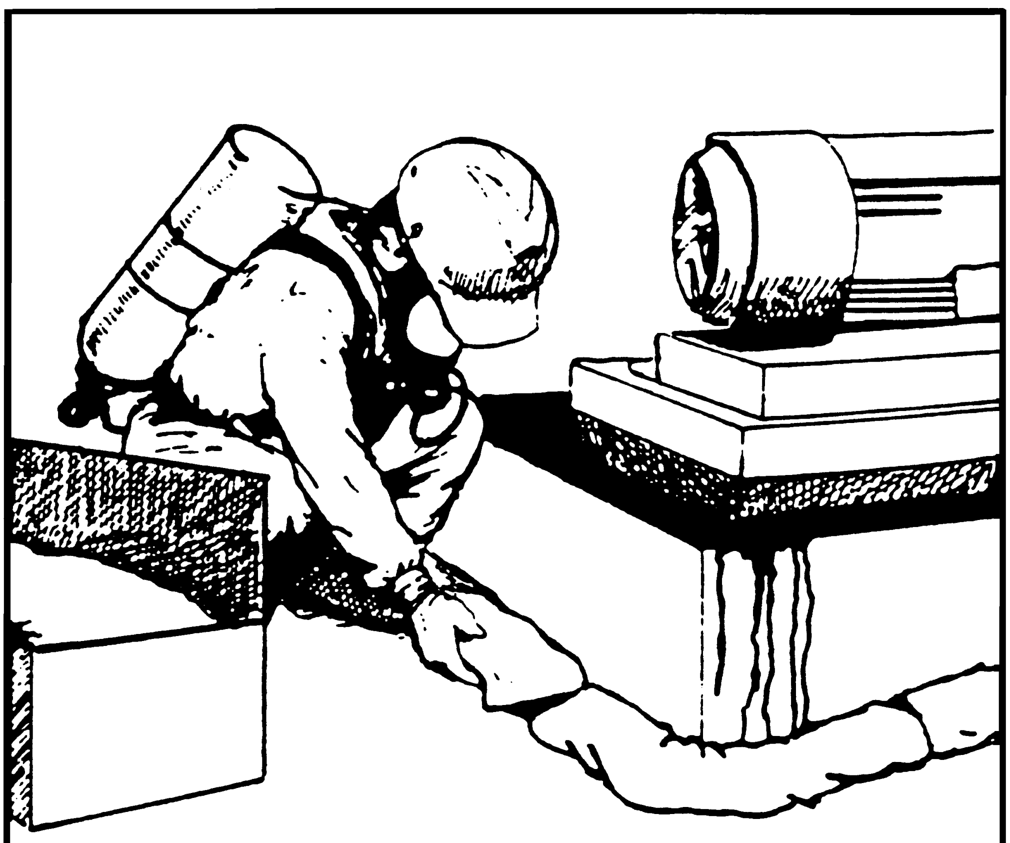
A. What Is A HazMat Emergency?

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

Spills of non-hazardous chemicals can be dangerous, but aren't a "hazardous materials emergency" under this law.

It is an emergency if:

- you need specially trained workers to contain and clean it up;
- it may cause high levels of exposure to toxic substances, or create a danger to workers that requires immediate attention.



(continued on the next page)

A. (continued)

Emergencies include:

- spilling any amount of an unknown or very irritating chemical

or

- spilling a large amount of a chemical. ("Large" is defined by EPA, not by the hospital.)

Here are some examples of emergencies:

- A pharmacist drops an IV bag of the chemotherapy drug mustargen. The drug can kill your skin on contact.
- Two chemicals in the lab mix, forcing you and your co-workers out of the room.
- A cylinder of ethylene oxide leaks for a minute, making you and your co-workers sick.
- A doctor drops an IV bag of iodine-131 (a radioactive material) in X-ray.
- A patient comes into the emergency room covered with parathion, a very poisonous pesticide.

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

B. Do Hospitals Have Chemical Spills?

According to the Occupational Safety and Health Administration (OSHA), hospitals do have to worry about spills. A 1991 letter from OSHA explains:

JUN 7 1991

Ms. Dalena Berrett
Loss Control Coordinator
HCA Parthenon Insurance Company . . .

Dear Ms. Berrett:

. . .

After considerable review OSHA interprets the scope of 1910.120 to cover hospitals in at least three scenarios; *1) when hospitals have an internal release of a hazardous substance which requires an emergency response, 2) when hospitals respond [by treating patients] as an integral part of a community-wide emergency response to a release of hazardous substance and, 3) if a hospital is a RCRA* permitted Treatment, Storage and Disposal Facility. . . .*

. . .

Sincerely,

Patricia K. Clark, Director
Directorate of Compliance Programs

(Emphasis added)

* Hospitals that want to store or treat hazardous waste must get a special permit. This comes from the U.S. Environmental Protection Agency (EPA). The rules about permits are part of a law called the Resource Conservation and Recovery Act (RCRA).

Source: Occupational Safety and Health Administration, Washington, DC

C. 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
- 2 or more chemicals may have mixed

By law, untrained workers may usually clean up:

- A small spill of blood (less than 1 gallon) **unless** it is from a research lab

- A small leak (one second) **unless** it is a deadly chemical (like cyanide)

- A spill of less than 5 gallons (one pail) **unless** it has mixed with another chemical

  or

  it is a deadly chemical (like mustargen)

  or

  it is radioactive

D. How Large is Large?

It depends! What if the hospital 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, but it may be smaller. Here are the Reportable Quantities for a few different materials:

Hazardous Chemical	Reportable Quantity
melphalan (a cancer drug)	1 pound
ethylene oxide (a sterilizer)	10 pounds
formaldehyde (used in labs)	100 pounds

Source: CERCLA Reportable Quantities, 40 CFR 302.

Task 2

Several workers at Pleasant Valley Hospital were injured in a chemical spill. 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 one case study to work on. As a group, please look over Factsheets E through K (pages 75-83) and answer the questions below for your case study.

1) What was done right in this case study?

2) What would you have done differently?

3) What recommendations will your committee make to prevent this from happening in the future?

Task 2 (continued)

Case Study #1—Central Supply

After an eventful weekend, Stan (a mechanic) had more work than he bargained for. In a rush, he came to attach a new cylinder of ethylene oxide (EtO) in Central Supply. He was wearing a mask (respirator), gloves, and a rubber apron. He turned the valve on the top of the old cylinder and started to unscrew it with a wrench.

Suddenly, a cloud of gas came out of the cylinder right into his face and knocked him out. Julie, his co-worker, ran out to get help.

By the time Julie got back to Central Supply, Bob (a co-worker) was walking through the gas toward Stan. He had been instructed by his supervisor Lucy to pull Stan out and shut off the valve. But when Bob tried to shut off the valve, he was knocked out by the gas too.

Task 2 (continued)

Case Study #2—Patient Care

The pharmacist was in a crunch, and asked Kate (a pharmacy tech) to carry a vial of chemotherapy drugs up to 8B, a busy hallway. Trying to save time, Kate took a short-cut and she slipped on a wet floor. The vial broke and the liquid splattered all over the hallway. The drug was Mustargen, which is used to treat lung cancer. It can kill the skin on contact and the drug itself causes cancer. It also causes birth defects in animals.

Kate scraped up as much of the broken glass and spilled material as she could. She called her supervisor Fred. Fred called housekeeping and asked them to come and mop up the spill. Bill, a housekeeper, came and mopped up the spill. Then he moved down the hall with his bucket and cleaned up a spill in another department using the same water.

E. 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 that you and your co-workers can't handle. One way to remember them is to decide that when you see a hazardous materials emergency you should commit a SIN:

1. **Safety** -- Get out of the area.
2. **Isolation** -- Try to keep other people out of the area.
3. **Notification** -- Report the incident

Stay outside of the room.

Do not try to rescue anyone.

Do not clean up or touch the material.

Be part of the solution.
Don't become part of the problem.

Source: "Student Certification Curriculum" (19 CCR 2520(a)(1)(C)

F. 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, in June 1993, Sid Faison died in an explosion during a methane leak in Washington, D.C. Faison was directing traffic away from the leak, when a van with two adults and two children stalled in the street. When the driver tried to start the van, the spark plugs started an explosion, which killed Faison. If he had been trained, he would have known to keep everyone farther away, and he would have known that trying to start the van could cause an explosion.

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.

G. OSHA Says…

Many SEIU health care 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 5 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 Activity 19 for more information about the OSHA standard.

(continued on the next page)

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

G. (continued)

<u>First Responder Awareness Level:</u> Call Someone and/or Sound the Alarm and Run

You need to keep other people from entering the area of the spill or leak. You also need to know who to notify and where to go if an emergency forces you out of your work area. This applies to most SEIU members who work in hospitals.

<u>First Responder Operations Level (firefighters):</u> 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. The hospital may choose to train a small crew to the operations level. They will brief the HazMat team that actually stops the leak or spill.

<u>Hazardous Materials Technicians:</u> The Offense Team

They take offensive actions to stop the release and wear special protective equipment. Extensive training is required, far beyond firefighter training.

<u>Hazardous Materials Specialists:</u> The Experts

These people are special assistants to the HazMat team. They may be specialists in radiation or other topics.

G. (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: "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.

H. 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 department the spill is in
- 4” by 4” DOT labels on packages
- anything else written on the container

Do not move closer to see any of these!

Source: *Hazardous Materials Awareness*, American Federation of State, County, and Municipal Workers, Chapter 3.

I. Keep Out—Holding Your Breath Means Death

You know that you should not use your nose, sense of taste, or touch to identify materials. You could be poisoned, burned, or worse.

If you see a spill, get out of the room as fast as you can. If your eyes, nose, or skin itch or burn, move farther away and call trained people immediately.

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.

If someone can't get out, don't try to help them. We all want to save our co-workers during an emergency. But we can't do it by trying to hold our breath and not be exposed. Even if you're in great shape, you can't run into a life-threatening atmosphere and rescue someone. You will probably need to be rescued too.

The best way to help, is to stay away and notify a HazMat or Rescue team as quickly as possible.

Source: *Hazardous Materials Awareness*, American Federation of State, County, and Municipal Workers, Chapter 3.

J. 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.

K. 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.

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 signs, tape, or some kind of marker around the room where the spill happened. Do not go near the spill to put up markers.

- Use information to try to convince others to stay away. Tell them that the material may be very dangerous. Ask them to stay away 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.

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

Task 3

In your groups, please review Factsheets L through O (pages 85–88) and answer the following questions. Choose someone in your group to write down your answers and report back to the group.

1) What do you think are the 3 most important parts of a good hospital Emergency Response Plan?

2) Does your workplace have an Emergency Response Plan for chemical hazards?

❑ Yes ❑ No ❑ Not sure

3) Please choose one chemical you work with that you will look up in your employer's emergency plan when you get back to work.

L. Don't Wait For An Emergency To Start Thinking

The Hospital's HazMat Emergency Response Plan

It is the hospital's responsibility to decide ahead of time which spills you can handle and which ones are emergencies. Workers and the union health and safety committee should review the plan and make sure that it protects people.

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 the hospital's emergency plan. (See Activity 19 – on pages 403 through 407 – for more information about the hospital's emergency plan.)

The Hospital's Hazardous Chemical List

By law, the hospital 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) and
- anything that is likely to spill.

To get a copy of the hospital's list, see Activity 18 (pages 372 and 373).

Sources: (The Plan) "HAZWOPER" 29 CFR 1910.120 [in California, 8 CCR 5192(q)(1)(2)]. (The List) "HazComm" 29 CFR 1910.1200(e)(1)(i) [8 CCR 5194 (e)(1)(A)] (To get copy of your hospital's list) 29 CFR 1910.1200(e)(4) [8 CCR 5194 (e)(3)].

M. Your Hospital's HazMat Emergency Plan

By law, your hospital has to plan for emergencies 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 hospital 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 (q) (1) (2).

N. 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 (customers, 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.

O. If You Are Exposed

If, for some reason, you breathe leaking chemicals or get spilled chemicals on your clothes or skin, get safely away from the source of the chemical but **do not leave the area**. Get your clothes off immediately. Try not to touch the chemicals. Wait for HazMat team to get the chemicals off of your body and clothes. This process is called **decontamination.** 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.

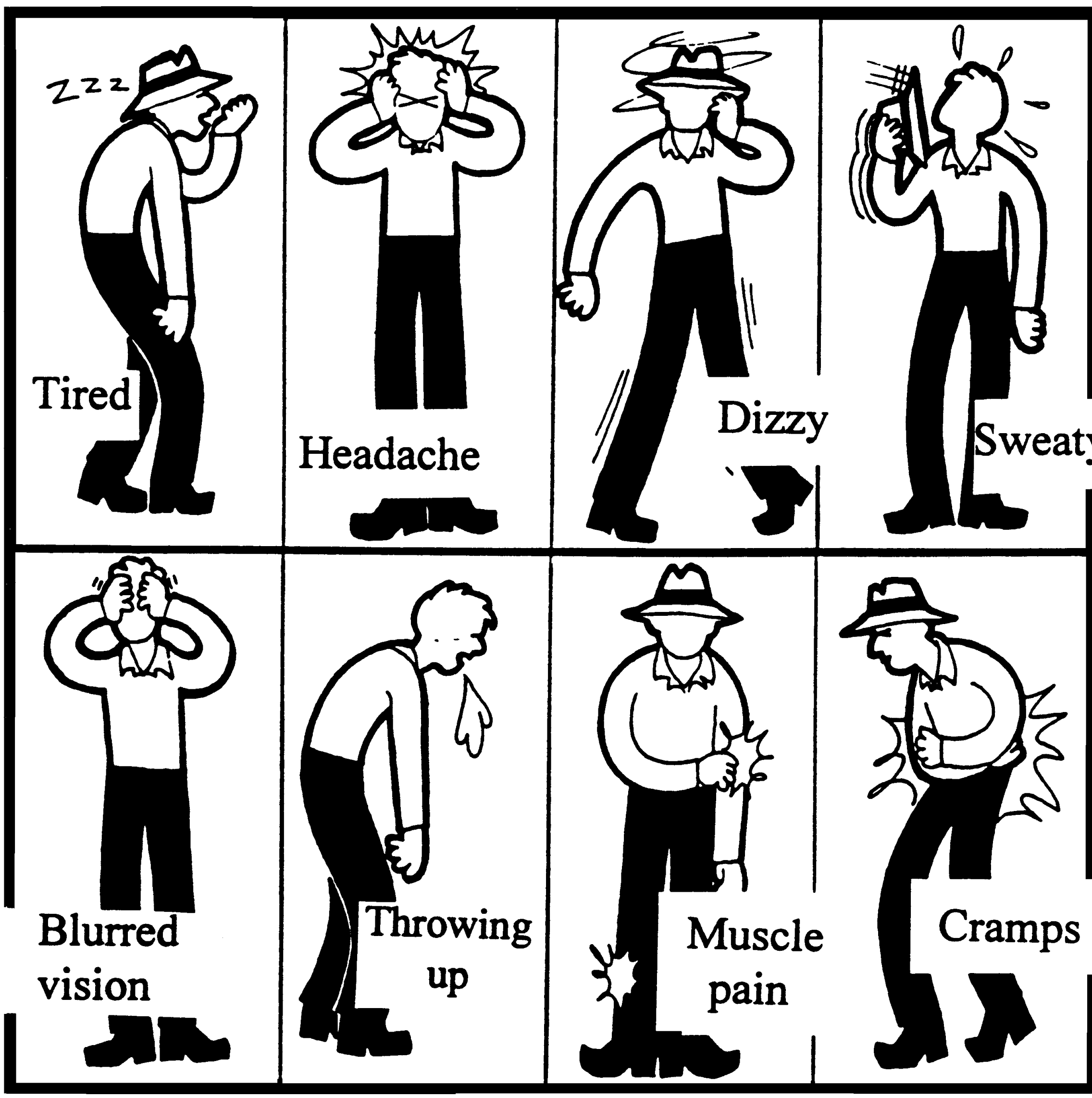
If you take chemicals home with you on your skin and clothes, you can make yourself or your family sick. Some chemicals will not make you feel sick until 6-8 hours after you breathe them. Never wash dirty work clothes with the family laundry. Get your employer to wash them or wash them separately.

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 (not your health insurance) must pay for it. Watch out for these signs of exposure:

* watery eyes	* itchy or burning skin	* headaches
* dizziness	* burning nose or throat	* feel very tired
* scratchy throat	* feel sick to your stomach	* feel “high”
* sore throat	* strange taste in your mouth	* skin rashes

O. (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.

Summary: Your Role in Emergency Response

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

2. Spills or leaks of some things, such as water or other "safe" chemicals may cause danger but aren't hazardous material emergencies under the OSHA HAZWOPER regulation.

3. In hazardous materials emergencies, awareness-level first responders have very limited roles:
   - to recognize that there is a hazard and get to safety
   - to keep everyone out of the area
   - to call trained people for help

4. 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.

5. Get out of the area as soon as you can, and stay away. Get as much information as you can from a safe distance.

6. 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.

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

8. 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.

9. It's the hospital'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.

NOTES

Activity 5: Tackling Toxic Chemical Myths

Purpose

To explore and see through the common myths about the impact of toxic chemicals in hospitals on our health.

Task 1

Local 94 has asked the health and safety committee to respond to a health care 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 Factsheets A through N (pages 95-110).

(continued on the next page)

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

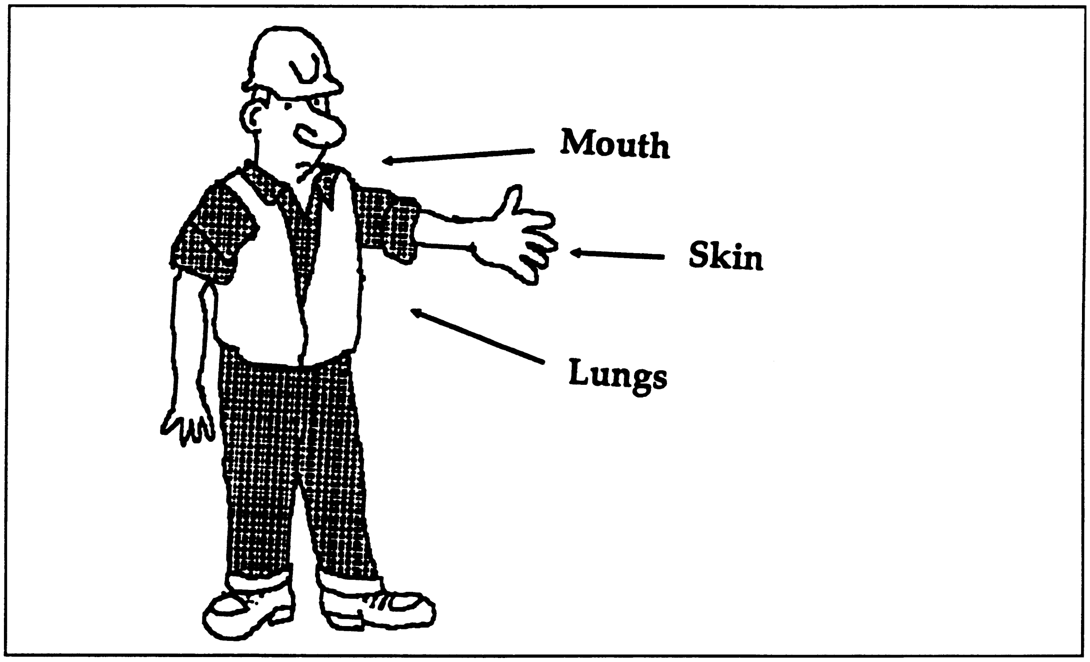
Task 1 (continued)

What would your group say to this worker?

A. How Toxic Chemicals Enter Your Body

The four basic ways toxics enter your body are:

- Direct Contact: on the skin or eyes
- Inhalation: through the lungs when you breath in through your nose or mouth
- Absorption: soak through the skin into the blood
- Ingestion: through the mouth from your hands when you eat, drink or smoke



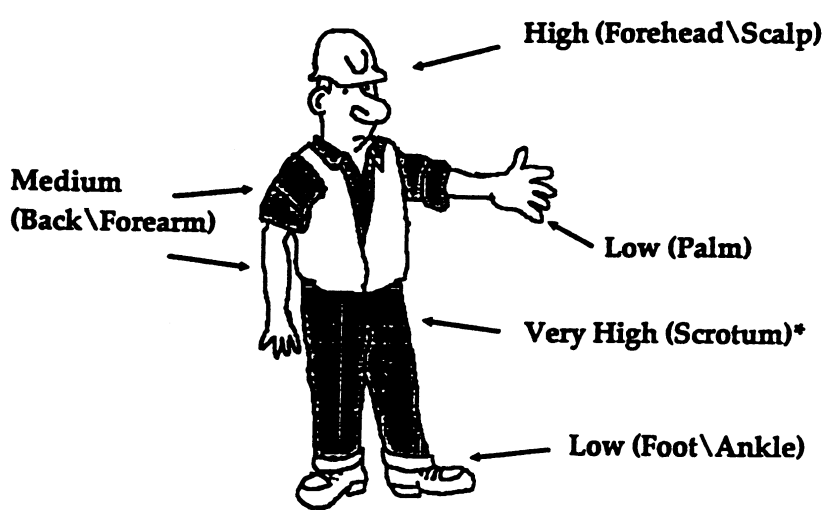
No matter how the chemical gets into your body, it can travel through your blood and harm other parts of your body. Chemicals can damage your brain, liver, kidneys, lungs, stomach . . . in fact, any part of your body. For example, methylene chloride can soak through your skin and damage your heart and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

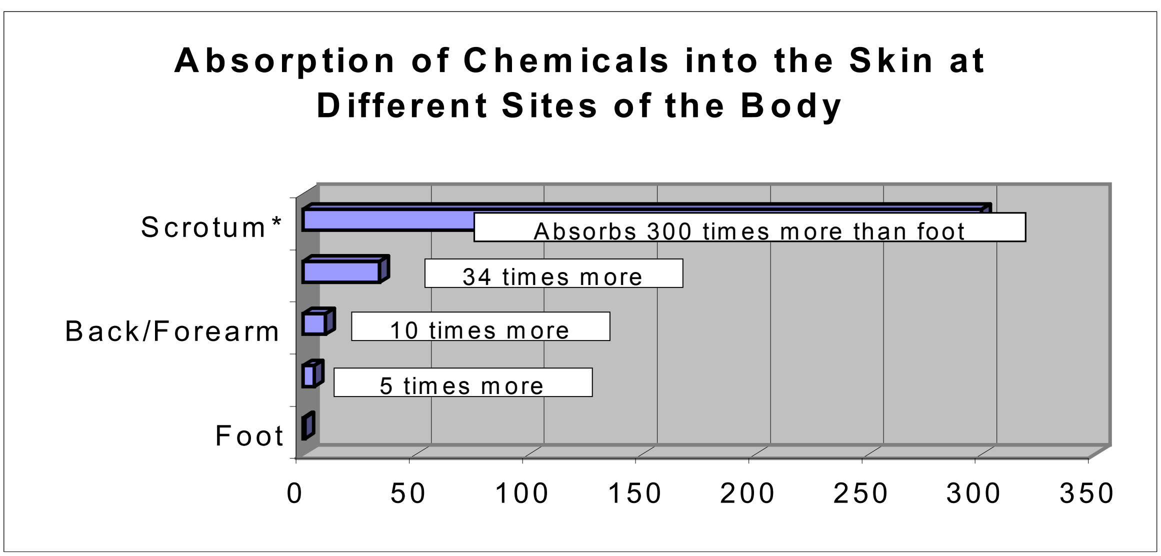
Some chemicals will just get on you and cause damage. This usually happens on the skin causing dermatitis (an inflammation of the skin) and on the eyes causing conjunctivitis (an inflammation of the eye membrane.

But, if the chemical doesn't get into 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.)





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

Source: E. Hodgson and P.E. Levi, *A Textbook of Modern Toxicology*, New York: Elsevier Science Publishing Co., 1987, pp. 34-35.

C. Did You Know that Chemicals Can Harm Many Parts of Your Body?

Nervous System

gasoline
methyl ethyl ketone
pesticides

Stomach

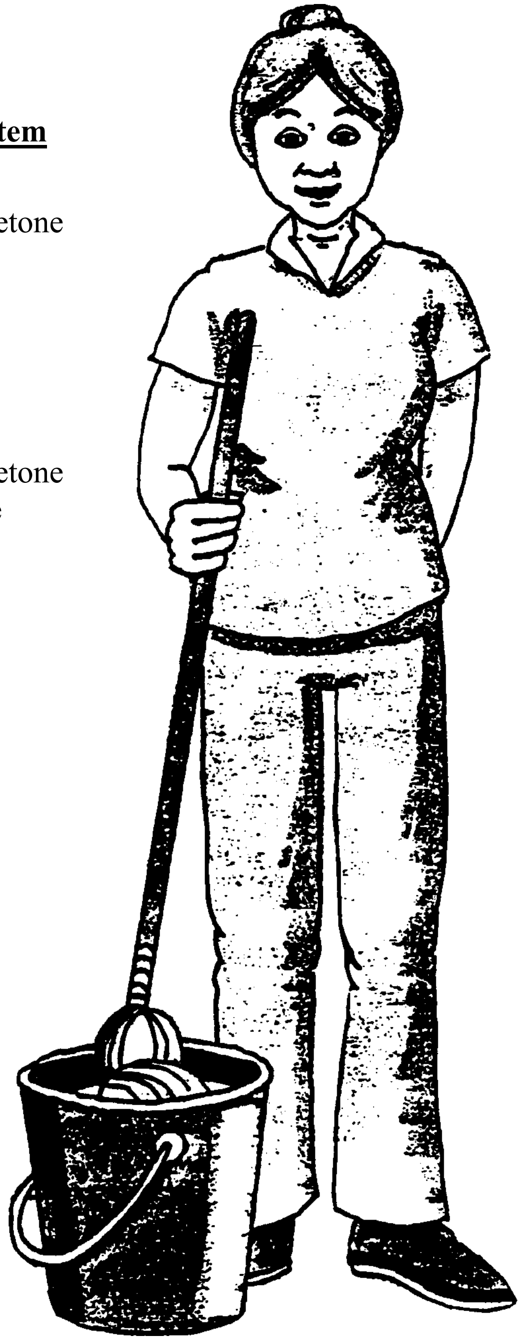
methyl ethyl ketone
turpentine
xylene

Kidneys

Cellosolve
toluene
xylene

Liver

mineral spirits
PCBs
tuluene



Eyes

benzene
toluene
tricholoethylene

Lungs

asbestos
chlorine
sodium hydroxide (lye)

Skin

benzene
tar
toluene

Reproductive

lead
2,4,5-T
vinyl chloride

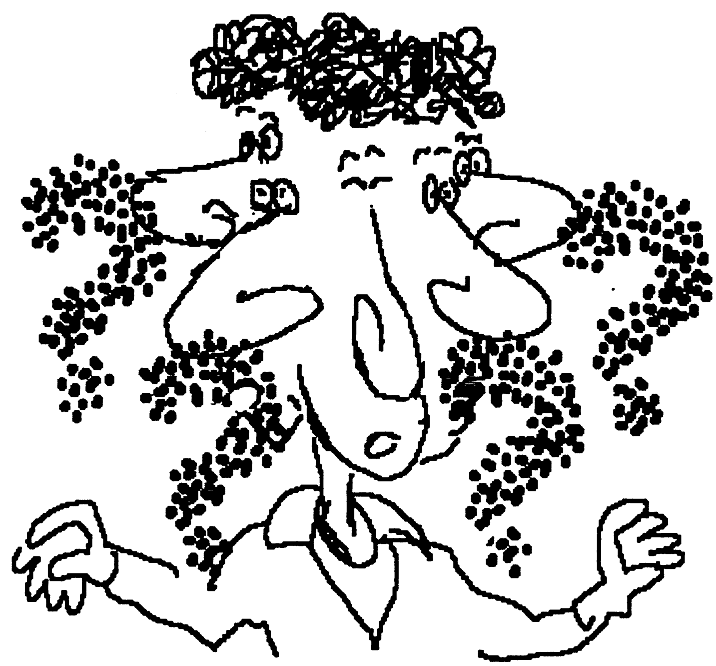
These are just a few examples of how chemicals can make you sick.

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 wastes react with your body. **To be harmed, you have to be exposed to enough of the substance.**

"Dose" means how much of a substance enters your body. For example:

- 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 to a chemical, or soon after.

- Chlorine bleach irritates your lungs right when you breathe 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 upon contact.

Chronic Effects

The word "chronic" means that the disease doesn't show up until a long time after you are exposed. It usually happens 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).
- Some chemotherapy (cancer curing) drugs can cause cancer 10 to 40 years after you work with them!

Many chemicals will cause both acute and chronic health problems. It depends on how much gets into or on your body. A large dose all at once will probably cause an acute effect. A small dose day after day for a long time may cause a chronic effect.

For example, formaldehyde used in labs causes both acute and chronic health effects:

- A large dose makes your eyes and nose burn and makes you cough.
- Over a long time, small amounts can cause cancer in your nose.

G. 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 chemicals we know give people cancer:

- Azathioprine*
- Chlorambucil*
- Diethylstilbesterol (DES)*
- Mustard Gas
- Certain combined chemotherapy for lymphomas*
- Methoxsalen with ultra-violet A therapy (PUVA)*
- Chlornoaphazine*
- Cyclophosphamide*
- Melphalan*
- Myleran*

(A star * indicates <u>medicines</u> that cause cancer.)

Chemicals that cause cancer are called carcinogens. You may have noticed that that 9 of the 10 chemicals above are drugs, and most of them are chemotherapy drugs that are used to cure cancer. They work because they kill the cancer, but they damage healthy bodies too. Here are 23 other chemicals and processes we know cause cancer:

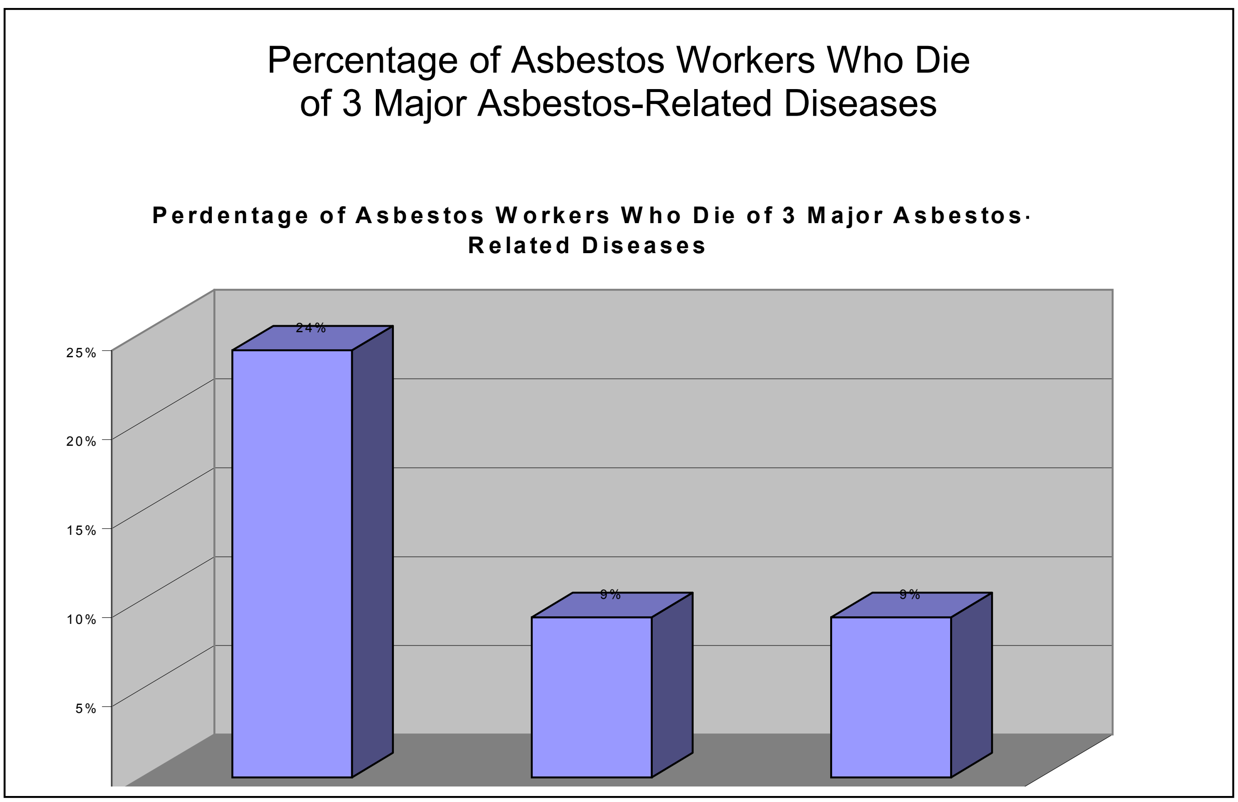
- Acrylonitrile
- 4-Aminobiphenyl
- Arsenic
- Asbestos
- Auramine manufacture
- Benzene
- Benzidine
- Benzo(a)pyrene
- 1,3 Butadiene
- Bis (Chloromethyl) ether
- Chromium
- Hematite underground mining
- Isopropyl alcohol manufacture by the Strong Acid Process
- Leather dust
- 2-Naphthylamine
- Nickel refining
- Radon gas
- Rubber manufacture (certain occupations)
- Soots, tars, and mineral oils
- Thorium dioxide
- Uranium
- Vinyl chloride
- Wood dusts (hardwoods)

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.

H. 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 will get sick.

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, asbestosis, and mesothelioma (a type of lung cancer). But not all asbestos workers get these diseases. The chart below shows just what the odds are for asbestos workers who died between 1967 and 1986.



* 14-19% of these deaths could have been avoided if these workers had not been exposed to asbestos.

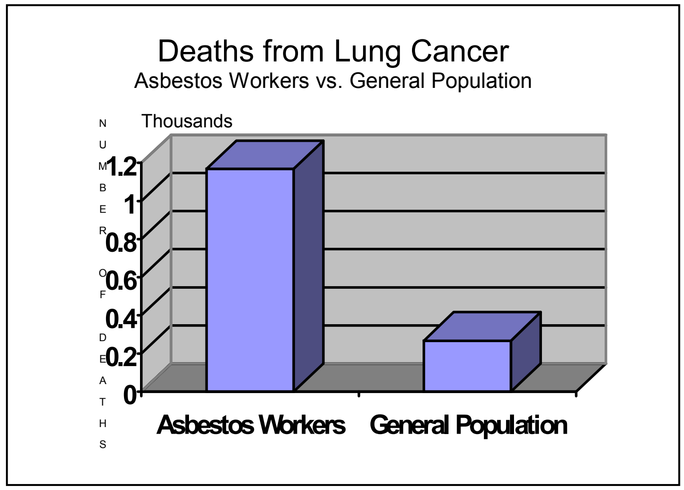
Source: I.J. Selikoff, "The Third Wave of Asbestos Disease: Exposure to Asbestos in Place, Public Health Control," *Annals of the New York Academy of Science*, vol. 643, 1991.

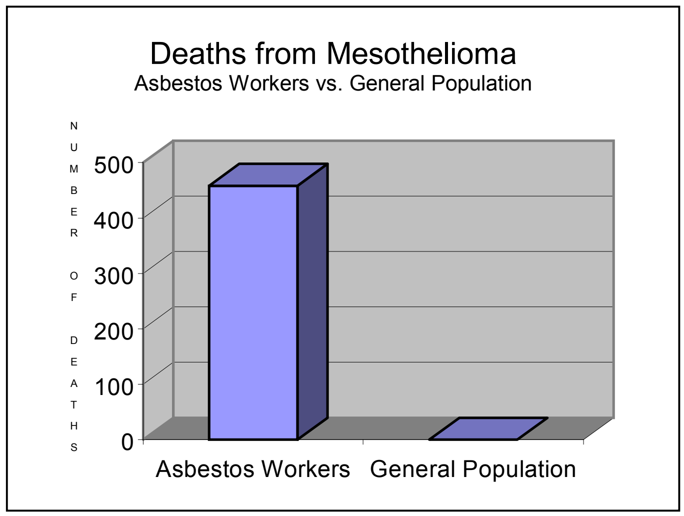
I. How Do We Know When a Toxic Substance Really Causes Human Disease?

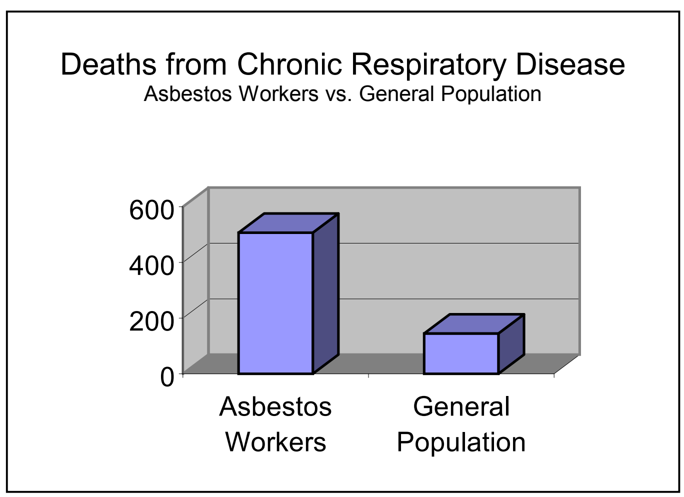
It is true that in most cases people who aren't exposed to workplace toxic chemicals get the same kinds of cancers as workers exposed to carcinogens. But the numbers are very different.

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.)

These graphs compare deaths of a population of 17,800 asbestos workers and 17,800 people in the general population from 1967-86.





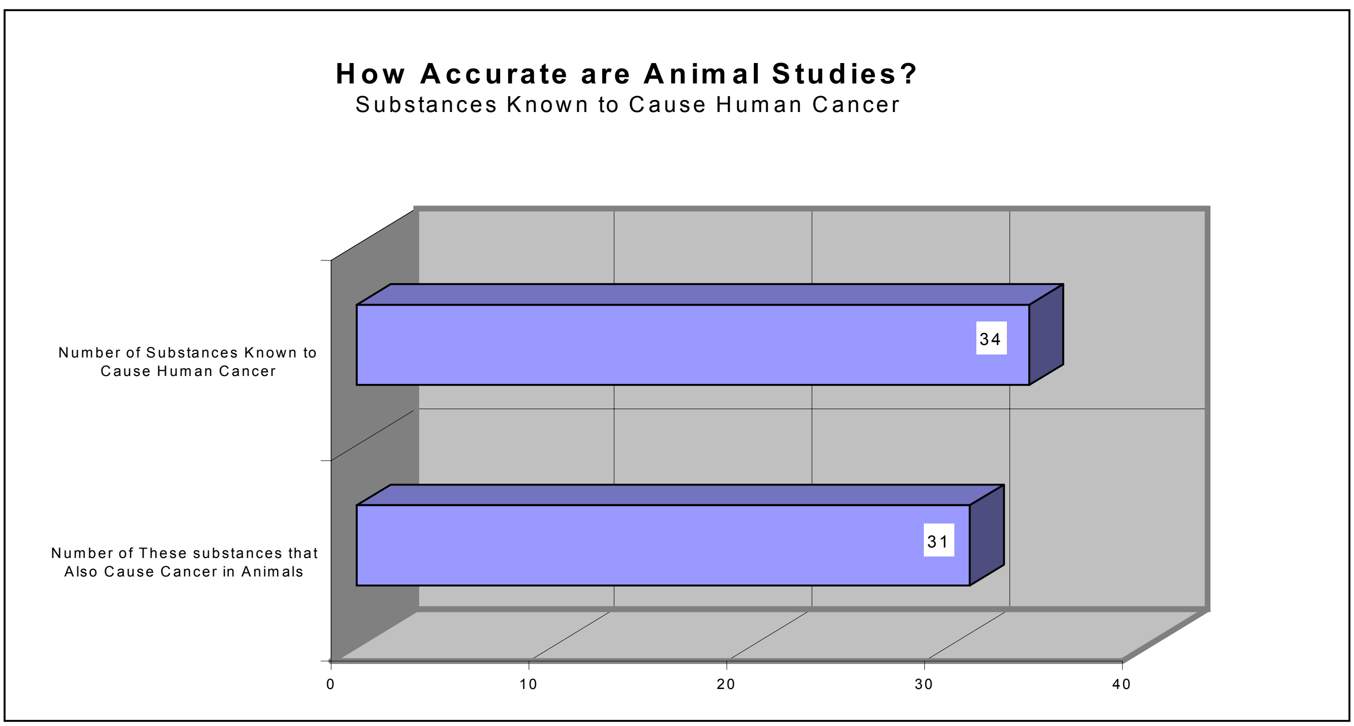


Source: I.J. Selikoff, "The Third Wave of Asbestos Disease: Exposure to Asbestos in Place, Public Health Control," *Annals of the New York Academy of Science*, vol. 643, 1991.

J. Do Animals Tell the Truth?

There are some pretty good reasons why it pays to take cancer studies on animals very seriously. Almost all of the substances that have been found to cause cancer in humans have also been found to cause cancer in animals. (There are 200-300 other chemicals that are suspected to cause cancer in humans.)

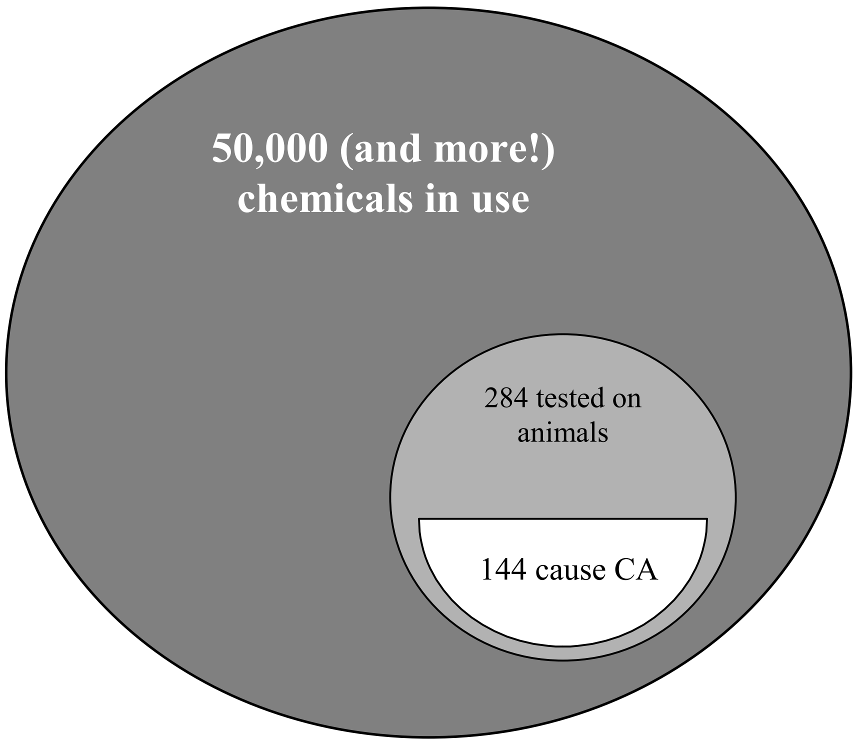
It is true that the animals are given large doses, but the real reason for this is that it speeds up the time it takes for the cancer to show up.
Large doses in themselves don't cause cancer. If you give an animal a large dose of a safe substance, they don't get cancer.



Source: David P. Rall, "Carcinogens and Human Health: Part 2," *Science*, January 4, 1991, p. 10.

K. 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 commercial 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.

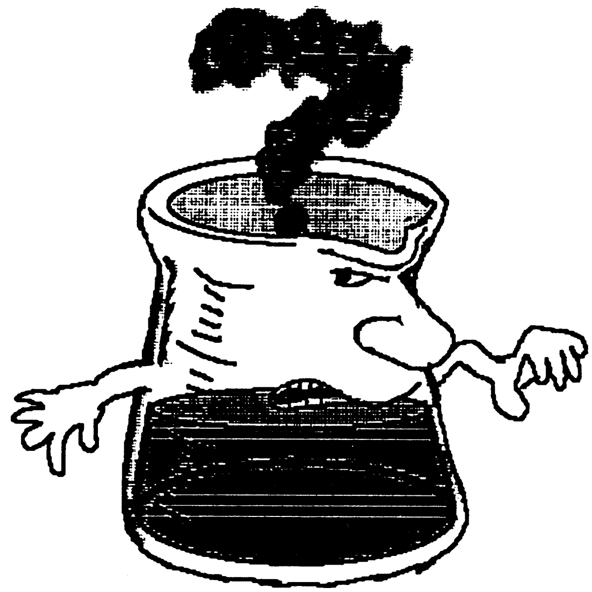


So far, OSHA has regulations for only one-third (53) of the 144 chemicals that the government's National Toxicology Program has identified in the past 10 years as causing cancer in animals. And, of those 53, only 21 are regulated by OSHA as carcinogens. **This means that OSHA has no regulations for nearly two thirds of all the known carcinogens.**

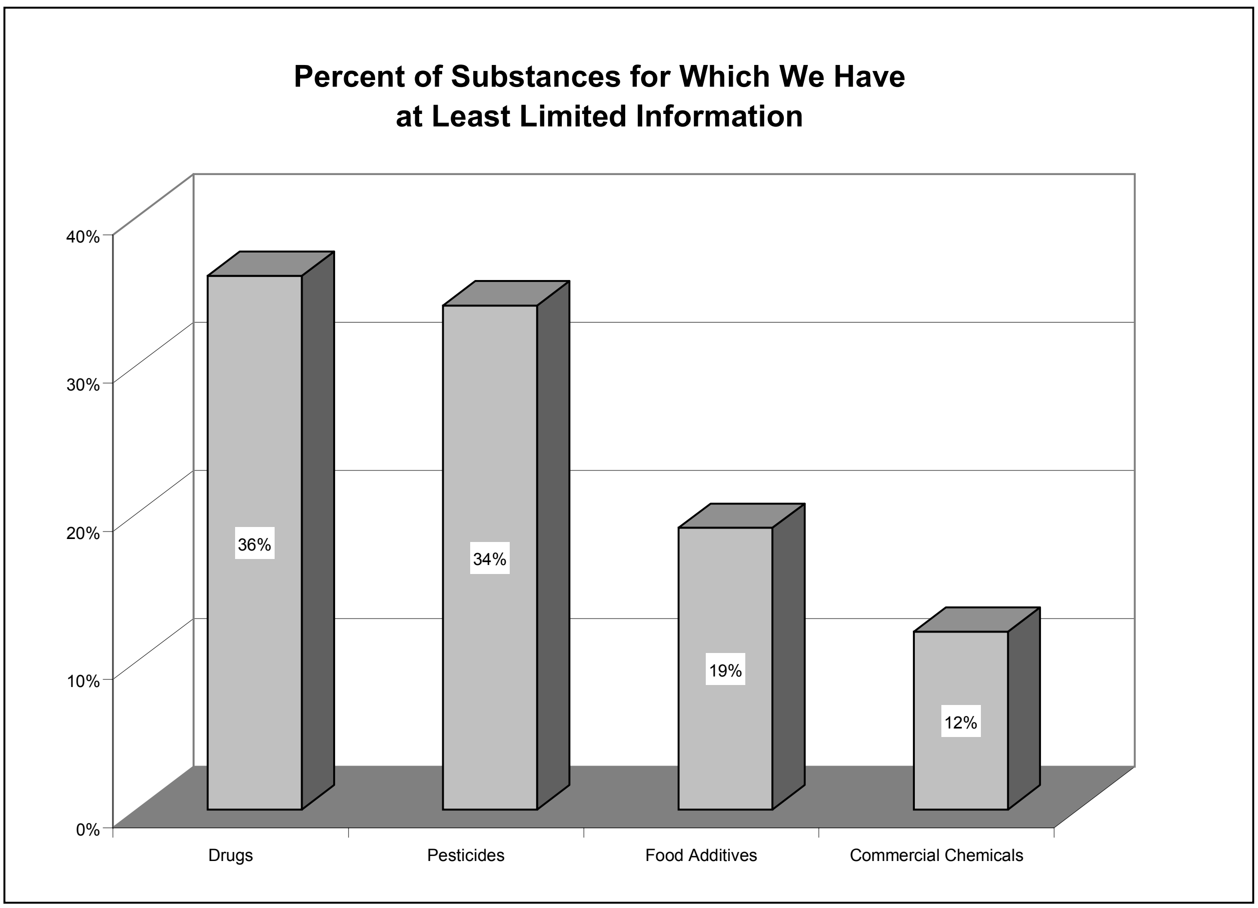
(continued on the next page)

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.

K. (continued)

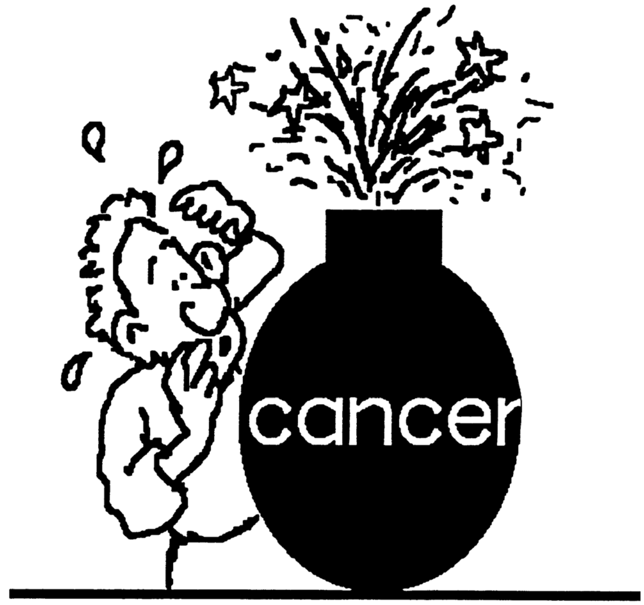


Unfortunately, we produce chemicals first and ask questions later. This chart shows just how few chemicals we actually know about when it comes to health and safety. The chart refers to the percent of chemicals of different types about which science has any health and
safety information at all.

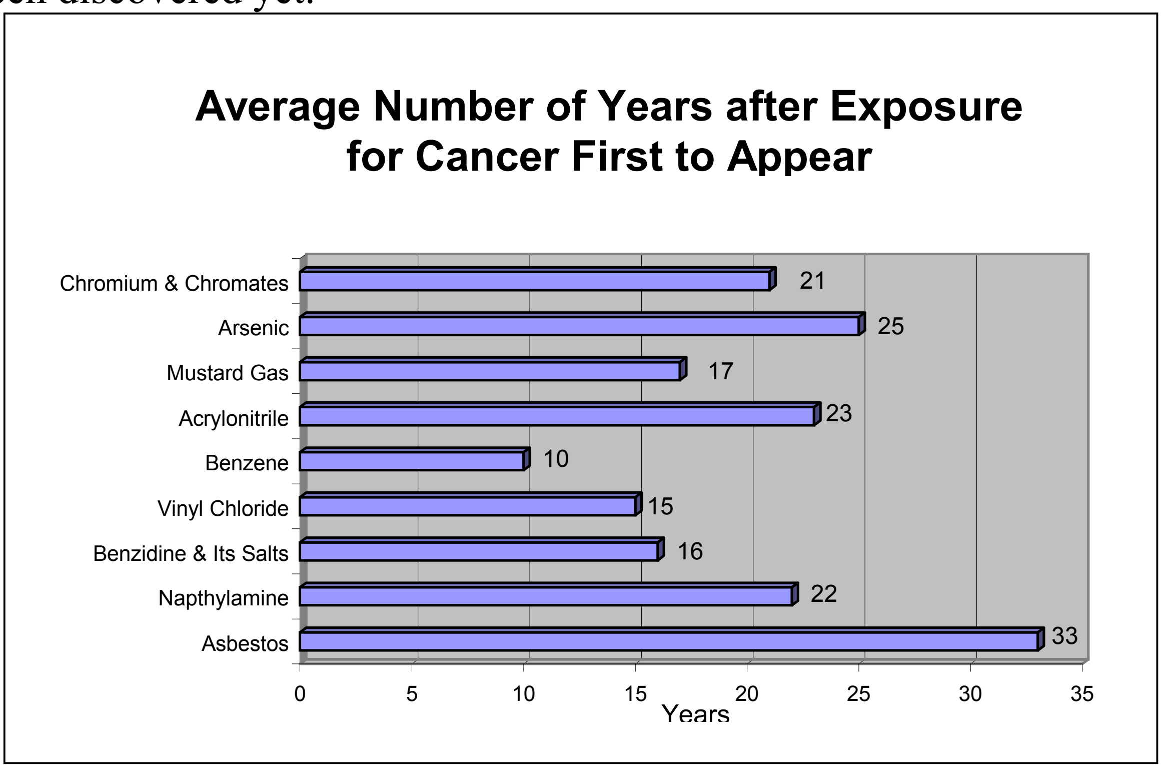


Source: National Research Council, *Toxicity Testing—Strategies to Determine Needs and Priorities*, 1984.

L. The Toxic Time Bomb



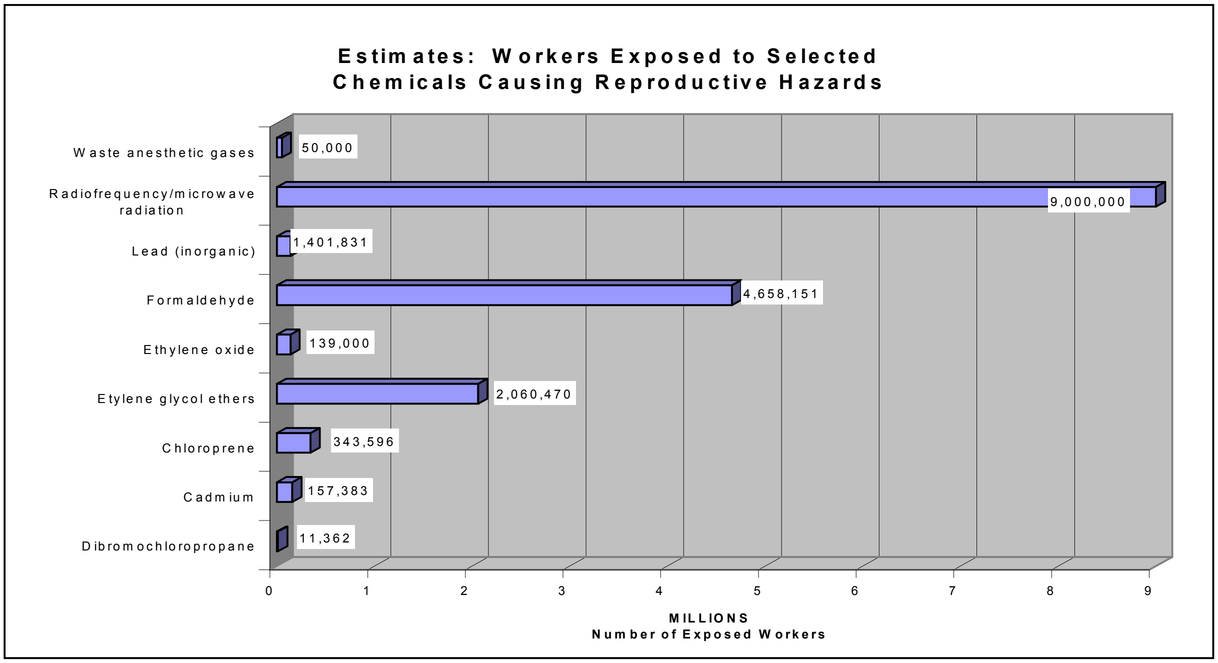
It's a big mistake to feel confident that because you've been exposed for many years and have no symptoms, all is well. **The sad fact of the matter is that it can take 10 to 40 years to see the results of a harmful exposure to a cancer-causing chemical.** You may be healthy for 20 years and get it the 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.



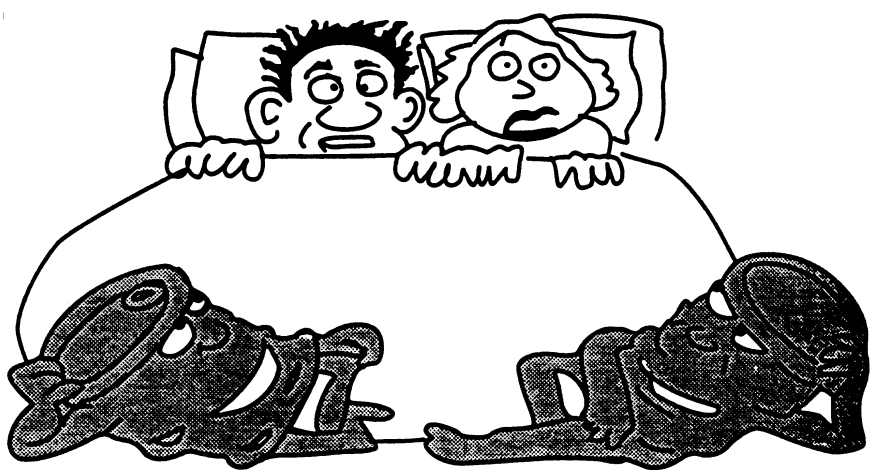
Source: B.S. Levy and D.H. Wegman (eds.), *Occupational Health: Recognizing and Preventing Work Related Disease*, Boston: Little Brown &Co., 1983.

M. 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 34,* no. 35, Center for Disease Control, September 6, 1985.

N. You're Havin' My Baby?!

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' work clothes.

(continued on the next page)

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

N. (continued)

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):** pre-maturity **2,4,5-Trichorophenol:** 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 review Factsheets O through T (pages 112-118) before giving your group's response.

> **"Because the hospital 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?

O. What are Exposure Limits, anyway?

It's easy to get confused when talking about exposure limits. There 4 basic exposure limits which are set by different agencies. Here are the ones you will usually see in the NIOSH Pocket Guide and on MSDSs:

PEL (Permissible Exposure Limit)

PELs are exposure limits set by OSHA. A PEL can be a time-weighted average (TWA) exposure limit, a "ceiling" exposure limit, or a "peak" exposure limit. These are all legal standards and it is illegal to be exposed to more than this at work.

TLV (Threshold Limit Value)

TLVs are suggested**—not legal—**standards established by the American Conference of Governmental Industrial Hygienists (ACGIH), which is not a government agency. This is a recommended average concentration over an 8-hour day. This term is used to express the airborne concentration of a material to which nearly all persons supposedly can be exposed without adverse effects day after day.

REL (Recommended Exposure Limits)

RELs are exposure limits recommended**—not legally enforceable—**by NIOSH. Like the PELs, RELs can take many forms: time-weighted averages, short-term exposure limits, and ceiling exposure limits. RELs are listed in the NIOSH Pocket Guide in the 3rd column.

IDLH (Immediately Dangerous to Life and Health)

This is an exposure limit also set by NIOSH. It provides the concentration to which a worker can be exposed for 30 minutes without permanent damage to his or her life or health. Workers should assume that they would not be able to escape from an area that had concentrations higher than the IDLH limits safely.

O. (continued)

PELs, RELs, and TLVs can be expressed in three different ways:

- **TWA (Time-Weighted Average)** is related to long-term exposure. The theory is that a worker will not get sick if he or she works at or below this level for a long time. A "long time" usually means 8 hours per day, 5 days per week for your whole working life. These are averages, which means that your exposure can be higher than this limit for part of the day, as long as it is also lower for part of the day. If the MSDS only lists "TLV," is usually means the time-weighted average.

- **STEL (Short-term Exposure Limit)** is the amount you can be exposed to for no more than 15 minutes. This is also an average. Short-term limits are higher than 8- or 10-hour exposure limits. (STELs are abbreviated as "ST" in the NIOSH Pocket Guide.)

- **C (Ceiling exposure limit)** is the amount that should **never** be exceeded at any point during the work day. Ceiling limits are set for some chemical that are fast-acting. (Be sure not to confuse "C" with "Ca" in the NIOSH Pocket Guide: "Ca" means that the chemical causes cancer!)

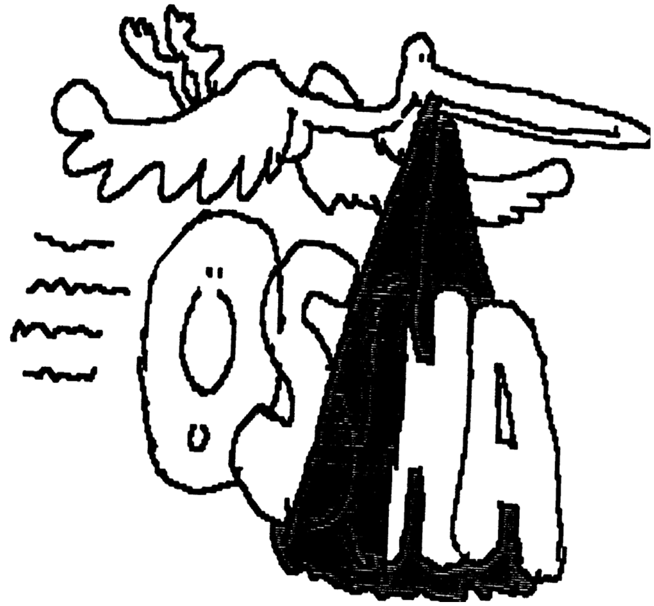
A note to help you understand the numbers

ppm (or "parts per million") is a way to measure how much of a chemical is in the air or in a liquid. One part per million is a very small amount—it is equal to about 3 tablespoons of something in a swimming pool 5 feet deep, 10 feet wide, and 13 feet long (about 10,000 gallons!) full of water.

mg/m^3 (or "miligrams per cubic meter) is similar to ppm, but it's used to measure concentrations of dusts, fumes, or other particles in the air. For most substances mg/m^3 can be converted to ppm.

Source: OCAW/Labor Institute, Hazardous Materials Workbook, eighth edition 1996, pp. 122-3.

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.

Q. 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 the Ohio 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: Complied 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. Economics or Health—Who Should Set Standards?

Until 1989, it took OSHA 17 years to issue standards for 24 toxic substances. In 1989, OSHA picked up the pace by adding, strengthening and reaffirming Permissible Exposure Limits for 428 toxic substances. Unfortunately, in developing these standards, OSHA relied entirely on the TLV's (threshold limit values) established by the ACGIH (American Conference of Governmental Industrial Hygienists). These TLVs are based largely on **corporate** information.

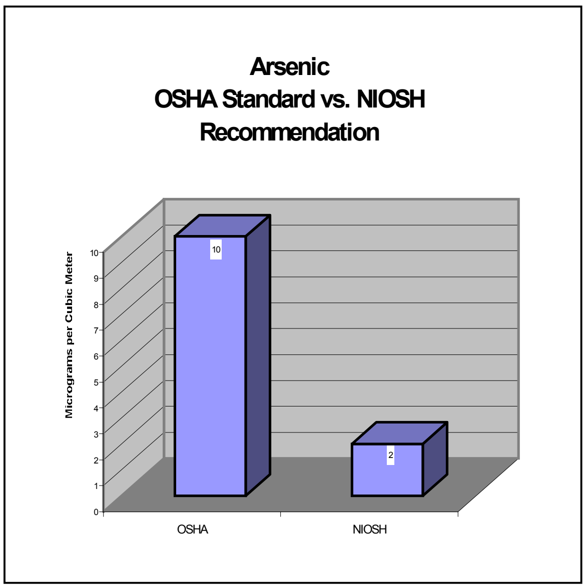
- In the process, OSHA chose to ignore recommendations of the National Institute for Occupational Safety and Health (NIOSH). (NIOSH bases its recommended standards on the best scientific evidence available.)
- NIOSH testified that **for 98 substances, the OSHA Permissible Exposure Limits based on the ACGIH TLVs were too high**. For some substances, such as arsine, chlorodiphenyl, chromium, and zinc chromate, NIOSH recommends standards that **are between 100 and 1,000 times more restrictive**.
- According to a recent article published in the *American Journal of Industrial Medicine*, "It is particularly disturbing that OSHA would turn to the ACGIH TLV committee, an anachronistic group with no legal authority and with limited resources, rather than to NIOSH, a governmental body with clear responsibility for developing criteria for standards under the Occupational Safety and Health Act."

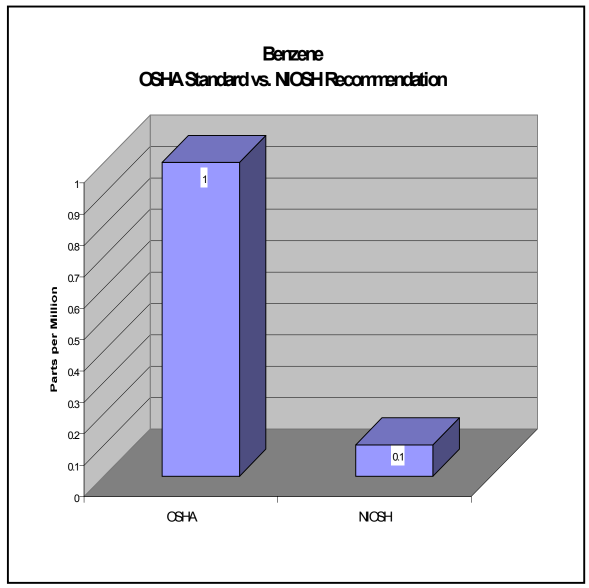
Because OSHA did not seek or incorporate recommendations from other agencies, and did not have a comment period or public hearings, the new standards were thrown out in 1992. Therefore, we are still using the original standards developed in 1971. These standards do not take into account any of the important improvements in scientific understanding of what substances, at what levels, can hurt or kill workers.

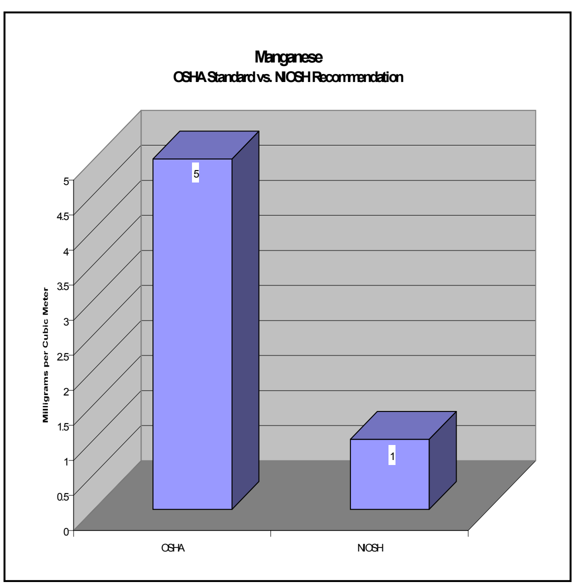
Source: James C. Robinson, et al., "Implications of OSHA's Reliance on TLVs in Developing the Air Contaminants Standard," *American Journal of Industrial Medicine* 19, no. 1, 1991.

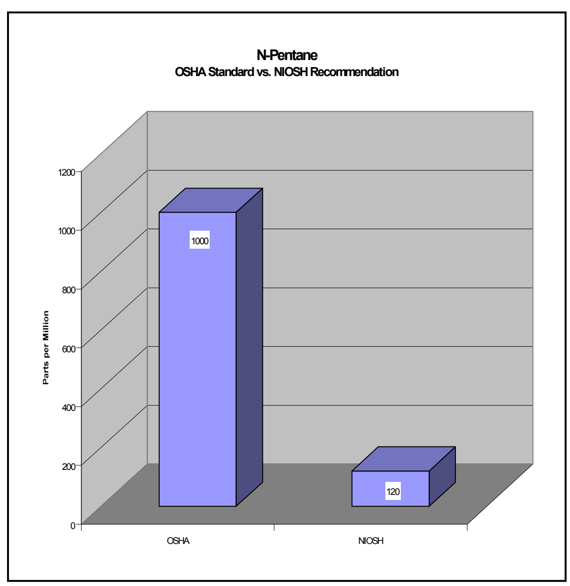
S. How and Why NIOSH and OSHA Differ

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.**







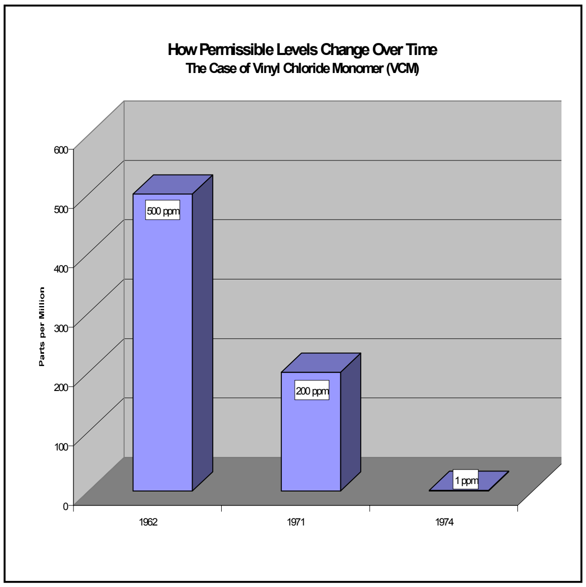


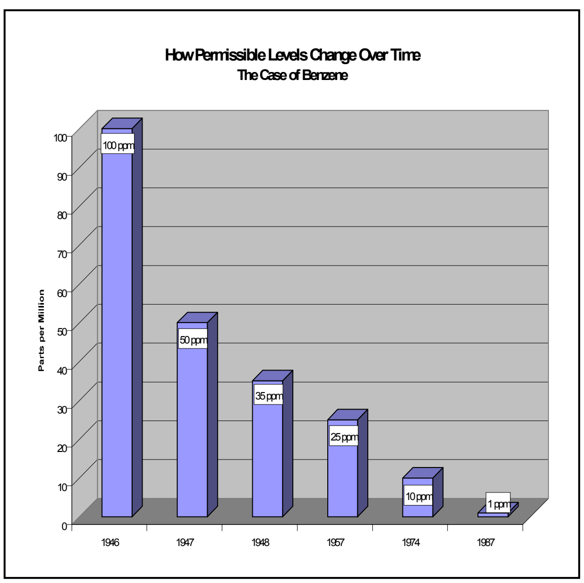
Source: U.S. Department of Health and Human Service, *NIOSH Pocket Guide to Chemical Hazards*, June 1990.

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 (ppm) 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 6: Getting Information from Labels

Purpose

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

Task 1

Your group is the joint health and safety committee for SEIU Local 94. Pleasant Valley Hospital's management is thinking about buying a new product. Your committee will look at the information about the product and tell management whether you think it is OK for workers to use.

As a group, please use:

- the label on page 123,
- your own experience, and
- Factsheets A and B (pages 124-126)

to answer the following questions:

1) What dangers to your health and safety does the label on the next page tell you about?

(continued on the next page)

Task 1 (continued)

2) What other information would you want to get from the manufacturer before or during an emergency?

3) What information does the label provide to help you contact the manufacturer?

4) Would you recommend that Pleasant Valley Hospital buy this product? Why or why not?

Task 1 (continued)

CELLO

BREVITY BLUE®

LIQUID SCOURING CREME

Manufactured by:

CELLO CORP.
1354 Old Post Road
Havre de Grace, MD 21078
(410) 939-1234

Member of Grow Group, Inc.

KEEP OUT OF REACH OF CHILDREN
CAUTION: EYE IRRITANT
See back panel for additional precautions and first aid.

ONE QUART

CAUTION: Eye irritant. Avoid contact with eyes.
FIRST AID: In the event of eye contact, flush eyes with large amounts of clear water for at least 15 minutes. If irritation persists, seek medical attention.
INGREDIENT STATEMENT: Water (CAS #7732-18-5), Silicone Dioxide (CAS #7631-86-9), Tall Oil Fatty Acid, Ammonium Salt (CAS #68132-50-3), Coconut Diethanolamide (CAS #68603-34-6), Ammonium Oxalate (CAS #5972-73-6)

Made for Professional Use Only.

A. Three 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

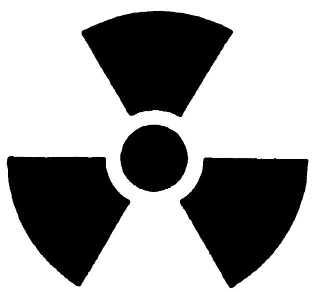
Some products must have more information on their labels, such as:

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

Right-to-Know Label **Drug Label** **Pesticide Label**

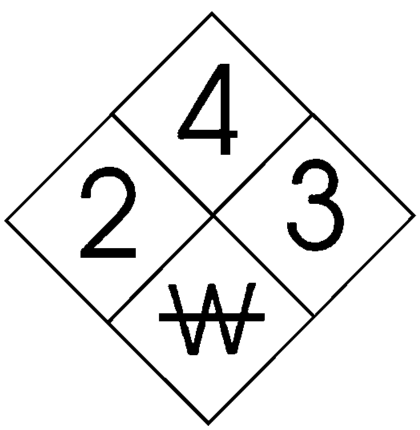
A. (continued)

There are other labels that are used to give you an early warning about hazards. They don't tell you what's inside the container. These labels are covered in other activities in this workbook:



Radiation labels
Activity 10

Biohazard (germ) labels
Activity 11



NFPA labels
Activity 7

DOT labels
Activity 7

B. Using "Right-to-Know" Labels

By law, every product you use at work that contains hazardous chemicals must have a label on it. The hospital 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 <u>why</u> 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 <u>why</u> you shouldn't heat it, or what could happen if you do.
- If it contains a chemical that causes **cancer**, there are special label requirements. The label must say that it causes cancer—that it is a carcinogen. It may also need other special warnings, depending on the chemical.
- 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.

Task 2

The trainers will tell you which of the next 2 scenarios to read—either the one about drug labels (page 128), or the one about pesticide labels (page 130).

In both scenarios, your group is the union health and safety committee for SEIU Local 94. A co-worker from Pleasant Valley Hospital came to you with a concern about a hazardous material and its label. As a group, please respond to the worker's statement using the appropriate label, your own experience, and Factsheets C through E (pages 132-135).

What is your group's response to the worker?

Task 2 (continued)

Drug Label Scenario

A worker has come to the union's health and safety committee with the label on the next page.

> **"The other day I was working the night shift and one of the temporary nurses dropped a chemo IV. It spilled all over the place and they asked me to clean it up. I've never cleaned this stuff up before, so I put on gloves, but I was real nervous.**
>
> **The next day I went to my friend Doris, who's a pharmacy tech. She didn't know much about the drug, but she gave me this label. Can this stuff hurt me?"**

Task 2 (continued)

MSD

MUSTARGEN®
(MECHLORETHAMINE HCl for INJECTION, MSD)

WARNINGS

Extravasation of the drug into subcutaneous tissues results in a painful inflammation. The area usually becomes indurated and sloughing may occur. If leakage of drug is obvious, prompt infiltration of the area with sterile isotonic sodium thiosulfate (1/6 molar) and application of an ice compress for 6 to 12 hours may minimize the local reaction. For a 1/6 molar solution of sodium thiosulfate, use 4.14 g of sodium thiosulfate per 100 mL of Sterile Water for Injection or 2.64 g of anhydrous sodium thiosulfate per 100 mL or dilute 4 mL of Sodium Thiosulfate Injection (10%) with 6 mL of Sterile Water for Injection.

PRECAUTIONS

General

This drug is highly toxic and both powder and solution must be handled and administered with care. Since MUSTARGEN is a powerful vesicant, it is intended primarily for intravenous use, and in most instances is given by this route. Inhalation of dust or vapors and contact with skin or mucous membranes, especially those of the eyes, must be avoided. Rubber gloves should be worn when handling MUSTARGEN. (See DOSAGE AND ADMINISTRATION and HOW SUPPLIED, *Special Handling*.)

DOSAGE AND ADMINISTRATION

Special Handling

Due to the drug's toxic and mutagenic properties, appropriate precautions including the use of appropriate safety equipment are recommended for the preparation of MUSTARGEN for parenteral administration. The National Institutes of Health presently recommends that the preparation of injectable anti-neoplastic drugs should be performed in a Class II laminar flow biological safety cabinet and that personnel preparing drugs of this class should wear surgical gloves and a closed front surgical-type gown with knit cuffs.[17]

Several other guidelines for proper handling and disposal of anti-cancer drugs have been published and should be considered.[18-22] There is no general agreement that all of the procedures recommended in the guidelines are necessary or appropriate.

MSD MERCK SHARP & DOHME
DIV OF MERCK & CO., INC., WEST POINT, PA 19486, USA

Task 2 (continued)

Pesticide Label Scenario

A worker has come to the union's health and safety committee with the following concern:

> **"For the last 2 years I've been using this cleaner for the shelves in central supply. 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.

Task 2 (continued)

DMQ®

Damp Mop Neutral Disinfectant Cleaner

ACTIVE INGREDIENTS:
R-alkyl (C_{14}-50%, C_{12}-40% C_{16}-10%) dimethyl benzyl ammonium chlorides............... 4.5%
INERT INGREDIENTS: 95.50%

EPA Reg. No. 5741-20
EPA Est. No. 5741-OH-1

DMQ retains the beauty of high gloss floors with the added effectiveness of a disinfectant!

DMQ is recommended to clean, disinfect and deodorize floors, walls, countertops, and other hard, non-porous surfaces in hospitals, schools, hotels or any commercial, industrial or institutional facility where a clean and sanitary environment is important.

DMQ provides 700 ppm of quaternary germicide at use-dilution.

Directions for use:

It is a violation of Federal Law to use this product in a manner inconsistent with its labeling.

Bactericidal and virucidal Activity [including the HIV-1 (AIDS virus)]

For one-step cleaning and disinfecting in the presence of organic soil and hard water up to 300 ppm as $CaCO_3$ (17.5 grains), use DMQ at 2 oz. per gallon of water.

Apply with a mop, cloth or spray device.
Treated surface must remain wet for 10 minutes.
Preliminary cleaning is required for heavily soiled surfaces.
Fungicidal Activity
Apply DMQ at 2 oz. per gallon of soft water to a pre-cleaned surface with a mop, cloth, or spray device.
Treated surface must remain wet for 10 minutes.
KILLS HIV ON PRE-CLEANED ENVIRONMENTAL SURFACES/ OBJECTS PREVIOUSLY SOILED WITH BLOOD/BODY FLUIDS in health care settings or other settings in which there is an expected likelihood of soiling of inanimate surfaces/objects with blood or body fluids, and in which the surfaces/objects likely to be soiled with blood or body fluids can be associated with a potential for transmission of human immunodeficiency virus Type 1 (HIV-1) (associated with AIDS).

Special Instructions for Cleaning and Decontamination against HIV-1 of Surfaces or Objects Soiled with Blood or Body Fluids:
Exposure to blood and body fluids should be avoided by use of barrier protection such as latex or other impervious gloves. Face shields and impervious gowns should also be worn if splashing of blood or body fluids may occur. Gross contamination of blood or body fluids must be removed with disposable rags, absorbant, etc., before application of DMQ. Contaminated cleaning materials, blood, and other body fluids should be autoclaved and/or disposed of according to local regulations for infectious waste disposal.

DANGER

PRECAUTIONARY STATEMENTS
Hazard to Humans and Domestic Animals

Keep out of reach of children. Causes eye damage and skin irritation. Do not get in eyes, skin, or on clothing. Harmful if swallowed. Wear goggles or face shield and rubber gloves when handling.

STATEMENT OF PRACTICAL TREATMENT

In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. For eyes, call a physician. Remove and wash all contaminated clothing before reuse. If swallowed, drink egg white, gelatin solution, or if these are not available, drink large quantities of water. Call a physician.

NOTE TO PHYSICIAN

Porbable mucosal damage may contraindicate the use of gastric lavage.

STORAGE AND DISPOSAL

Do not reuse empty container. Wrap container and put in trash.

SPARTAN CHEMICAL COMPANY, INC. 110 N. Westwood Avenue/Toledo, OH 43607

C. Using Drug Labels

By law, every drug or medical device must have a label on it. The Food and Drug Administration (FDA) makes rules about drugs. According to the FDA, drugs must have a lot of information on the label. This information is written to protect patients, but it can help workers too. In general, pills are not dangerous to workers (unless you swallow them), but liquids, powders, and gases can be.

The health and safety information on drug labels that you can use includes:

- **Warnings—**any special dangers from the drug. (These may be called adverse reactions. In some cases they may only affect patients who use the drug, but in some cases they may harm workers too.)

- **Directions for use**—including anything you should do to protect yourself when giving the drug:
    - how the drug should and should not be given (for example, "avoid contact with skin")
    - how much, and how often the drug should be given (giving too much of the drug can expose workers)
    - how the drug should be prepared (for example, does it need to be mixed in a well-ventilated area)

- **Any studies that have shown long-term side effects.** These may be hard to read. The drug may only cause side effects in patients, not workers. But some drugs do cause side effects for workers, and the label can warn you. For example, some chemotherapy drugs can kill your skin on contact!

C. (continued)

This section of the label must include any studies that show:

- cancer (or problems that can lead to cancer)
- reproductive problems (such as birth defects or not being able to have children)
- liver or kidney damage or other health problems

Here are some key words to look for in this section of the label:

carcinogenic—causes cancer
mutagenic—may cause cancer
teratogenic—causes birth defects
fetotoxic—causes miscarriages

The label will also tell you:

- **All ingredients**—you can use this to look up more information
- **The expiration date**—a few chemicals can form dangerous compounds over time
- The manufacturer's **name and address**
- **Whether some people are allergic to the drug** or it makes some conditions worse. For example, the directions may say that people with skin disease should not use the drug. This means workers with skin disease need extra protections if they have to touch the drug.

Source: FDA Drug Labeling regulations, 21 CFR 201.

D. An Imperfect System

The drug labeling system doesn't always work as well as it should, as you can see from the article below.

HOSPITAL WORKERS SETTLE WITH MAKER OF EXPERIMENTAL DRUG THAT FIGHTS AIDS

TULSA, Okla.--Health care workers at an area hospital reached a confidential settlement with the maker of an experimental AIDS drug.

The drug, DHPG, is sold as "Cytovene". It comes in a powder form and is mixed for intravenous use.

In 1987 a Doctor at Oklahoma Memorial Hospital began receiving DHPG. In August, 1989, 15 workers who handled the drug began having symptoms, including unusual hair loss, headaches, and skin rashes. They were exposed by contact with the drug through the skin, mucous membranes, or inhalation.

The workers sued the manufacturer, claiming that the company failed to warn of the dangers of preparing and dispensing the drug.

By September 1989, the suit contended, Syntex U.S.A Inc. provided advertising and package inserts about safe methods for handling the drug.

Source: "Hospital Workers Settle With Maker of Experimental Product Used to Fight AIDS, *Occupational Safety and Health Reporter*, February 24, 1993, p. 1648

E. Pesticide Labels

By law, every pesticide must have a label on it. Pesticides include germicides and sterilizing chemicals, as well as insect and weed killers. 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—a few drops could kill you
  Warning—a teaspoonful could kill you
  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 <u>why</u> 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 <u>why</u> 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.

Task 3

The "Right-to-know" law requires your employer to do 4 things:

1. have labels on each product you work with,
2. keep chemical fact sheets on the job,
3. train health care workers about the dangers of the chemicals they work with, and
4. write a plan that explains how the hospital will do items 1, 2 and 3.

In your groups, please discuss and answer the following questions. (For more information on the "right-to-know" law, see Factsheet F on page 137.)

1) Is your employer following the "right-to-know" law? Please mark on the chart below which of the 4 requirements your employer is or is not doing.

Right-to-Know Requirements for Employers	**My employer IS doing this**	**My employer IS NOT doing this**	**I don't know**
…labels on each product			
…chemical fact sheets available at work			
…effective training for workers on chemical hazards			
…has a written plan			

2) Of these requirements, which do you think is the most important? Why is it important?

F. The Right-to-Know Law

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

1. Have **labels** on the products you work with.

2. Keep current **chemical fact sheets** (called Material Safety Data Sheets or MSDSs) on the job (see "Activity 8: MSDS").

3. **Train** health care workers about the dangers of the chemicals they work with.

4. **Write a plan** that explains how the hospital 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). In these 12 states, state and local government workers are not protected by a right-to-know law. For more information about Right-to-Know laws, see "Activity 19: Legal Rights."

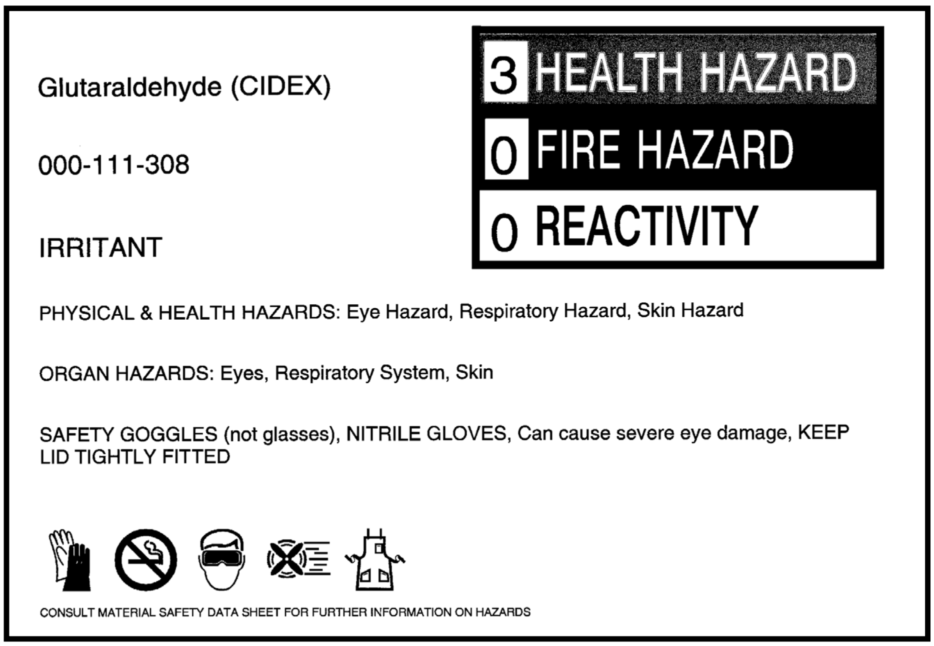
The Joint Commission (JCAHO) also says the hospital must have a system for managing hazardous materials. Part of the JCAHO inspection is to make sure that the hospital is following all other regulations, including OSHA's.

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

G. Uniform Labels Make It Easier

Different manufacturers put different information on their labels, and they use different formats. You have to read the fine print and it's not always clear where the information you want most can be found on any given label. This can be a problem when you need information in a hurry.

That's why Kaiser Permanente uses a uniform labeling system at its Morse Avenue facility. Many containers holding hazardous chemicals have one of these labels. They are clear and easy to read and you know just where to look to get the information you need most.



The nine-digit number under the chemical name is called a CAS number. It is another way to identify the specific chemical hazard in the product. You will learn how you can use this number in Activity 9 on the NIOSH Pocket Guide.

The symbols along the bottom of the label indicate safety precautions that should be taken (nitrile gloves, no smoking, goggles, local exhaust ventilation and protective clothing).

Note: The actual labels are color coded for quick reference. The box with the Health Hazard number is blue; Fire Hazard is red; and Reactivity is yellow.

Summary: Using Labels

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

2. The hospital 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. Drug labels also list all of the ingredients in the drug.

6. 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 7: Using DOT and NFPA Labels

Purpose

To recognize the Department of Transportation (DOT) and National Fire Protection Association (NFPA) labels.

Task 1

Your small group is the health and safety committee at Pleasant Valley Hospital. Two co-workers were sent into an OR suite. When they got there, they saw a cylinder that was leaking. It had this DOT label on it:

(green label)

As a group, please use Factsheets A through F (pages 143-151) to answer the following questions.

1) What clues can you get <u>from this DOT label</u> about the dangers to the workers' health?

(continued on the next page)

Task 1 (continued)

2) In general, what are some of the safety dangers to workers from a cylinder of gas?

3) Given the information you now have, what do you think the workers sent into the OR suite should do?

A. Stop Right There!! Remember 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 that you and your co-workers can't handle safely:

1. **S**afety – Get out of the area
2. **I**solation – Try to keep other people out of the area
3. **N**otification – Report the incident

Stay out of the area of an indoor spill.
(or at least 150 feet away if outside)

Do not try to rescue anyone.

Do not clean up or touch the material.

Be part of the solution
Don't become part of the problem

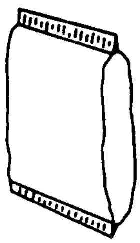
* Emergency spills are defined on Factsheet A in "Activity 4: HazMat Emergencies" (pages 67-68).

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

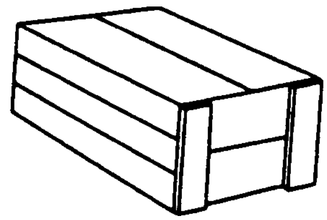
B. Containers

Hazardous materials don't just come in big trucks. Almost any type of container could have hazardous materials in it. DOT Labels tell you the same things about the contents of any container. Different kinds of containers include:

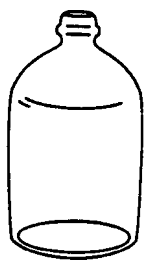
bags



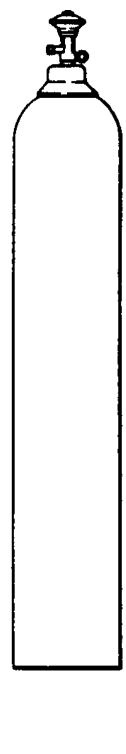
boxes



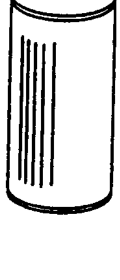
bottles, jars, ampules



cylinders



spray cans



Source: *Is Your Work Making You Sick?*, Labor Occupational Health Program, University of California, Berkeley.

C. Department Of Transportation (DOT) Labels

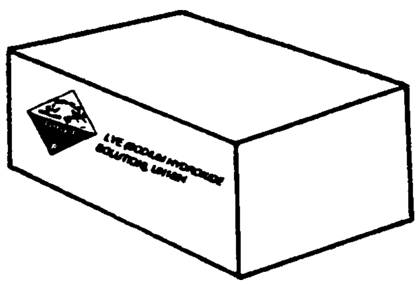
The Department of Transportation (DOT) has set up a system to identify materials quickly in an emergency. Labels and markings are used on packages and cylinders, and they include the following pieces of information:

color of the label

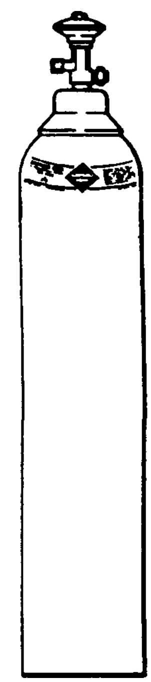
symbol on the label

chemical's name

UN number (an unique number for each chemical



Box with a **label** and **markings**



Cylinder with a label

If you see a DOT label at a spill, get out!

This is a clue that the material is very dangerous.

Remember: all labels 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.

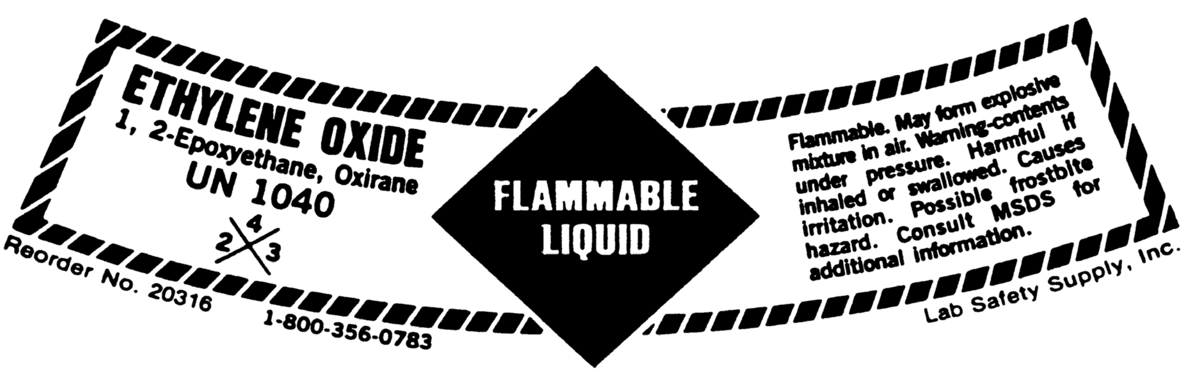
D. Color Is The First Clue!

In an emergency, all you will probably be able to see is the color of the label. 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 of Hazard	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, or be radioactive

Labels are hard to see because they are small. But, don't go closer during an emergency to see the label!



Source: *Hazardous Materials Workbook*, OCAW Union, New York: Apex, 1993.

E. Examples of Chemicals for Each Type of DOT Label

LABEL	EXAMPLE	HAZARDS
1. Explosives		
Explosive 	picric acid (orange label)	• Explodes if dropped or touched.
2. Gases (flammable and non-flammable)		
Flammable gas 	acetylene (red label)	• Burning vapors spread. • Container can explode if gas is on fire.
Poison gas 	ethylene oxide (white label)	• Burns lungs. • Burns skin and eyes on contact.
Non-flammable gas 	nitrogen (green label)	• Container can explode like a missile in a fire.

(continued on the next page)

E. (continued)

3. Flammable Liquids

Flammable

toluene

(red label)

- Can burn even in freezing weather.
- Burning vapors spread.
- Container can explode in a fire.

4. Flammable solids

Flammable solid

zinc

(red and white striped label)

- Container can explode in a fire.

Dangerous when wet

sodium

(blue label)

- Water will start a fire and make it burn furiously.
- Container can explode in a fire.

Spontaneously combustible

magnesium diamide

(white and red label)

- May start to burn without any outside heat.
- Container can explode in a fire.

E. (continued)

5. Oxidizers (solid, gas, or liquid)

Oxidizer 	calcium hypochlorite (yellow label)	• Will burn if mixed with fuel, even if there is no air. • Can burn explosively.

6. Poisonous (solid or liquid)

Poison 	parathion (white label)	• Soaks through skin. • Causes stomach cramps, convulsions, and can stop the heart.
Infectious (biohazard) 	blood and body fluids (white label)	• Carries disease
Harmful 	pesticides (white label)	• Poison if eater—may not be shipped with food.

(continued on the next page)

E. (continued)

7. Radioactive (solid, gas or liquid)

Radioactive 	chromium-51 (yellow and white label)	• Causes radiation burns, poisoning. • Can cause cancer years after exposure.

8. Corrosive (solid, gas or liquid)

Corrosive 	sulfuric acid (white and black label)	• 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	• Causes fire and explosion. • Release of poisonous gases. • Burns skin.

This system of placards was revised on October 1, 1993.

Source: DOT Hazardous Materials Transportation Regulations, 49 CFR 172.500.

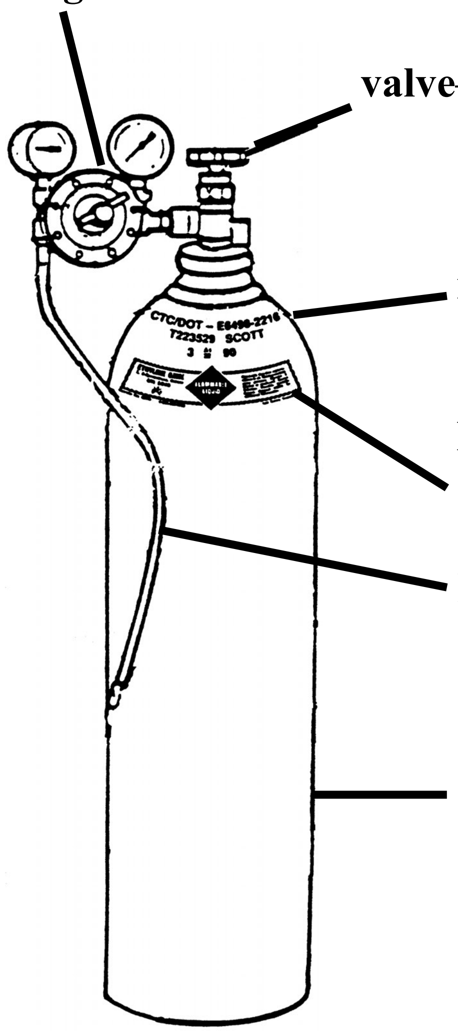
F. Gas Cylinders

Hospitals use lots of gases that are shipped in cylinders under high pressure. Some common gases in hospitals are ethylene oxide, nitrogen, oxygen, nitrous oxide, and helium. Even if the gas inside is not dangerous, the cylinder itself will become a missile if it breaks, and it will become a bomb in a fire.

Here are the parts of a gas setup:

regulator—controls how fast the gas leaves the cylinder

valve—lets gas out of the cylinder



inspection stamp—must be inspected every 5 years, date stamped into metal

DOT label—tells you the type of hazardous material

hose—goes to patient or equipment

cylinder—different sizes, materials, and colors used for different gases

(continued on the next page)

Source: Compressed Gas Association, *Handbook of Compressed Gases*, New York: Van Nostrand Reinhold, 1990.

F. (continued)

It is hard to break a gas cylinder. But if it does break, it will become a missile. Broken cylinders have blown through concrete walls and traveled hundreds of yards. Gas cylinders have to be moved and stored carefully so they don't break. Here are some basic rules for using cylinders:

- Attach the cylinder to a wall or equipment so that it can't fall. Use a tight chain or a clip. Attach it above the middle of the cylinder.
- Attach the cylinder to a hand truck when you move it.
- If you have to move a cylinder by hand, roll it instead of lifting it.
- Cylinders have caps to protect the valve. Keep them on all the time unless they keep the cylinder from working. The cap is too tight if you have to use a tool to pry it off.
- Don't switch regulators or valves between cylinders with different contents.

Source: Compressed Gas Association, *Handbook of Compressed Gases*, New York: Van Nostrand Reinhold, 1990.

Task 2

Two workers from Pleasant Valley Hospital 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 labels, what information and advice can you provide?

> **When Bill and Jerome got to work on Wednesday morning, they opened up the supply closet and saw that a number of 5-gallon bottles had fallen off the shelves and were broken. Their supervisor told them to turn the bottles upright and clean up the spill. On some of the bottles they can see the label on the left below (label #1), on the rest of the bottles they can see the label on the right (label #2).**

Given these labels, what information and advice can your committee give Bill and Jerome? Using Factsheets G through I (pages 156-160), please answer the questions on the next two pages as you try to help them out.

(continued on the next page)

Source: *8-Hour Emergency Response Workbook*, OCAW Union, 1993.

Task 2 (continued)

1) Please fill in the chart below to show what the numbers in each section of the labels on the previous page mean.

Section of the NFPA Diamond	Label #1	Label #2
HEALTH (left section)		
FIRE (top section)		
CHEMICAL REACTION (right section)		
SPECIAL HAZARDS (bottom section)		

Task 2 (continued)

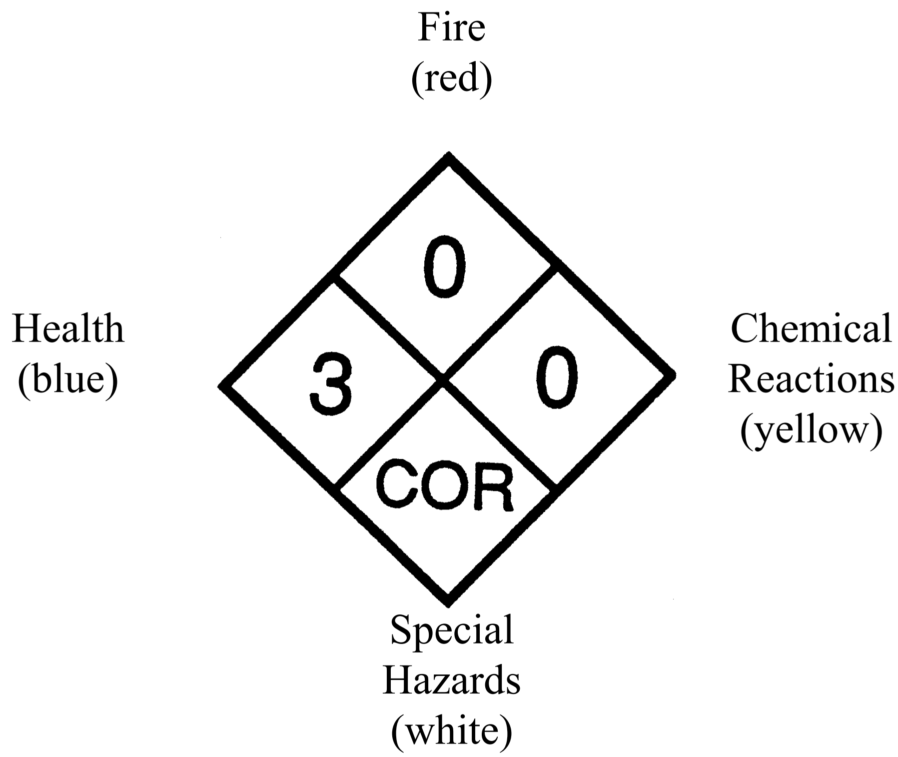
2) What are your biggest concerns in the situation that Bill and Jerome face?

3) What are the limitations of the NFPA labels? What other specific information would you want to know in this situation?

4) What is your advice to Bill and Jerome?

G. Colors of 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").

*In some cities the fire department says that companies have to use the NFPA diamond, so it is very common. In other cities it is not used at all.

Source: *Fire Hazard Properties of Flammable Liquids* . . . , NFPA 325M, 1991 edition.

H. Diamonds Aren't Forever

The NFPA system was developed for firefighters and off-site emergency responders. It can provide limited but crucial information. **A big problem with the diamond is that it doesn't tell you about life long health hazards.**

Helpful:

- It is large enough to read from a safe distance.
- It provides quick information on flammability, reactivity, acute health and special hazards (such as when not to use water on a fire).

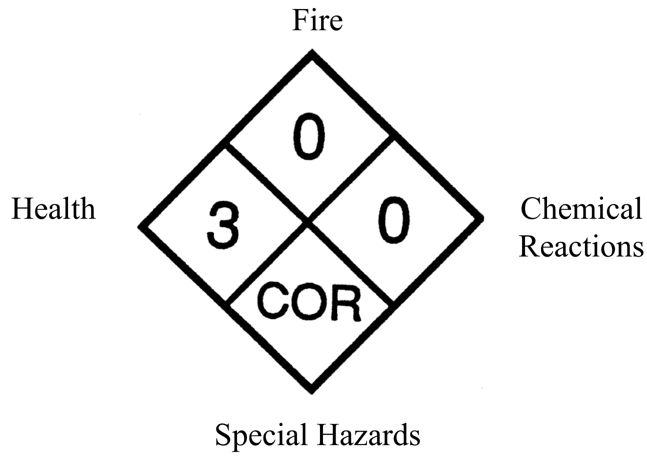
NOT Helpful:

- Different hospitals 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.
- 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.

Source: *Hazardous Materials Workbook*, OCAW Union, New York: Apex, 1993.

I. What the Numbers Mean

If you see a "2" or higher in any section of an NFPA diamond, the material is very 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).



HEALTH SECTION (BLUE)

Number	Description	Examples
4	Very short exposure can cause death or major life-long injury, even with medical care.	Acrylonitrile Bromine Parathion
3	Short exposure can cause serious short-term or life-long injury, even with medical care.	Aniline Sodium hydroxide Sulfuric acid
2	Continued exposure can temporarily disable or may cause lasting injury unless medical care is given.	Bromobenzene Pyridine Styrene
1	Causes irritation but only minor lasting injury, even if no medical care is given.	Acetone Methanol
0	No more dangerous than ordinary materials in a fire.	

I. (continued)

FIRE SECTION (RED)

Number	Description	Examples
4	(1) quickly or totally evaporate at room temperature, and burn easily, or (2) spread quickly in air and burn easily.	1.3-butadiene Propane Ethylene oxide
3	Liquids and solids that can catch on fire at room temperature.	Phosphorous Acrylonitrile
2	Must be heated before it can catch on fire.	2-butanone Kerosene
1	Must be preheated to 200E or more before it can catch on fire.	Propylene glycol Asphalt
0	Materials that will not burn.	

CHEMICAL REACTION SECTION (YELLOW)

Number	Description	Examples
4	Can easily explode at normal temperatures and pressures.	Benzoyl peroxide Picric acid TNT
3	(1) can feed an explosion, (2) can explode must if heated in a closed container, or (3) react explosively with water.	Diborane Ethylene oxide
2	(1) can cause violent chemical reactions, but do not explode, (2) may react violently with water, or (3) may form explosive mixtures with water.	Acetaldehyde Potassium
1	Normally stable, but can (1) become unstable at high temperatures, or (2) react with water, but not violently.	Ethyl ether Sulfuric acid
0	Normally stable, even in a fire, and do not react with water.	

(continued on the next page)

I. (continued)

SPECIAL HAZARDS SECTION (WHITE)

~~W~~

water will start a fire

(sodium)

OXY

oxidizer

(calcium hypochlorite)

radioactive

(chromium-51)

COR

corrosive

(hydrogen chloride)

ACID

acid

(sulfuric acid)

germs

(medical waste)

ALK

alkali or base

(sodium hydroxide)

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

Summary: Using DOT and NFPA Labels

1. The Department of Transportation (DOT) has set up a system to identify materials quickly in an emergency. **Labels** and **I.D. numbers** are used on containers.

2. If you see a DOT label at a spill, get out! It is a clue that the material is very dangerous.

3. Containers have a colored label, the name of the chemical, and a 4-digit number. If you are close enough to see the numbers at a spill, you are too close to the container. In an emergency, all you will probably be able to see is the color of the label.

4. Any gas cylinder could become a missile if it is dropped or a bomb in a fire. Keep cylinders chained so they cannot fall. Don't switch regulators or valves between cylinders with different contents.

5. The NFPA system was designed for fighting fires, and spills, not for day-to-day use.

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

7. It provides quick information on flammability, reactivity, acute health and special hazards (such as when not to use water on a fire).

8. The NFPA numbers give you limited information—they don't give you specific information about the chemical.

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

NOTES

Activity 8: Using Material Safety Data Sheets (MSDS)

Purpose

To understand the uses and limitations of Material Safety Data Sheets (MSDS).

Task 1

Beatrice, one of your co-workers from Pleasant Valley Hospital, comes to talk to some union stewards at lunch about a new product she is concerned about. She uses it in a room without ventilation, and breathes it and gets it on her skin. She says it "almost knocked her out" the day before. You decide to get more information from a Material Safety Data Sheet (MSDS).

Your trainer will ask the whole group to use one of the MSDSs at the end of this task (pages 183-191), or hand out an MSDS from your own workplace. Please work with your group to answer the 6 questions below. **Use Factsheets A through L (pages 166 - 182)** to help you make a list of concerns about the new product. (There is a glossary at the back of this book – Section 21 (pages 427-440). Also, Fact Sheet G of Activity 9 (pages 203-204) defines the different exposure limits for chemicals.)

1) What is the name of the product?

What specific chemical or chemicals are in this product?

Where did you find this information on the MSDS?

(continued on the next page)

Task 1 (continued)

2) Is this product likely to catch fire or explode?

❑ Yes ❑ No

Where did you find this information on the MSDS?

3) How can this product get into your body?

Where did you find this information on the MSDS?

4) What are the short-term (acute) health problems that could result from exposure to this product?

Where did you find this information on the MSDS?

Task 1 (continued)

5) What are the long-term (chronic) health problems that could result from exposure to this product?

Where did you find this information on the MSDS?

6) Make a "worry list," in order of importance, of the most critical problems with this product.

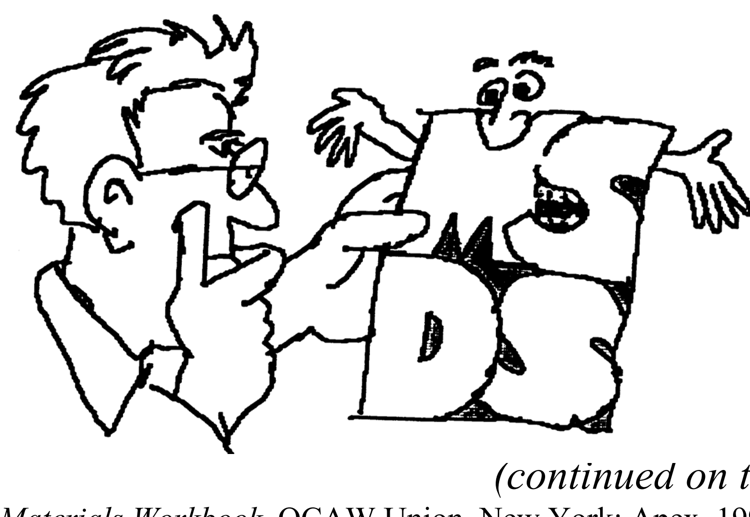
A. MSDSs: The Law and the Limitations

OSHA and many state laws say that employers have to keep MSDSs at the workplace. Your employer must:

- Have an MSDS for every hazardous chemical used in the workplace, and must provide you with a copy no later than 15 days after the request, at no charge.
- Ensure that MSDSs are readily accessible to all workers during each shift.
- Provide training to you and your co-workers so that you understand the health effects of these chemicals and how to work with them safely.

The MSDS is prepared by the product's manufacturer and provides basic information on the product's physical properties and related health effects. They are also supposed to give guidance on using, storing and handling substances safely on the job and in emergencies. 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."**



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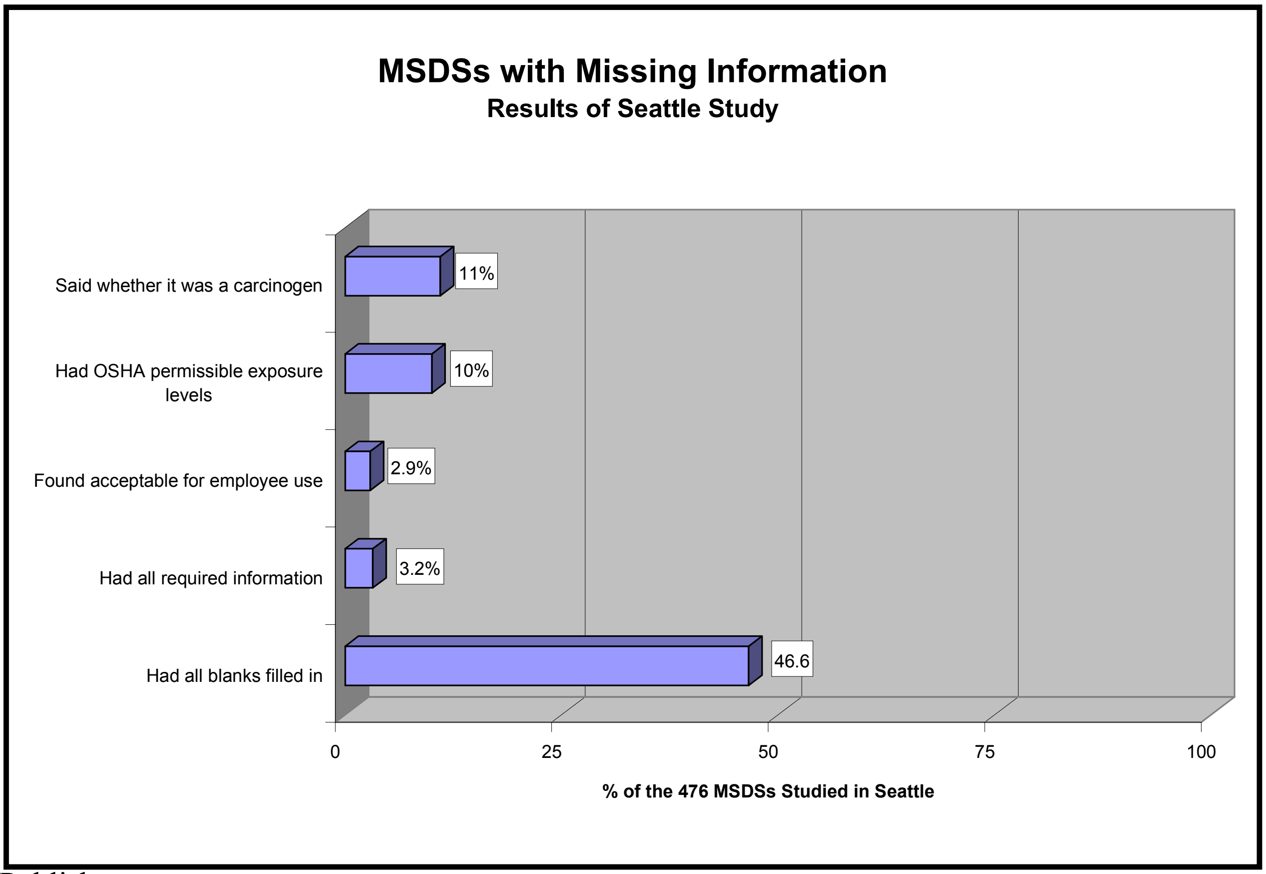
Source: *Hazardous Materials Workbook*, OCAW Union, New York: Apex, 1996.

A. (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.

Another problem with MSDSs is that employers sometimes don't keep them up-to-date. Also, OSHA does not have the time to look at MSDSs. So they almost never fine employers for having wrong MSDSs.

B. The 5 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:

- **Hazardous Ingredients**—What chemicals are in the product? (Section II (2) on some MSDSs.) This section gives you the basic ingredients in the product and tells you the legal and recommended limits for workplace exposures.

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

- **Fire and Explosion Hazard Data**—Can it catch on fire or explode? (Section IV (4) on some MSDSs). See Factsheet E 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 Factsheets F, H and I for more information.

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

These five sections will tell you what the chemical can do to you and how you can protect yourself. Remember that the hospital 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 MSDSs to answer questions that may come up at work. This program will help you learn about other books you can use to get information, too.

(continued on the next page)

B. (continued)

The hospital 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 “Activity 19: Legal Rights” 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. The company also writes the MSDSs.

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 in “Activity 19: Legal Rights” to get copies of MSDSs. You can also request a copy of the MSDS from the manufacturer.

On the next 2 pages is a blank MSDS. Not every MSDS is in exactly this order, but they must have all this information.

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

B. (continued)

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

B. (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

Page 2

★ USGPO 1986-491-529/45775

C. MSDSs and Drugs

Only some drugs must have MSDSs. If you are working with:

pills:	Do not need to have MSDSs.
Liquids, drinks or powders:	Must have MSDSs if any ingredient is dangerous to workers.
gases:	Must have MSDSs if any ingredient is dangerous to workers.

The manufacturer is allowed to put "Trade Secret" instead of chemical names in the ingredients section of the MSDS. The ingredients really do have to be a trade secret. They still have to fill in the rest of the MSDS. This includes any health and safety information from any studies that have been done. The Food and Drug Administration says that manufacturers have to do studies on all drugs before they are allowed to sell them.

The MSDS for a brand new drug or an experimental drug may not have much information. But, the manufacturer must still fill out an MSDS if there is any reason to believe that it might be harmful.

The hospital does not have to have MSDSs for radioactive materials or hazardous wastes.

Source: OSHA Hazard Communication Standard, 29 CFR 1910.1200 (b)(5)(ii), 59 CFR 6169, February 9, 1994.

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 addresses the following issues (words in **bold** are on the MSDS):

Route(s) of entry: How can this stuff get into my body?
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.

Acute and Chronic health effects: What can it do to my health?
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 "Activity 5: Toxic Myths" for more information about "acute" and "chronic" health problems.

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

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

Signs and symptoms of exposure: How can I tell if it's hurting me?
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?

The temperature at which a liquid can burn is called its **flash point**. If the flash point is less than 140 degrees, this is a very flammable chemical—even a spark can set it on fire. Here are some examples:

Chemical	Flash Point	This means that it…
ether (an anesthetic)	-49	burns well below zero
ethylene oxide	-20	burns below zero
acetone (a solvent)	0	burns at zero degrees
rubbing alcohol	53	burns at room temperature
2-butoxyethanol (a cleaner)	143	burns in a fire

When you pour flammable chemicals 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. 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.

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

Will it explode if it catches on fire?

This usually indicates chemicals that pose unusual fire and explosion hazards. 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*.

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 <u>some</u> MSDSs). This talks about how the hospital 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.

- **Local ventilation** means a fan <u>right where you work</u>. 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 14: Controls" for more information on ventilation and other 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 cleaner gets lots of little drops in the air. Squirting the same cleaner on a rag gets less into the air. (Although you may still have to protect your skin from the chemical.)

When you cold sterilize instruments by hand, you get lots of glutaraldehyde on your hands. Even if you wear gloves, a lot of it can still soak through to your skin. But if you dip the instruments 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 "Activity 14" Controls" 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 Respirators?

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. Respirators are a bad way to solve chemical problems because:

- all 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 15: Respirators" for more information about respirators.

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

I. What About Gloves and Other Equipment?

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 <u>you</u> 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
ethyl ether	10	8	64	12	>240
formaldehyde	60	>240	>240	>240	>240
Phenol	35	>240	>240	>240	>240

ID = Insufficient Data—DO NOT USE

All equipment has to be cleaned, inspected, maintained, and stored in a safe clean place. Who has to do this must be outlined in the company's required **respirator program**—ask to see the written program.

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.

J. 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.**

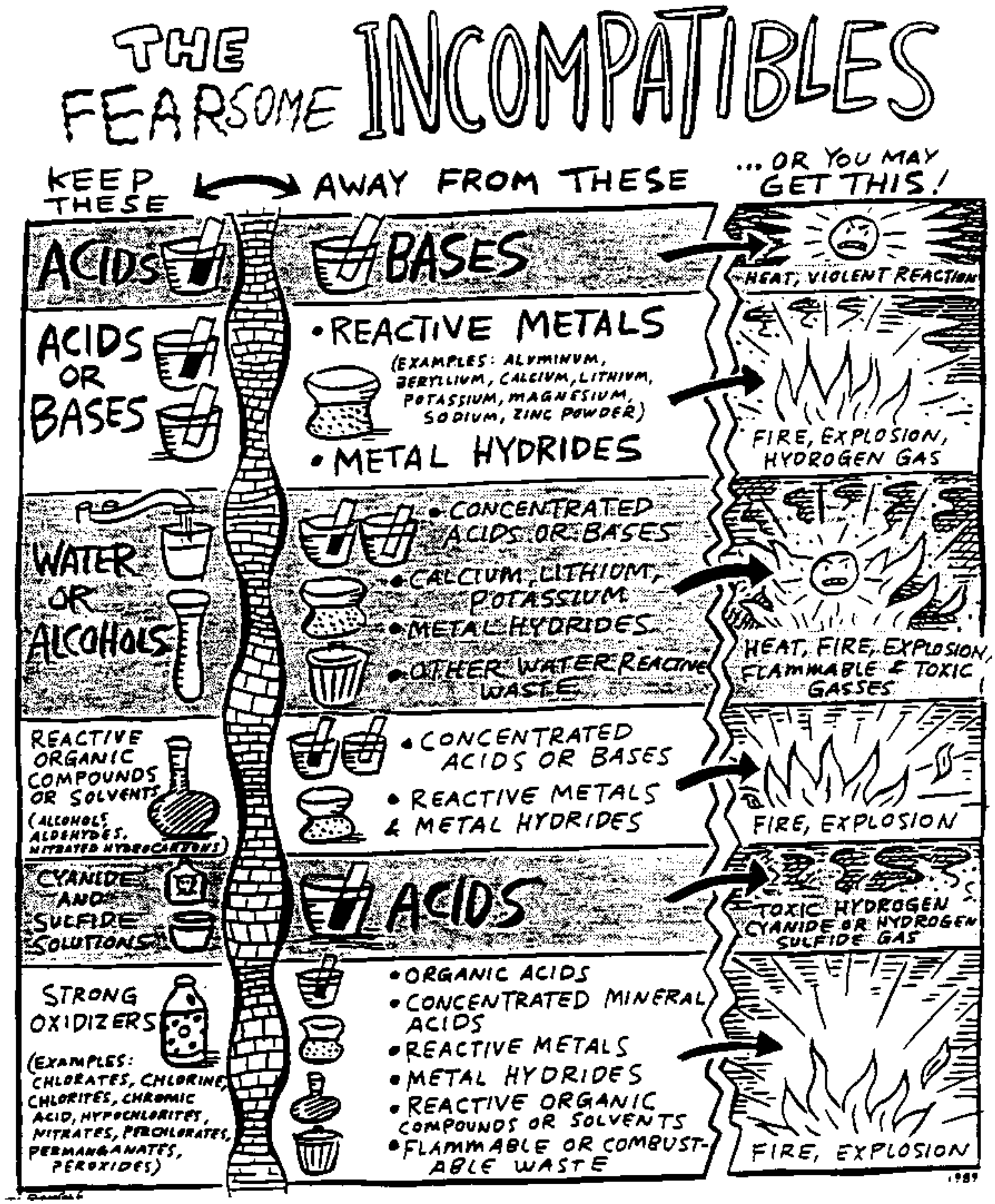
Similar wastes should be stored together in labeled, fireproof containers and sent for treatment or to a special landfill. Look in the section called **Reactivity** (section 5 on <u>some</u> MSDSs). This will tell you what <u>not to mix or store</u> the chemical with. This section often uses a lot of chemistry terms. For example, the MSDS might say: "Incompatible with strong oxidizers." 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 most chemical names ending in "ite" ammonium nitrate sodium permanganate most chemical names ending in "ate" oxygen (in cylinders)
combustible materials (organic materials)	flammable chemicals hair, clothing
reactive metals	pure sodium pure magnesium aluminum

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

J. (continued)

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



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

K. Emergencies and MSDSs Don't Always Mix

Many of the chemical spills in hospitals will be small amounts of very dangerous chemicals. Most MSDSs do not give detailed enough information to handle these situations safely. Remember, to handle 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 MSDSs) 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.

L. MSDSs 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 "Activity 14: Controls" for more information about substitution.

M. MSDS: Vesphene

MATERIAL SAFETY DATA SHEET

I - PRODUCT IDENTIFICATION

COMPANY NAME: Calgon Vestal Laboratories

ADDRESS:	5035 Manchester Avenue St. Louis, Missouri 63110	Tel No: (314)535-1810 Nights: (314)535-1395 CHEMTREC: (800)424-9300
PRODUCT NAME:	Vesphene II se	Product No.: 6461

Synonyms: Aqueous Phenolic Germicidal Detergent

II - HAZARDOUS INGREDIENTS OF MIXTURES

MATERIAL:	(CAS#)	% By Wt.	TLV	PEL
#2-phenylphenol	(90-43-7)	9.65	N/A	N/A
sodium p-tertiary amylphenate	(80-46-6)	8.34	N/A	N/A

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)60-90F: N/A
Evaporation Rate(ether=1): N/A	% Volatile by wt @105C/2 hrs. 70%
Solubility in H2O: Complete	pH @ 1:128 Solution 10.6
Freezing Point F: 20F	pH as Distributed: 12.3
Boiling Point F: @14.7 psig >200F	Appearance: Red liquid
Specific Gravity H2O=1 @25C: 1.10	Odor: Mild and pleasant

IV - FIRE AND EXPLOSION

Flash Point F: None to boil	Flammable Limits: N/A

Extinguishing Media: Suitable for 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 may produce CO2, CO, sulfur oxides.

Conditions Contributing to Hazardous Polymerization: Will not occur.

(Cont'd on Page 2)

M. MSDS: Vesphene (continued)

Vesphene II se
VI - HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE (Medical Conditions Aggravated/Target Organ Effects,
A. ACUTE (Primary Route of Exposure) Concentrate corrosive to tissues.
EYES & SKIN: Use dilution slightly irritating to eyes.Concentrate corrosive to skin and eyes. INHALATION: Inhalation toxicity >54 ml/ liter at 1:128 for 4 hours.Mists may irritate nasal passages.
INGESTION: Oral LD50 (rats) 4.50 gm/kg.Causes upset to 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 with plenty of water for at least 15 minutes.Call a physician. SKIN: In case of contact,immediately wash with plenty of water for at least 15 minutes.Immediately 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 solutions 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: 08/22/91

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

N. MSDS: ▶ thrane®

Anaquest

Material Safety Data Sheet: Ethrane®

Manufacturer	Anaquest A Subsidiary of BOC Inc 110 Allen Road Liberty Corner NJ 07938	**Telephone**	800 535-5053 (emergency) 908 647-9200 (other)

Section I: Identification

Trade/Common Names	Ethrane® - enflurane
Chemical Names	2-chloro-1,1,2-trifluoroethyl difluoromethyl ether
Chemical Family	Halogenated ether
DOT Designation	Not Regulated

NFPA Hazard Ratings	Health	Fire	Reactivity
	2	1	0

Section II: Hazardous Ingredients

Component	**ACGIH TLV**	**OSHA PEL**	**OTHER LIMITS**	**NOTES**
Enflurane (13838-16-9)	75 ppm	N/A	2 ppm*	NONE

*NIOSH recommendation for halogenated anesthetic agents in general

Notes: (1) (Suspect) carcinogen - OSHA, ACGIH, NTP or IARC
(2) SARA Title III Section 313 chemical
(3) SARA Title III Extremely Hazardous Substance

Section III: Physical Data

Boiling Point	56.5°C	**% Volatile (by weight)**	100
Vapor Pressure (mm Hg)	188.6 @ 22°C	**Evaporation Rate (diethyl ether=1)**	Slower
Vapor Density (air=1)	Heavier than air	**pH**	N/A
Specific Gravity (water=1)	1.52 @ 25°C	**Solubility in Water**	Negligible
Appearance and Odor	Clear, colorless, odorless solution.		

Section IV: Fire and Explosion Hazard Data

Flash Point	>200°F (93°C)	**Method**	Closed Cup
LEL	N/A	**UEL**	N/A
Extinguishing Media	Foam, dry chemical, or CO_2		
Special Fire Fighting Procedures	None		
Unusual Fire/Explosion Hazards	Toxic gases may be released (see decomposition products, below)		

Section V: Reactivity Data

Stable	Yes
Incompatibility (materials to avoid)	Avoid contact with peroxides
Hazardous Decomposition Products	phosgene, hydrogen chloride, hydrogen fluoride

Hazardous Polymerization will not occur.

Continued on Reverse Side

N. MSDS: ► thrane® (continued)

Material Safety Data Sheet: Ēthrane®

Section VI: Health Hazard Data

Effects Of Overexposure

Eyes	Acute: May cause irritation and redness. Chronic: None known.
Skin	Acute: May cause dryness, irritation. Chronic: None known.
Inhalation	Acute: May cause irritation of the mouth and throat. Overexposure can lead to headaches, dizziness/drowsiness, unconsciousness, and death. Chronic: None known.
Ingestion	Unlikely under normal conditions of handling or usage. Acute: May lead to unconsciousness or death.

Emergency First Aid Procedures

Eyes	Flush with copious amounts of water for at least 15 minutes. Seek medical attention.
Skin	Remove contaminated clothing and wash skin with large amounts of soap and water. Use moisturizing lotion to relieve dry skin.
Inhalation	Remove person to fresh air. Administer artificial respiration or CPR as needed. Seek medical attention for severe dizziness or unconsciousness.
Ingestion	Contact Poison Control Center for instructions. Administer artificial respiration or CPR as needed. Seek medical attention.

Section VII: Spill or Leak Procedures

Steps to be taken if material is released or spilled	Ventilate area of spill or leak. Absorb spill using sorbant for organic chemicals (vermiculite, spill pillows, etc.). Collect in sealed containers for disposal. Wear protective equipment as indicated below. Additional information may be obtained by contacting 1-800-535-5053.
Waste disposal method	Dispose of in accordance with federal, state, and local regulations. NOTE: In the absence of specific analysis, waste should be considered to potentially exhibit the characteristic of toxicity by TCLP (D022).

Section VIII: Personal Protection

Respiratory Protection	Not needed for routine handling in well-ventilated areas. Where needed, use NIOSH approved cartridge respirators for organic vapors.
Ventilation	Local exhaust is recommended where this product is in use.
Skin	Latex, rubber, or other impervious gloves recommended.
Eyes	Eye protection recommended. Eye wash facilities should be provided.
Other	None.

Section IX: Special Precautions

Handling and Storage	Store at controlled room temperature. Handle and store bottles so as to avoid breakage.
Other	None.

The information contained in this Material Safety Data Sheet is based on the best data currently available to us, and is believed to be accurate. However, no warranty, express or implied, is made with the respect to the accuracy or completeness of this information, or the results obtained from its use. It is the responsibility of the product users to determine the proper conditions for handling, use, storage and disposal of this material in their own operations.

Date Issued: March 1992 **Replaces Information Dated:** March 1986
Prepared By: D. Shewitz

O. MSDS: CIDEX®

MATERIAL SAFETY DATA SHEET **MSDS NO. 0093**
PAGE 1

SECTION 1 - IDENTIFICATION

MANUFACTURER'S NAME: JOHNSON & JOHNSON MEDICAL, INC.
ADDRESS: P.O. Box 90130
Arlington, TX 76004-3130

EMERGENCY TELEPHONE NUMBER: 1-800-423-5850

TELEPHONE NUMBER FOR INFORMATION: 1-800-423-5850

ISSUED: 9/13/93

IDENTITY: 2% Aqueous Glutaraldehyde Solution (Activated)

PREPARED BY: Regulatory Affairs

PRODUCT CODE: 2245, 2250 and 2253

TRADE NAME: CIDEX* Activated Dialdehyde Solution/Activator Vial

SYNONYMS: None

CHEMICAL FAMILY: Aldehydes

MOLECULAR FORMULA: $OHCC_3H_6CHO$ (Active)

RTECS #: MA 2450000 (active)

MOLECULAR WEIGHT: 100

HAZARD RATING - HEALTH: 3 (Serious Hazard)# **FLAMMABILITY:** 0 **REACTIVITY:** 0 **SPECIFIC:** None
Ocular hazard based on NFPA rating system

SECTION 2 - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

COMPONENTS (SPECIFIC CHEMICAL IDENTITY)	CAS #	%	OSHA PEL	ACGIH TLV	OSHA 1910.1200
Glutaraldehyde (active)	111-30-8	2.4	0.2ppm,C#	0.2ppm,C	na
inert buffer salts	na	0.6	None	None	nonhazardous
water	7732-18-5	97.0	None	None	nonhazardous

The OSHA PEL for glutaraldehyde was invalidated (along with the PEL's of many other chemicals) on procedural groun by court order in 1992, but may remain valid in some OSHA-approved state plans.

SECTION 3 - PHYSICAL/CHEMICAL CHARACTERISTICS

APPEARANCE AND ODOR: 2 components: colorless fluid and powdered salts; turns green when activated. Sharp odor.

BOILING POINT: 212°F

SPECIFIC GRAVITY(H_2O=1): 1.0026 g/cc

VAPOR PRESSURE(mm Hg): same as water

MELTING POINT: na

VAPOR DENSITY(Air=1): > 1

EVAPORATION RATE(H_2O=1): 0.98

SOLUBILITY IN WATER: complete

pH: 8.2 - 8.9

FREEZING POINT: same as water

ODOR THRESHOLD: 0.04 ppm, detectable. (ACGIH)

SECTION 4 - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT(METHOD USED): None

FLAMMABLE LIMITS - LEL: nd **UEL:** nd

EXTINGUISHING MEDIA: If water is evaporated, material can burn. Use carbon dioxide or dry chemical for small fires Use foam (alcohol, polymer or ordinary) or water fog for large fires.

SPECIAL FIRE FIGHTING PROCEDURES: Self-contained breathing apparatus and protective clothing should be available to fireman.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

TOXIC GASES PRODUCED: None

O. MSDS: CIDEX® (continued)

MSDS NO. 0093
PAGE 2

SECTION 5 - REACTIVITY DATA

STABILITY: Stable

CONDITIONS TO AVOID: None

INCOMPATIBILITY(MATERIALS TO AVOID): None

HAZARDOUS DECOMPOSITION OR BYPRODUCTS: None

HAZARDOUS POLYMERIZATION: Will not occur

SECTION 6 - HEALTH HAZARD DATA

ROUTE(S) OF ENTRY - INHALATION: yes **SKIN:** yes **INGESTION:** yes **EYE:** yes

SIGNS AND SYMPTOMS OF EXPOSURE:

EYES: Contact with eyes causes damage.

SKIN: Can cause irritation, sensitization or allergic contact dermatitis. Avoid skin contact.

INHALATION: Vapors may be irritating and cause headache, chest discomfort, symptoms of bronchitis or asthma.

INGESTION: May cause nausea, vomiting and general systemic illness.

EMERGENCY AND FIRST AID PROCEDURE:

EYES: Flush thoroughly with water. Get medical attention.

SKIN: Flush thoroughly with water. If irritation persists, get medical attention.

INHALATION: Remove to fresh air. If symptoms persist, get medical attention.

INGESTION: Do not induce vomiting. Drink copious amounts of milk. Get medical attention.

HEALTH HAZARDS(ACUTE AND CHRONIC):

Acute: As listed above under Signs and Symptoms of Exposure.
Chronic: None known from currently available information.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: None known from currently available information.

LISTED AS CARCINOGEN BY - **NTP:** no **IARC MONOGRAPHS:** no **OSHA:** no

TOXICITY: ORAL LD50 (Rat). . . . . .Toxicity Rating 0: 12,600 mg/kg.
OCCULAR (Rabbit). . . . . Toxicity Rating 3: Severe irritation and corneal opacity persisting more than se
days without reversion.
DERMAL LD50 (Rabbit). . . None by dermal route.
INHALATION LC50 (Rat). . .Irritating but non-toxic at highest concentration achieved (2.89 ppm).

SECTION 7 - PRECAUTIONS FOR SAFE HANDLING AND USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: For **LARGE** spills, use ammonium carbonate to "neutralize" glutaraldehyde odor. Collect liquid and discard it. For **SMALL** spills, wipe with sponge or mop down area with an eq mixture of household ammonia and water. Flush with large quantities of water.

WASTE DISPOSAL METHOD: Triple rinse empty container with water and dispose in an incinerator or landfill approved fo pesticide containers. Discard solution with large quantities of water.

EPA HAZARDOUS WASTE NUMBER: na

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Use normal storage and handling requirements.

O. MSDS: CIDEX® (continued)

MSDS NO: 0093
PAGE 3

SECTION 8 - TRANSPORTATION DATA & ADDITIONAL INFORMATION

	D.O.T. (ground)	I.A.T.A. (air)	I.M.O. (ocean)
	NOT REGULATED	NOT RESTRICTED	NOT REGULATED
PROPER SHIPPING NAME:	2% Glutaraldehyde Solution	2% Glutaraldehyde Solution	2% Glutaraldehyde Solution
HAZARD CLASS:	None	None	None
LABELS:	None Needed	None Needed	None Needed
PACKAGING:	None	None	None
ID #:	None	None	None
SPECIAL INSTRUCTIONS:	None	None	None

REPORTABLE QUANTITY: None

SECTION 9 - CONTROL MEASURES

VENTILATION:

ROUTINE: Product should be used in a covered container with a tight-fitting lid. Use with standard room ventilatior (air conditioning) with a minimum of 10 air changes per hour (ACH). In rooms where there are less than 10 ACH, use local exhaust hoods, or ductless fume hoods or portable ventilation devices which contain filter media which absorb glutaraldehyde from the air.

EMERGENCY: Not applicable

RESPIRATORY PROTECTION:

ROUTINE: None required

EMERGENCY: Organic vapor cartridge mask or self-contained breathing apparatus

EYE PROTECTION:

ROUTINE: Safety glasses

EMERGENCY: Safety glasses or face shield

SKIN PROTECTION:

ROUTINE: Natural latex gloves, nitrile or butyl rubber gloves. Do not use neoprene rubber or vinyl gloves, as glutaraldehyde may rapidly permeate through these materials. Plastic apron.

EMERGENCY: Gloves as listed above; protective clothing; rubber boots

WORK/HYGIENIC PRACTICES: Avoid contamination of food

SECTION 10 - SPECIAL REQUIREMENTS

None

KEY:
- na = Not Applicable
- nd = Not Determined
- C = Ceiling
- PEL = Permissable Exposure Level
- TLV = Threshold Limit Value
- NFPA = National Fire Protection Association
- RTECS = Registry of Toxic Effects of Chemical Substances
- * = Trademark

P. MSDS: IDAMYCIN®

MATERIAL SAFETY DATA SHEET

SECTION 1 - IDENTITY

COMMON NAME: IDAMYCIN® (Idarubicin Hydrochloride for Injection)
HAZARD DETERMINATION UNDER OSHA HAZCOM STD. Hazardous

CHEMICAL NAME: 4-Demethoxy daunarubicin hydrochloride
CHEMICAL FAMILY: Anthracycline
USE: Prescription medicine - Antineoplastic

FORMULA: $C_{26}H_{27}NO_9 \cdot HCl$ m.w. = 533.97

MANUFACTURER'S NAME: Farmitalia Carlo Erba, Adria Laboratories
Distributor: Adria Labs. Div. of Erbamont Inc.
EMERGENCY TELEPHONE NO. 614/764-8100

ADDRESS: P.O. Box 16529, Columbus, OH 43216
OTHER INFORMATION CALLS 614/761-6206

SIGNATURE OF PERSON RESPONSIBLE FOR PREPARATION
DATE PREPARED October 25, 1991

SECTION 2 - HAZARDOUS INGREDIENTS

PRINCIPAL HAZARDOUS COMPONENT(S) (CHEMICAL & COMMON NAME(S))	CAS NO.	%	THRESHOLD LIMIT VALUE (UNITS)
4-Demethoxy daunarubicin hydrochloride	57852-57-0	9.1	Undetermined
(Lactose)	(63-42-3)	(80.9)	(GRAS)

SECTION 3 - PHYSICAL & CHEMICAL CHARACTERISTICS (FIRE & EXPLOSION DATA)

BOILING POINT N/A
SPECIFIC GRAVITY (H_2O=1) N/A
VAPOR PRESSURE (mmHg) N/A

PERCENT VOLATILE BY VOLUME (%) N/A
VAPOR DENSITY (AIR=1) N/A
EVAPORATION RATE (=1) N/A

SOLUBILITY IN WATER Freely soluble
REACTIVITY IN WATER None

APPEARANCE AND ODOR Orange-red cake, no odor

FLASH POINT N/A
FLAMMABLE LIMITS IN AIR & BY VOLUME Unknown
LOWER UPPER
EXTINGUISHER MEDIA Chemical or CO_2 Dry Foam

AUTO IGNITION TEMPERATURE Unknown

SPECIAL FIRE FIGHTING PROCEDURES: Evacuate personnel to safe area. Firefighters should use self-contained breathing equipment and protective clothing. Use water spray, dry chemical foam or carbon dioxide.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Unknown

IDAMYCIN.242

P. MSDS: IDAMYCIN® (continued)

Idamycin

SECTION 4 - PHYSICAL HAZARDS

STABILITY	UNSTABLE		CONDITIONS TO AVOID	N/A
	STABLE	X		
INCOMPATIBILITY (MATERIALS TO AVOID)	Unknown			
HAZARDOUS DECOMPOSITION PRODUCTS	When heated to decomposition it emits very toxic fumes of NO_x and HCl			
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID	
	WILL NOT OCCUR	X		

SECTION 5 - HEALTH HAZARDS

THRESHOLD LIMIT VALUES LD_{50}

mouse IV 4.91 mg/kg; 16.40 mg/m^2	rat IV 2.56 mg/kg; 13.94 mg/m^2	dog IV 1 mg/kg
oral 14.18 mg/kg; 47.36 mg/m^2	oral 10.07 mg/kg; 54.8 mg/m^2	oral 2.5 mg/kg

SIGNS AND SYMPTOMS OF EXPOSURE — 1. ACUTE OVEREXPOSURE Undetermined — 2. CHRONIC OVEREXPOSURE Undetermined

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE — Cardiovascular, Hepatic, Renal, Bone marrow impairment

CHEMICAL LISTED AS CARCINOGEN OR POTENTIAL CARCINOGEN — NATIONAL TOXICOLOGY PROGRAM: YES [ ] NO [X] — I.A.R.C. MONOGRAPHS: YES [X] NO [ ]

OSHA: YES [ ] NO [X] — OSHA PERMISSIBLE EXPOSURE LIMIT: Undetermined — ACGIH THRESHOLD LIMIT VALUE: Undetermined

OTHER EXPOSURE LIMIT USED — Undetermined

EMERGENCY AND FIRST AID PROCEDURES

1. INHALATION: Seek medical attention
2. INGESTION: Seek medical attention
3. SKIN: Wash with soap and water immediately.
4. EYES: Irrigate with saline or water.

SECTION 6 - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (SPECIFY TYPE) — Approved toxic dust respirator mask.

VENTILATION — LOCAL EXHAUST: Vertical laminar flow hood — MECHANICAL (GENERAL)

OTHER — SPECIAL - HEPA filter vented to outside area

PROTECTIVE GLOVES - Synthetic or Rubber gloves EYE PROTECTION - Recommend splash goggle

OTHER PROTECTIVE CLOTHING OR EQUIPMENT - Long sleeved impermeable, disposable gown with elastic cuffs.

SECTION 7 - SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE - Idarubicin is a potent anti-cancer drug. Caution in the handling and preparation of the powder and solution must be exercised. If Idarubicin powder or solution contacts skin or mucosae, immediately wash thoroughly with soap and water.

OTHER PRECAUTIONS See product insert for further information.

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED — Deactivate with dilute bleach solution (10% solution). Rinse well with water.

WASTE DISPOSAL METHODS - Deactivate with dilute bleach solution (10% solution). Dispose of in accordance with your procedure for hazardous waste disposal to meet local, state and federal regulations.

Task 2

1) Did you find working with the MSDS difficult or confusing? Why or why not?

2) Will MSDSs be useful health and safety resource tools at your facility? Why or why not?

3) Where can you go to get more information?

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

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 spills safely. Workers who handle hazardous materials in an emergency need special training and equipment.

5. Many MSDSs are missing or have the wrong information. Use them, but always get information from other sources.

6. Part of your "right-to-know" is to have MSDSs for each product that contains hazardous chemicals on file in the work area where you can get at them.

NOTES

Activity 9: Using the NIOSH Pocket Guide to Get More Information

Purpose

To practice using the NIOSH *Pocket Guide* to check the health information on MSDSs.

Task 1

Mary, a health care worker represented by Local 94, has come to you because she is concerned about "Dead N Gone," a product she works with. She says it hurts her eyes and gives her a headache. She asked her supervisor, but he said that according to the MSDS it is "Safe if used as directed." You're not so sure the MSDS is up-to-date, so you want to check a more neutral source of information.

Your first step is to find out what chemicals are in the product, and find them in the NIOSH *Pocket Guide*.

In your groups, **please answer the questions on the next page using Factsheets A through G (pages 197 - 204), the section of the MSDS below, and the *Pocket Guide*.**

Part of the MSDS for "Dead N Gone"

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) What are the 3 individual chemicals that make up “Dead N Gone”?

2) Please look up each chemical in the *Pocket Guide*, and fill in the chart below:

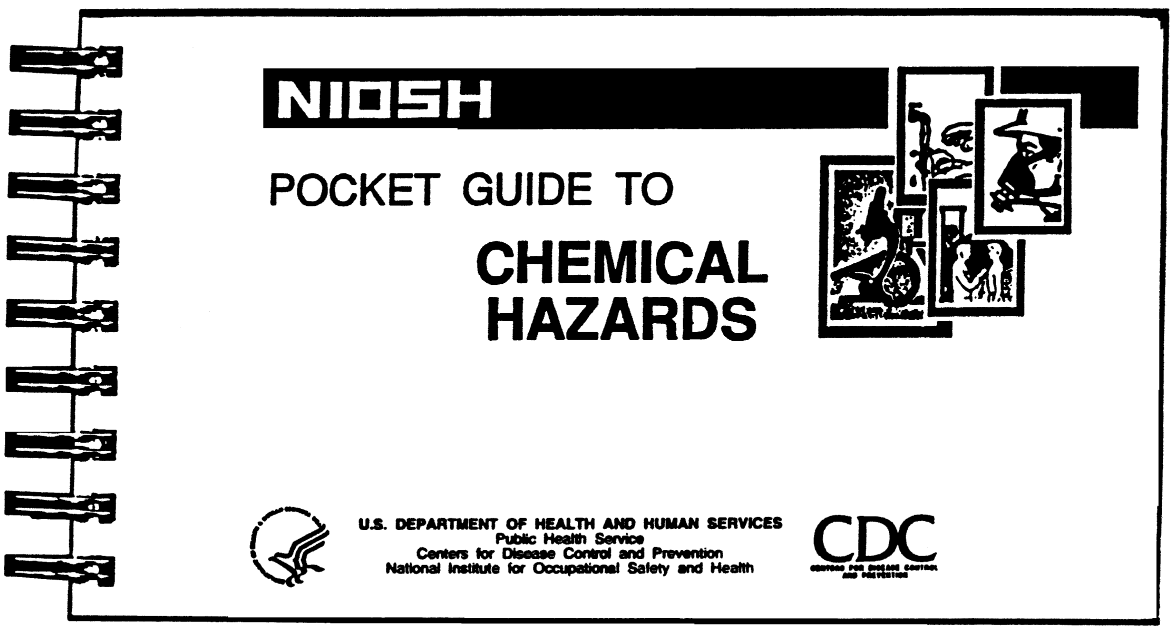
Chemical name	NIOSH guide page number	How did you find it?

3) Will the *Pocket Guide* always list the chemicals you are looking for? Why or why not?

4) Why do you have to look up each ingredient separately in the *Pocket Guide*?

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 (NIOSH). This is a government agency that does research on health and safety on the job. It does not enforce any laws. The NIOSH *Pocket Guide* is printed every four years.

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 only lists the chemicals that OSHA has set limits for, and some others. 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:

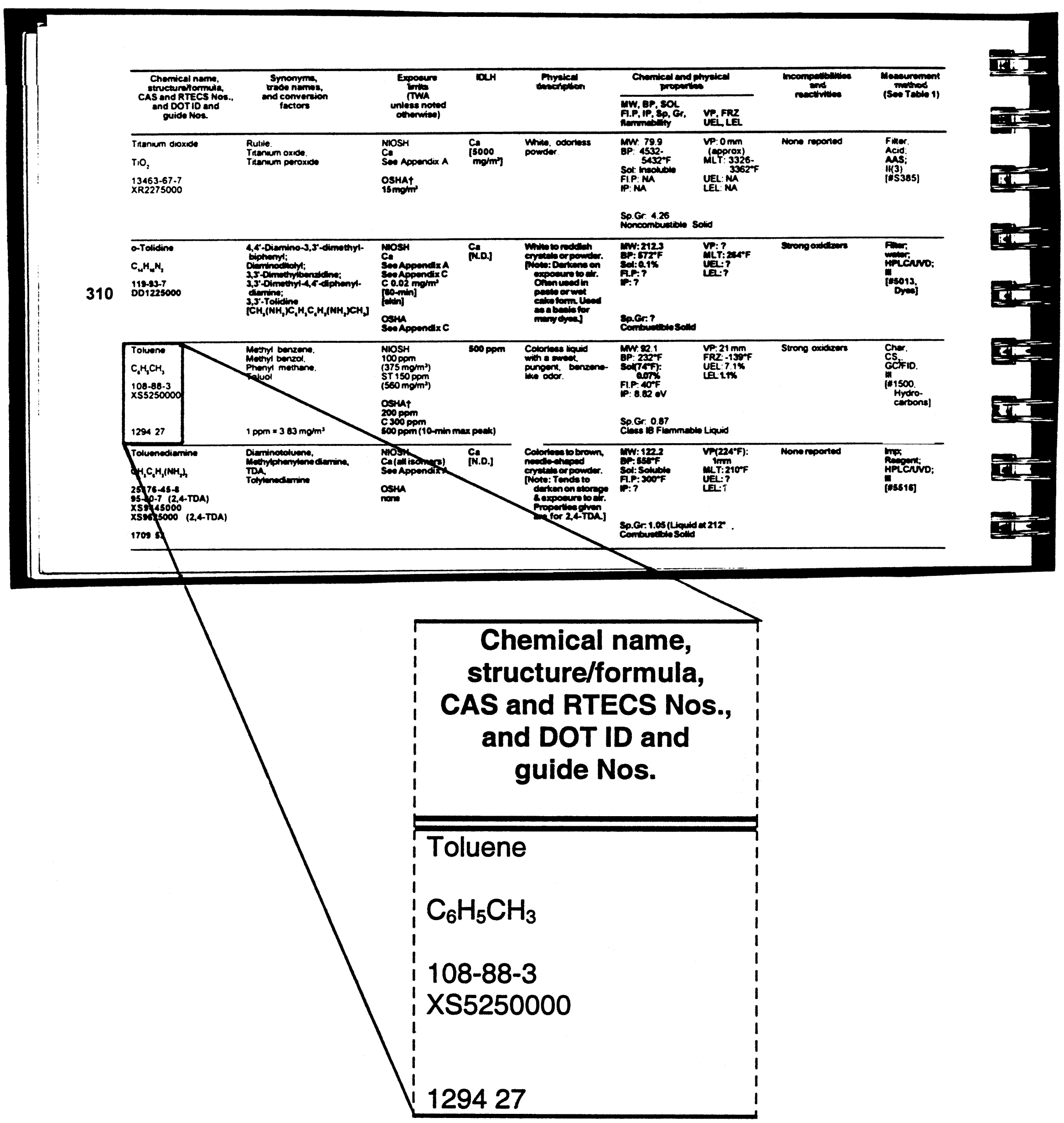
SECTION II: HAZARDOUS INGREDIENTS						
CAS REGISTRY NO.	%W	CHEMICAL NAME(S)	TABLE Z-1-A			CARCINOGEN
			TWA mg/M^3	STEL mg/M^3	CEILING mg/M^3	
67-63-0	1-5	2 Propanol	980	1225	--	No
68424-85-1	4.5	N-alkyl dimethyl benzyl ammonium chloride	-- not established --			No

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

Need help? Go on to the next factsheet.

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 389 of the *Pocket Guide*. If you look up 1,1,1 trichloroethane in that index (under "T"), here's what you'll see:

SYNONYM AND TRADE NAME INDEX (Continued)

437

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 376 of the *Pocket Guide*. If you look up CAS# 71-55-6, here's what you'll see:

376

CAS NUMBER INDEX

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

G. What are Exposure Limits, anyway?

It's easy to get confused when talking about exposure limits. There 4 basic exposure limits which are set by different agencies. Here are the ones you will usually see in the NIOSH *Pocket Guide* and on MSDSs:

PEL (Permissible Exposure Limit)

PELs are exposure limits set by OSHA. A PEL can be a time-weighted average (TWA) exposure limit, a "ceiling" exposure limit, or a "peak" exposure limit. These are all legal standards and it is illegal to be exposed to more than this at work.

TLV (Threshold Limit Value)

TLVs are suggested—**not legal**—standards established by the American Conference of Governmental Industrial Hygienists (ACGIH), which is not a government agency. This is a recommended average concentration over an 8-hour day. This term is used to express the airborne concentration of a material to which nearly all persons supposedly can be exposed without adverse effects day after day.

REL (Recommended Exposure Limits)

RELs are exposure limits recommended—**not legally enforceable**—by NIOSH. Like the PELs, RELs can take many forms: time-weighted averages, short-term exposure limits, and ceiling exposure limits. RELs are listed in the NIOSH *Pocket Guide* in the 3rd column.

IDLH (Immediately Dangerous to Life and Health)

This is an exposure limit also set by NIOSH. It provides the concentration to which a worker can be exposed for 30 minutes without permanent damage to his or her life or health. Workers should assume that they would not be able to escape from an area that had concentrations higher than the IDLH limits safely.

(continued on the next page)

G. (continued)

PELs, RELs, and TLVs can be expressed in three different ways:

- **TWA (Time-Weighted Average)** is related to long-term exposure. The theory is that a worker will not get sick if he or she works at or below this level for a long time. A "long time" usually means 8 hours per day, 5 days per week for your whole working life. These are averages, which means that your exposure can be higher than this limit for part of the day, as long as it is also lower for part of the day. If the MSDS only lists "TLV," is usually means the time-weighted average.

- **STEL (Short-term Exposure Limit)** is the amount you can be exposed to for no more than 15 minutes. This is also an average. Short-term limits are higher than 8- or 10-hour exposure limits. (STELs are abbreviated as "ST" in the NIOSH *Pocket Guide*.)

- **C (Ceiling exposure limit)** is the amount that should **never** be exceeded at any point during the work day. Ceiling limits are set for some chemical that are fast-acting. (Be sure not to confuse "C" with "Ca" in the NIOSH *Pocket Guide*: "Ca" means that the chemical causes cancer!)

A note to help you understand the numbers

ppm (or "parts per million") is a way to measure how much of a chemical is in the air or in a liquid. One part per million is a very small amount—it is equal to about 3 tablespoons of something in a swimming pool 5 feet deep, 10 feet wide, and 13 feet long (about 10,000 gallons!) full of water.

mg/m^3 (or "miligrams per cubic meter) is similar to ppm, but it's used to measure concentrations of dusts, fumes, or other particles in the air. For most substances mg/m^3 can be converted to ppm.

Source: OCAW/Labor Institute, Hazardous Materials Workbook, eighth edition 1996, pp. 122-3.

Task 2

Now that you have found the chemicals from "Dead N Gone" in the *Pocket Guide*, please look at the health information provided in the "Dead N Gone" MSDS.

In your groups, please use the health information from the MSDS on the next page to answer the questions below.

1) What does the MSDS say about short-term (acute) health hazards?

2) What does the MSDS say about long-term (chronic) health hazards?

3) Does the MSDS say it causes cancer?

(continued on the next page)

Task 2 (continued)

The MSDS for "Dead N Gone"… continued

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 over exposure 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.

Task 2 (continued)

The MSDS for "Dead N Gone"… continued

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.

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 can compare the information from the MSDS to the information in the NIOSH *Pocket Guide*. Look up the health information in the *Pocket Guide* so you can tell Mary if the MSDS is correct.

You found out that the main ingredient is **perchloroethylene**, so you only need to look up that 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 Factsheet I, pages 211-212, for help).

1) What does the *Pocket Guide* say are the short-term (acute) health hazards ("Symptoms" and "Target Organs" in the *Pocket Guide*) of perchloroethylene?

2) What does the *Pocket Guide* say are the long-term (chronic) health hazards ("Symptoms" and "Target Organs" in the *Pocket Guide*)?

3) Does the NIOSH *Pocket Guide* say that perchloroethylene causes cancer?

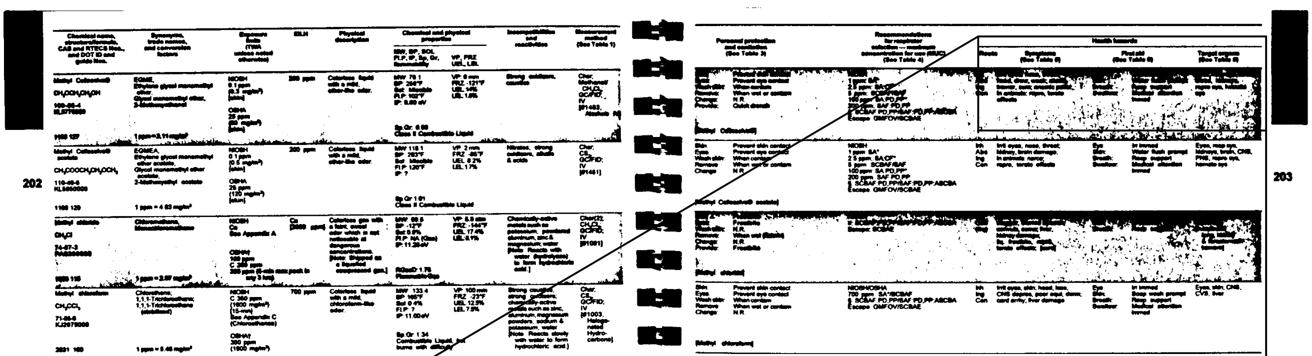
Task 3 (continued)

4) What new information can you give your co-worker Mary about "Dead N Gone"?

5) Which source would you trust for information about health hazards—the MSDSs or the NIOSH *Pocket Guide*? Why?

H. 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 xxxiii-xxxvi of the *Pocket Guide*	Explained on pages xxxvii-xl of the *Pocket Guide*	Explained on pages xxxiii-xxxvi 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	Irrit eyes, nose, throat; head, drow, weak; ataxia, tremor, som; anemic pallor, in animals: repro, terato effects	Eye: Skin: Breath: Swallow:	Irr immed Water flush prompt Resp support Medical attention immed	Eyes, resp sys, CNS, blood, kidneys, repro sys, hemato sys

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

I. 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.

Symptom Abbreviations	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	exhausted
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

(continued on the next page)

Source: Clayton L. Thomas, M.D., MPH, ed., *Taber's Cyclopedic Medical Dictionary*, 16th ed., Philadelphia: F.A. Davis, 1989.

I. (continued)

Target Organ Abbreviations	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: Using the NIOSH *Pocket Guide* to Get 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. It lists the chemicals that OSHA has set limits for, and some others.

4. The *Pocket Guide* uses a lot of abbreviations. Look them up on page 211 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.

6. If you have different information about the same chemical, always follow the strongest warnings. "Err on the side of safety."

NOTES

Activity 10: Radioactive Materials

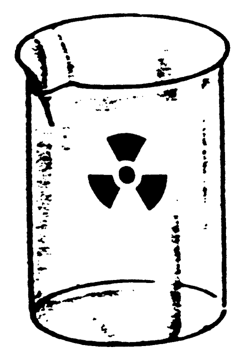
Purpose

To help non-nuclear hospital workers understand the dangers of radioactive materials spills.

Task 1

Your group is the bargaining committee for Local 94. On a survey, workers told you they were concerned about radiation. One worker's comments were especially interesting. Please read the worker's statement and answer the questions below using Factsheets A through J (pages **Error! Bookmark not defined.** - 226).

> **"I was working the night housekeeping shift, and I got a call from the supervisor in the west wing. One of the techs had dropped a glass in the hallway, and they wanted me to clean it up.**
>
> **When I got there, the glass had a sticker on it that looked like this:**



> **I said no way would I clean it up, but the supervisor got mad and threatened to write me up."**

1) Do you think this worker is in danger from the material she was asked to clean up? Why or why not?

(continued on the next page)

Task 1 (continued)

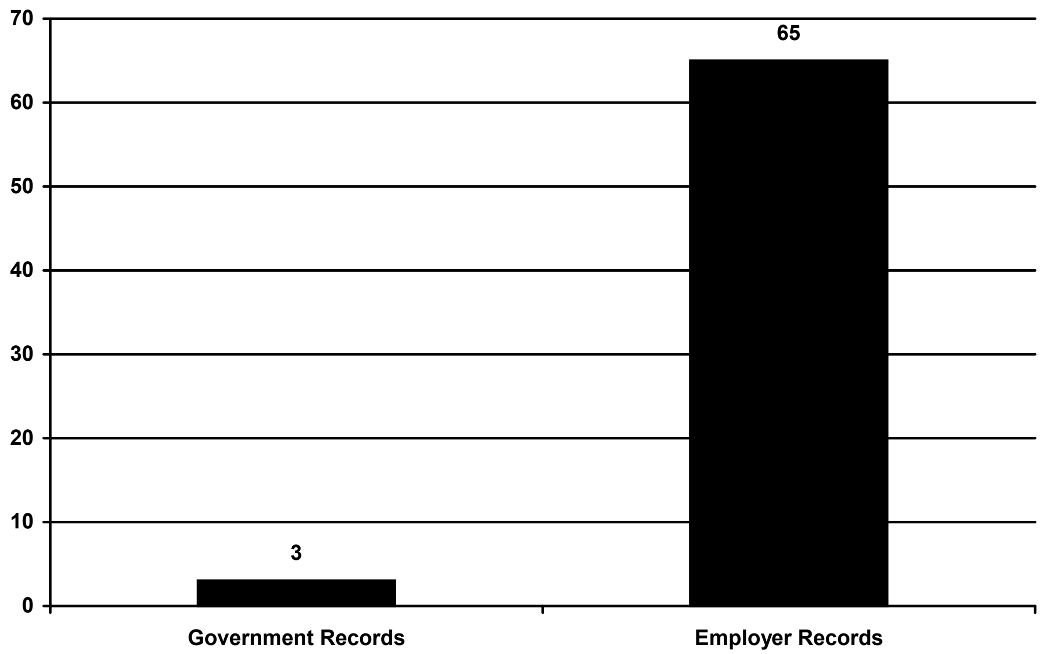
2) What do you think this worker should say to the supervisor?

A. What We Don't Know Can Hurt Us

Half of all "nuclear workers" in the US work in health care. According to a recent study, no one knows how many "nuclear workers" are exposed to dangerous amounts of radiation. This study compared government records of workers who were over-exposed to employer records for the same workers. The employer records showed more than 20 times the number of workers than the government records did.

Workers in Radiation Accidents

Government & Employer Records



These statistics may only be the tip of the iceberg. Only workers in areas like nuclear medicine have to be measured for radiation and get training. Other workers, like nurses in emergency rooms or housekeepers may not get training because they are not in "radiation areas." But we don't even know how much they are exposed to, because they don't have to be measured.

Source: *Nuclear Regulation: Better Data Would Help Ensure Safety of Nuclear Materials*, U.S. General Accounting Office, Pub. No. GAO/RCED-93- 90.

B. What is Different About Radioactive Materials?

Unlike chemicals, radioactive materials can hurt you without ever touching you.

- Some radioactive materials give off rays (like X-rays) that can damage anything that lives, and they can pass through solid materials like clothes, books, … even walls.

- Other radioactive materials give off tiny, incredibly fast-moving particles that can also damage anything that lives. They can't pass through walls though.

This means that radioactive materials may not be safe, even when they are sealed in a container.

You can not see, smell, or taste radiation. Very few medical radioactive materials glow in the dark.

There is good news, though—unlike other chemicals, radioactive materials lose their power over time. Most materials that can spill in hospitals are radioactive from 6 hours to 90 days. This does not mean that you should wait for a spill to lose its power and then clean it up. A trained crew still needs to come in to clean it up. But it is OK to put some kinds of radioactive waste in a storeroom and let it lose its power before throwing it out.

Source: "Radioactivity," in Frank L. Fire, *The Common Sense Approach to Hazardous Materials*, New York: Fire Engineering, 1986.

C. What Can Radioactive Materials Do?

Radioactive materials are used to treat cancer, but they can also cause cancer. Radioactive materials can cause:

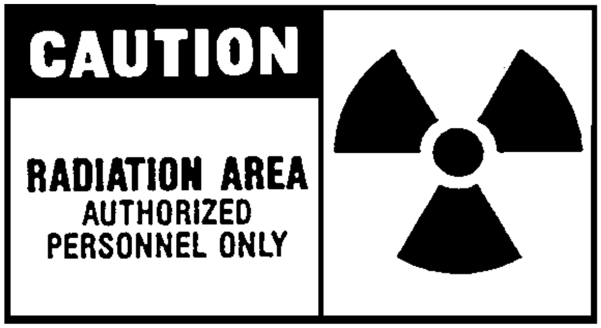
- Cancer 10 to 40 years after you are exposed. Radioactive materials can cause cancer in any part of the body.
- Birth defects in children, even children you have years from now.
- Burns if you are in the way of an x-ray machine for a long time (this is very unlikely).

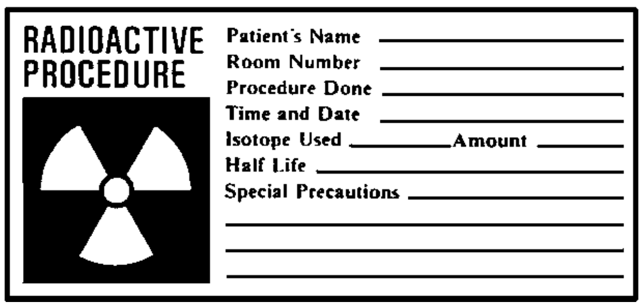
Too much radiation can cause you great harm. Even the "experts" disagree what safe levels of exposure are, but many feel that legal limits are too high. There are good reasons for using radiation in the hospital but workers shouldn't be exposed to any extra radiation.

Source: "Radiation, Ionizing, Adverse Effects," in Weeks, Levy and Wagner, *Preventing Occupational Disease and Injury*, Washington, DC: American Public Health Association, 1991.

D. How Do I Know It If I See It?

All areas with radioactive materials should have warning signs like one of these:





Radioactive materials have names that end in a number. Here are some of the most common materials used in hospitals:

- Iodine-131 (an IV used with X-ray machines and by itself)
- Technetium-99 (an IV used with X-ray machines)
- Cesium-137 (used inside X-ray machines)
- Cobalt-60 (used inside X-ray machines)

Vomit, body wastes, and blood from patients who have had radioactive drinks (like iodine-131) also have radioactive materials in them.

Source: "Requirements for Protection Against Ionizing Radiation from Nuclear Materials," *Healthcare Hazardous Materials Management—HHMM*, September 1991, pp. 1-9.

E. Types of Radioactive Materials Used In Hospitals

Radioactive materials can be in any part of the hospital, not just in the nuclear medicine department. Four different types of radioactive materials are common in hospitals:

- **Radioactive dyes** are given to patients when they have some x-rays. These tests are becoming more common. The dyes are liquids which can spill. The containers, needles, and cotton balls used to give the shots have radioactive materials on them.

- **Radioactive drinks** are given to patients to treat diseases. These are liquids which can spill. The containers and straws used to give these materials have radioactive materials on them. Vomit, body waste, and blood from these patients also have radioactive materials in them for about a week.

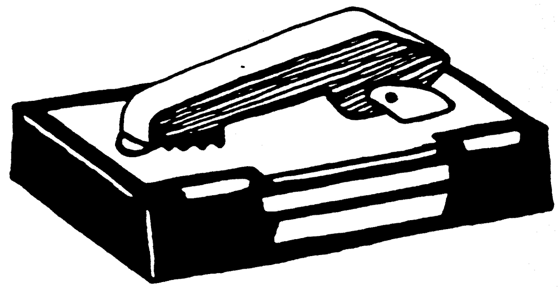
- **X-ray machines and CAT scanners**, which are used in the radiology department and in the emergency room, are source of radiation. They do not contain radioactive materials. Instead, they transform electrical energy into focused beams of radiation. They can not "leak" unless they are turned on. Regular inspection and maintenance is required.

- **Pieces of radioactive material** are put into patients in surgery to treat diseases. These are small pieces, but tiny bits can break off on the tray during surgery.

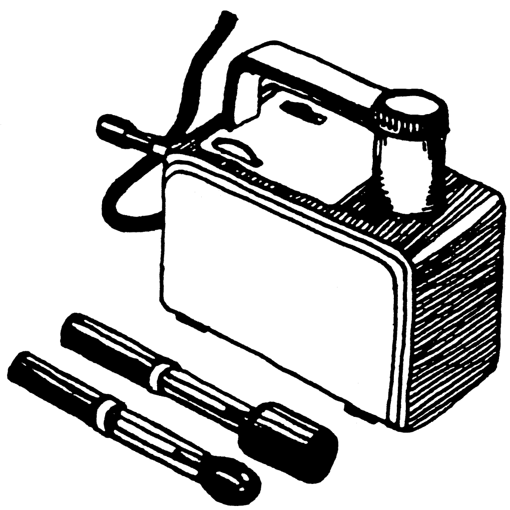
Source: Jean-Pierre Gauvin, "Radiation Protection in Hospitals," in Charney and Schirmer, *Essentials of Modern Hospital Safety*, Chelsea, MI: Lewis Publishers, 1990.

F. Geiger Counters, Everyone?

Everyone who works around radioactive materials should wear a film badge that measures how much radiation you are exposed to. This is a small piece of film that you wear for a month at a time, then send to a lab. One problem with film badges is that they measure what you have already been exposed to. Also, it takes a month or more from the time you put it on until you get a result. Workers are entitled to see the results.



Film Badge



Geiger Counter

The "Geiger counter" you see in the movies doesn't measure all types of radiation. It can tell you how much radiation there is right now. You don't have to wait until after you're exposed to find out. The health physics or nuclear medicine department at your hospital might use a Geiger counter. But film badges are the best for workers on a day-to-day basis.

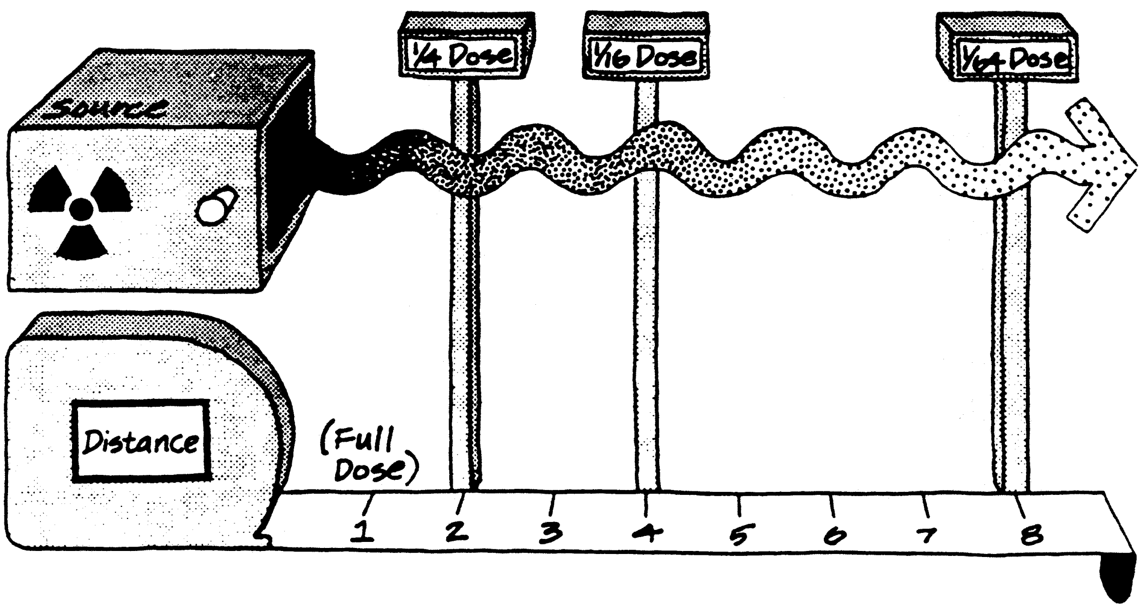
Source: National Institute for Occupational Safety and Health, *Guidelines for Protecting the Safety and Health of Healthcare Workers*, 1988.

G. Protecting Ourselves

There are 4 ways to protect workers from radiation:

1) **Time:** If you stay away from radioactive materials you won't be exposed. The less time you spend around radioactive materials, the less of it will get into your body.

2) **Distance:** Staying far away from radioactive materials really does make a difference. For example, if you stand 2 feet away, you get 4 times less radioactive materials in your body than at 1 foot. At 3 feet away, you get 9 times less than at 1 foot.



3) **Shielding:** Lead, glass, and concrete can stop some kinds of radioactive materials. But if you don't know what kind it is, a shield can't help you. Just because you have a lead apron, doesn't mean you're safe, since some kinds of radiation will go right through lead.

4) **Use less:** Every unnecessary X-ray exposes one more worker.

Source: Kahn, Ryan, et al., "Ionizing Radiation," in Levy and Wegman, *Occupational Health: Recognizing and Preventing Work-Related Disease*, Boston: Little, Brown, 1983.

H. Cleanup

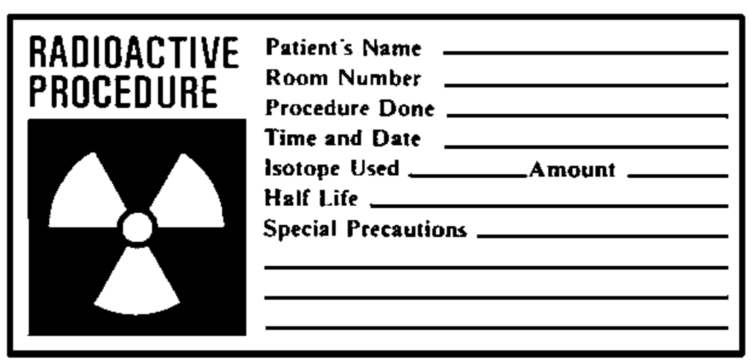
If you're not trained to be a cleanup worker, cleaning up radioactive materials spills can be very dangerous. Poor cleanup can put you, your co-workers, and your patients at risk. Remember that vomit, body waste, and blood from patients who take radioactive drinks have radioactive materials in them.

Do not clean up a spill:

∃ from a container with a radioactive
material label on it

or

- in a patient room with a radioactive sign on the door



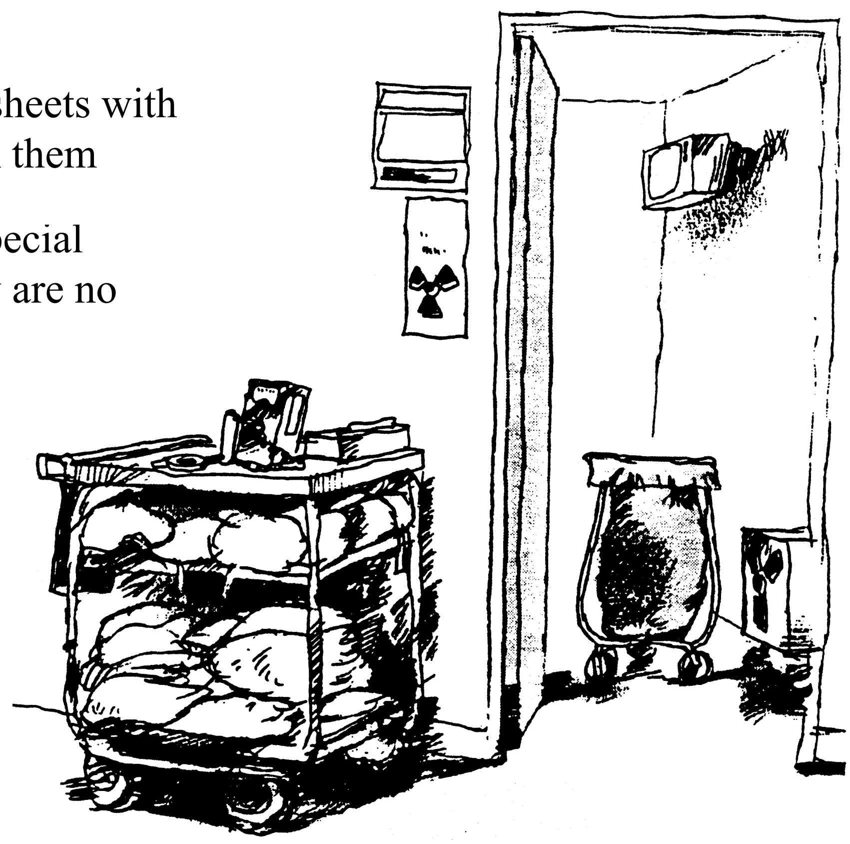
Sources: *Radiation Protection for Medical and Allied Health Personnel*, Bethesda. MD: National Council on Radiation Protection and Measurements, 1989 and Bernard Shleien, *Radiation Safety Manual for Nuclear Medicine Departments*, Olney, MD: Nucleon Lectern Associates, 1987.

I. Radioactive Waste

Everything that has radioactive materials on it must go in a radioactive waste bag. This includes:

- spilled materials
- containers, needles, and cotton balls used to give shots of radioactive materials
- containers and straws used to give drinks of radioactive materials
- vomit, body waste, and blood from patients who have taken radioactive drinks
- bandages from patients who have radioactive material put into them in surgery
- lab coats or plastic sheets with radioactive spills on them

They must be sent to a special dump or stored until they are no longer dangerous



Source: "Radiation Safety," in Stoner, Smathers et al., *Engineering a Safe Hospital Environment*, New York: John Wiley & Sons, 1982.

J. Radiation Safety Committees

Every 3 years, your hospital is reviewed by a group called JCAHO (the Joint Commission on Accreditation of Healthcare Organizations). JCAHO says that every hospital must have a safety committee. The hospital may also have a special radiation safety committee.

The JCAHO recommends that these committees have a "representative" from:

- administration
- medical staff, and
- support staff

Committees are usually made up of managers, with no front-line workers. You could suggest or negotiate worker participation. A good radiation safety committee ought to be able to help you and give you information.

Source: JCAHO, 1996 *Accreditation Manual For Hospitals*, Vol. 1, Standards; CWA, *Health and Safety Manual for Hospital Workers*, Section EC.

Summary: Radioactive materials

1. We do not know how many workers are exposed to dangerous levels of radiation. Everyone who works around radioactive materials should wear a film badge that measures how much radiation you are exposed to.

2. Radioactive materials are different from chemicals because they:
   - give off rays (like X-rays) that can pass through walls and other solid things or
   - give off tiny, incredibly fast -moving particles that can damage anything that lives.

3. Radioactive materials may not be safe, even if they are sealed in a container.

4. Radioactive materials cause cancer, birth defects (even in children born years from now), and burns.

5. All areas with radioactive materials should have warning labels.

6. Time, distance, shielding, and using less radiation may protect workers.

7. Cleaning up radioactive materials spills can be very dangerous.

8. Everything that has radioactive materials on it must go in a radioactive waste bag. This includes body waste, containers, needles, and cotton balls used to give shots of radioactive materials.

NOTES

Activity 11: Blood And Other Spills

Purpose

To explore the risks to health care workers of getting sick from handling blood.

Task 1

Your group is made up Local 94 union stewards from Pleasant Valley Hospital. A member has come to you with the following statement. In your group, please read the statement, review Factsheets A through G (pages 230 - 238), and answer the questions that follow. Be sure to choose one person from your group to take notes and report back.

> **"I'm confused about Hepatitis and AIDS. One of the nurses told me you can only get them from sex and blood, but then I heard someone else saying you can get them from kissing.**
>
> **I'm not so worried about Hepatitis. At least they have a cure for that. But AIDS, that's what I worry about. I don't know anybody who has it, but I'm just not sure I'm safe."**

How would your group respond to this worker?

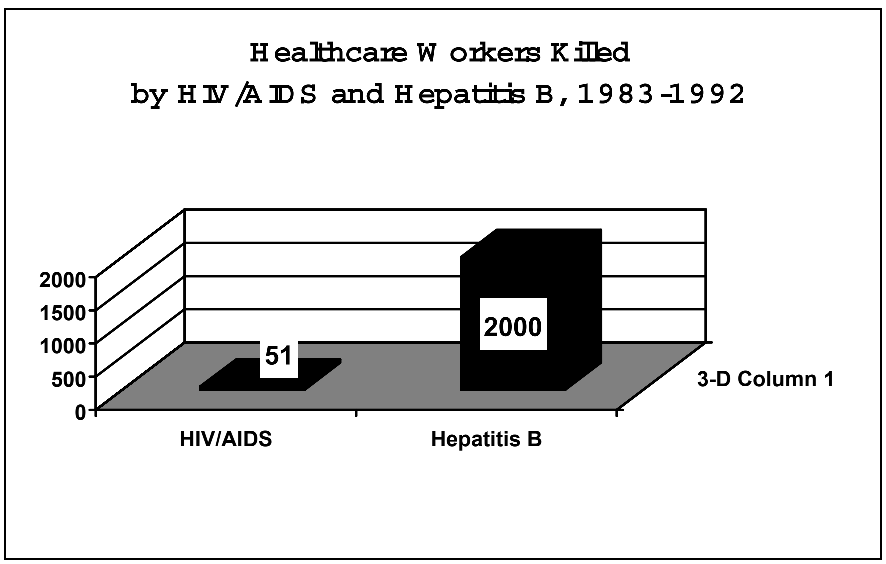
A. Blood is Dangerous

Blood is everywhere in hospitals, and it can carry diseases like:

- Hepatitis B
- HIV/AIDS
- malaria
- Hepatitis C

In emergencies, there is no way to know quickly enough who has these diseases in their blood. That's why we have to treat all blood and body fluids the same, just like a poisonous chemical. Treating all blood the same is called using "universal precautions."

Even though these diseases are all carried in blood, they affect people in very different ways. For example, once a person becomes infected with HIV their body cannot get rid of the infection, while most people who get Hepatitis B are able to clear the virus from their system. Even so, more health care workers have died from Hepatitis B than from HIV/AIDS because it's much easier to catch.



The good news is there are shots (a vaccine) that can usually keep you from getting Hepatitis B. And, the law says your employer must give you the vaccine for free if you work with blood. Almost every case of Hepatitis B could be prevented with the vaccine!

Source: Abram S. Benenson, ed., *Control of Communicable Diseases Manual*, Washington, DC: American Public Health Association, 1995.

B. ABCs of Bloodborne Disease

Most people know by now that Hepatitis B, Hepatitis C and HIV/AIDS are caused by viruses (germs) that can be found in people's blood. (Fewer viruses also live in semen, vaginal fluids, and saliva.) **In order to get Hepatitis B, Hepatitis C or HIV/AIDS, you have to get someone else's blood into your blood or have sex with them.**

You can get Hepatitis B or C, or HIV/AIDS from just one needlestick or having sex just once. Or, you may have to get the viruses into your blood over and over again before you are infected.

You can get these viruses in your blood when:

- You have sex (penis in vagina, mouth or anus) with anyone who has the viruses in their blood (a man or a woman)
- You shoot-up drugs and share a needle or syringe with someone who has the viruses in their blood
- You get someone else's blood into your blood (like getting stuck with a needle with HIV in it)
- You share a toothbrush with someone who has the viruses in their blood. (Brushing causes breaks in the lining of the mouth tissue.)
- Babies can also get the viruses from their mothers in the womb, during birth, or from their breast milk. (HCV transmission from mother to child appears to be uncommon.)

C. The Differences between Hepatitis B and HIV/AIDS

QUESTIONS	HEPATITIS B (For Hepatitis C see Fact Sheet E)
What causes the disease?	The Hepatitis B virus, known as HBV.
What does the disease do?	HBV can attack your liver. Hepatitis B is the # 1 cause of liver cancer in the world.
Does everybody who has the virus get sick?	Most people who have HBV in their blood develop Hepatitis B. Most of these people fight off the Hepatitis and live without any HBV in their body. Others become "carriers"—they don't get sick, but can pass HBV on to other people. And some people die from liver failure or liver cancer due to Hepatitis B.
Is there a vaccine?	Yes, there is a safe vaccine against Hepatitis B.
Is there a cure?	No, there is no cure for Hepatitis B.
Is there treatment?	There are treatments to help people stay healthy longer. Sometime these medicines get the Hepatitis B virus out of your body, but often they don't.
What are the symptoms?	The symptoms of Hepatitis B are vague. At first, people may just feel like they have a cold or the flu, and complain of: • a loss of appetite • feeling sick to your stomach • having stomach pain • throwing up If the Hepatitis gets worse, though, people have more specific symptoms, like: • joint pain • a rash • a low fever • yellow skin (also called "jaundice") • urine the color of Coca-Cola

C. (continued)

HIV/AIDS
AIDS is caused by a virus called HIV—human immunodeficiency virus.
The HIV virus attacks your body's defenses—your immune system. So people with HIV/AIDS can die from germs that wouldn't even make other people sick.
Until recently, most people who were infected with HIV got sick and died from AIDS. Some died within a few months of learning they were HIV positive, but most lived for over 10 years with the virus in their blood. We now have drugs that can keep people with HIV alive and healthier. But we don't know for how long these drugs will be effective, or whether there are long-term side effects. People who have HIV and haven't developed AIDS can still pass the virus on to others.
No, there is no vaccine for HIV/AIDS.
No, there is no cure for HIV/AIDS.
Yes. There are treatments to keep people healthy longer, but there is no way to get the virus out of their bodies.
It's hard to tell that you have HIV. When first infected, people may just feel like they have the flu, with a fever, sore throat or even a rash. But for most people months, even years, could go by without even feeling sick. Some symptoms which people may get when they are sick with AIDS are: • swollen glands (lumps) in the neck, armpit or groin • thrush (a white coating) in the mouth and throat • heavy sweating at night, or a fever that doesn't go away • purple blotches on the skin • diarrhea that doesn't go away • always feeling tired • unexplained weight loss • dry cough • yeast infections in the vagina that don't go away

D. HIV Facts

HIV/AIDS is hard to catch.

- A drop of blood usually has very few HIV viruses in it—especially compared to the number of HBV viruses in blood.
- You have roughly a 1 in 250 (0.4%) chance of getting HIV in your blood if you get stuck with a needle with HIV in it.

You can be infected for years and feel fine.

- Most people don't know they have HIV until they either get tested or become sick with AIDS.
- With new treatments, people are living longer with AIDS.
- But, even before people feel sick, they can pass the virus onto other folks.

Even so, people do get HIV/AIDS and die from it.

- There is no vaccine to protect you against the disease.
- There is no cure.

Treatments are being developed.

- It is very important to get treated as soon as possible if you may have been exposed to HIV (through a needlestick, for example).
- A few studies have shown that people should get treated within 1-2 hours after being exposed—even if they don't know for sure that they have HIV.
- The new treatment—the "HIV cocktail"—is helping to keep people with HIV healthier for longer!
- But, even though it keeps people healthier, they still have the virus in their blood and they can pass it on.

E. All Hepatitis is Not Created Equal

There are many different Hepatitis viruses. The most common ones found in blood are called Hepatitis B, and C.

Hepatitis B used to be the main threat to health care workers because it is easier to catch than Hepatitis C and scientists have been able to identify and study it for many years.

There is a vaccine to protect you against Hepatitis B. Your employer must provide you with the vaccine for free if you may be exposed to blood on the job.

If you suffer a needlestick or other exposure to blood containing hepatitis B, you should be evaluated for treatment.

Hepatitis C is also caused by a virus (HCV) which is carried in the blood and attacks the liver, causing cancer and other liver diseases. Like Hepatitis B, Hepatitis C is also carried in saliva and other body fluids.

However, **unlike Hepatitis B, there is no vaccine** to keep people from getting Hepatitis C. Because of this, the Centers for Disease Control estimate that **each year five times more health care workers will be infected with "C" than with "B"**.

Most people who have HCV in their blood don't even know it. They don't feel sick or have any symptoms, until the hepatitis has damaged their livers or caused cancer. Over half the people with HCV will develop chronic liver disease. HCV is the leading cause of liver transplants in the U.S.

There is no cure for Hepatitis C that works for most people. But, there is treatment which can help some people who have HCV in their blood.

(*continued on next page)*

E. Hepatitis (continued)

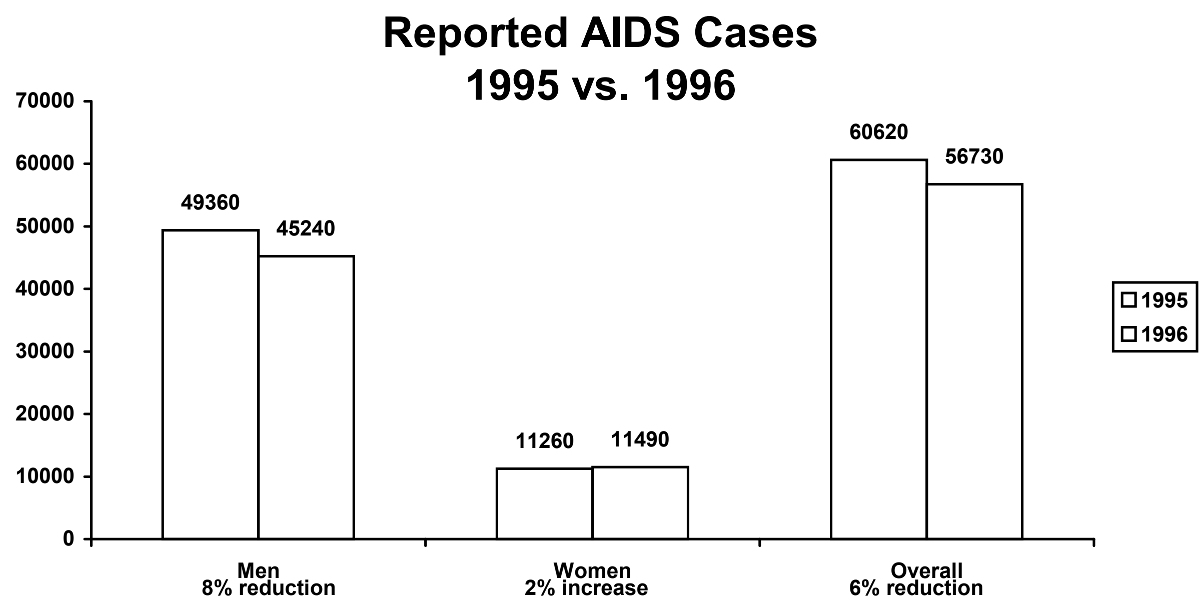
Hepatitis A is a very different disease. It lives in the gut (stomach and intestines). You can catch it from someone who doesn't wash their hands and prepares food. It makes you sick to your stomach, gives you the runs (diarrhea), and turns your skin yellow. You feel terrible, but almost everyone gets better in a few weeks. **There is a new shot (vaccine) to protect you from Hepatitis A.** So far, it has not been recommended for health care workers.

Sources: Centers for Disease Control, "Recommendations for Follow-Up of Health-Care Workers After Occupational Exposure to Hepatitis C Virus", MMWR Vol. 46, No. 26, July 4, 1997. Kathleen F. Phalen, "Needle Stick Risk", Washington Post, 8/11/98 p.10.

F. Who's Getting Sick?

All kinds of people have gotten Hepatitis B or C or HIV/AIDS: black and white, straight and gay, old and young, men and women. They all got infected blood into their blood through sex, needles, cuts, or blood transfusions (before 1992). You can't tell by looking whether someone has Hepatitis B or C or HIV in their blood. There are tests to tell if you or if a patient has Hepatitis B or C or HIV—Factsheet N (page 247) has information about the blood tests.

In the early 1990's HIV/AIDS was the #1 killer of young men and women (aged 25-44), and of young children (aged 1-4). Happily, thanks to community and public education programs, the number of people dying from AIDS has been going down for a number of years. In 1996 the number of deaths due to AIDS dropped by 23% in people 13 years old and older. And in 1996—*for the first time*—the number of new cases of AIDS has gone down! (Unfortunately, the number of new cases in women continued to go up.)



Sources: Szmuness, Harley, et al., "Sociodemographic Aspects of the Epidemiology of Hepatitis B," in *Viral Hepatitis*, ed. Vyas, Cohen et al., Philadelphia: Franklin Institute Press, 1978; and CDC, *HIV/AIDS Prevention Fact Book 1993*; and *Morbidity and Mortality Weekly Report*, 2/15/96; CDC, 1997.

G. Do I Have To Be Afraid Of Everything?

It's hard to get Hepatitis B. It's even harder to get HIV/AIDS or Hepatitis C. You can't get any of these diseases unless someone's blood gets into your blood, and they have HIV, HBV or HVC. This means having unprotected sex or sharing needles. Doctors have studied HIV/AIDS for almost 20 years, and they've studied Hepatitis for even longer. They have talked to thousands of family members who live with people with HIV/AIDS and Hepatitis B or C. In more than 15 years, no one has ever gotten HIV/AIDS from a family member unless they had unprotected sex or shared blood (on needles, razors, toothbrushes, or in cuts).

- It's safe to hug a person with HIV/AIDS or Hepatitis B or C.
- It's safe to use a toilet that a person with HIV/AIDS or Hepatitis used.
- It's safe to work with a person with HIV/AIDS or Hepatitis B or C.
- It's safe to talk to a person with HIV/AIDS or Hepatitis B or C.
- It's safe to live with a person with HIV/AIDS or Hepatitis B or C.
- It's safe to go swimming with a person with HIV/AIDS or Hepatitis B or C.
- It's safe for a healthy person to give blood (they use new, clean needles).
- It's safe to give a person with HIV/AIDS or Hepatitis a shoulder to cry on.
- It's safe to share a towel with a person with HIV/AIDS or Hepatitis B or C.
- It's safe to use a telephone after a person with HIV/AIDS or Hepatitis has used it.
- It's safe to be in a crowded room with a person with HIV/AIDS or Hepatitis B or C.

You can't get HIV/AIDS or Hepatitis from coughs or sneezes—but you can get a cold!

Task 2

Health care workers are exposed to blood on a regular basis at work. Health care providers can help individuals with prophylaxis (preventing the disease from developing) and treatment once they have been exposed, but these don't always work. We must work to make the workplace as safe as possible so workers are exposed to blood less often.

In your group, talk about the working conditions at your facility. Then, please review Factsheets H through P (pages 240 - 251) and answer the questions below.

1) What are the worst, or most dangerous, practices you've seen in your hospital that potentially expose workers to blood-borne diseases?

2) As a group, please list the 3 most important things that you think a hospital should do to protect workers from getting infected with blood-borne diseases. Why are these steps important?

H. Blood At Work

Health care workers have gotten the Hepatitis B or C viruses, or HIV on the job when:

- They were stuck by a needle with blood in it
- They were cut by a scalpel with blood on it
- They were cut by glass or anything else with blood on it
- They got blood into a cut in their skin
- They got blood in their eyes, mouth or nose

Two health care workers have gotten the Hepatitis B and C viruses into their blood when they were bitten by patients. No health care worker has ever gotten HIV/AIDS from a bite.

Remember that almost every case of Hepatitis B can be prevented with the vaccine, but there are no vaccines for Hepatitis C or HIV/AIDS.

Source: Hadler, Doto, et al., "Occupational Risk of Hepatitis B Infection in Hospital Workers," *Infection Control*, January 1985, pp. 24-31.

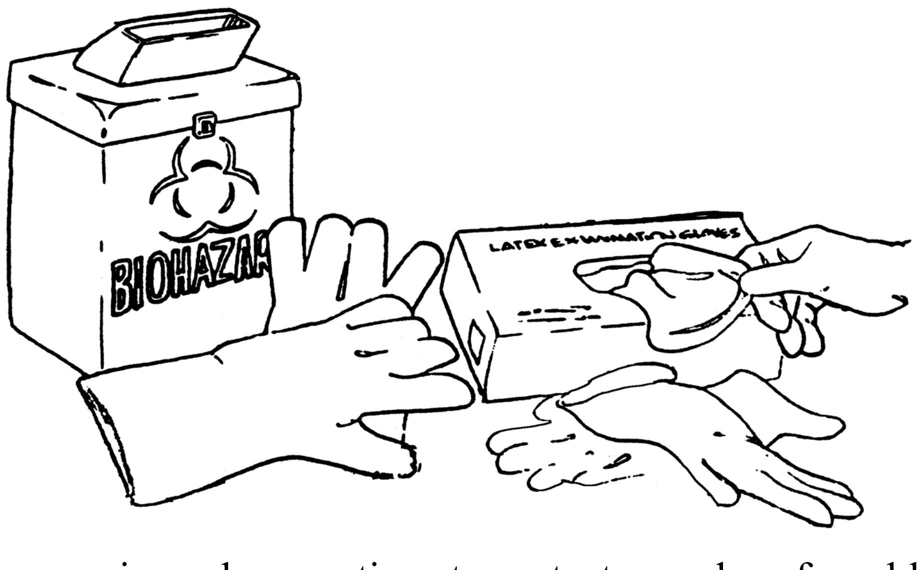
I. All Blood Is Created Equal

Many of us have been trained how to protect ourselves from all blood, no matter who it comes from. There are things we do each time we handle a patient's blood, vomit, urine, feces, or whenever we handle hospital waste:

- wear gloves
- wear eye protection (if there is a chance of blood splashing)
- put needles in needle boxes
- put blood-soaked waste in red bags
- wash our hands

These habits are called universal precautions.

To use universal precautions health care workers must be trained, and must be provided with the supplies you need—like gloves, needle boxes, red bags, and a place to wash your hands.



We need to use universal precautions to protect ourselves from blood. We also need to get the Hepatitis B vaccine and get safer needles.

Source: W.H. Heaton, *Universal Precautions: Policy and Procedure Manual*, National Health Publishing, 1988.

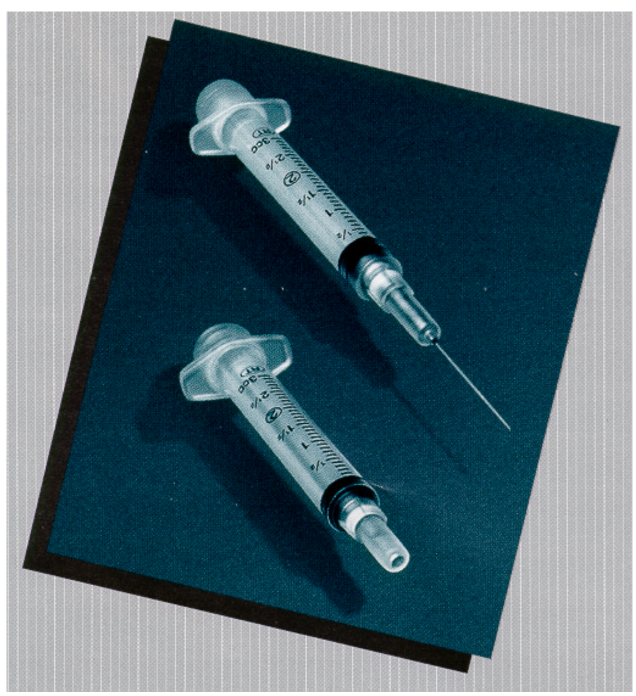
J. Preventing Needlesticks—The #1 Problem

The #1 way health care workers get Hepatitis B or C or HIV from their jobs is when they get stuck with a needle from an infected patient. They may get stuck with a needle when a patient moves suddenly. Or a needle may be in a trash bag when they pick it up. You have a 1 in 3 to 1 in 20 chance (5 to 30%) of getting the Hepatitis B virus in your blood if you are stuck by a needle with HBV in it. You have a 1 in 250 chance (much less than 1%) of getting HIV in your blood if you are stuck by a needle with HIV in it.

The best way to prevent needlesticks is to use fewer needles. Being careful when using needles will not keep workers from getting stuck. Our patients don't always cooperate and in a crisis, care for our own safety isn't always the first thing on our minds.

If needles can't be eliminated from a procedure, the next best thing is to use a needle with a built in safety device to prevent anyone from being stuck. Here are just a few examples (there are many more being used):

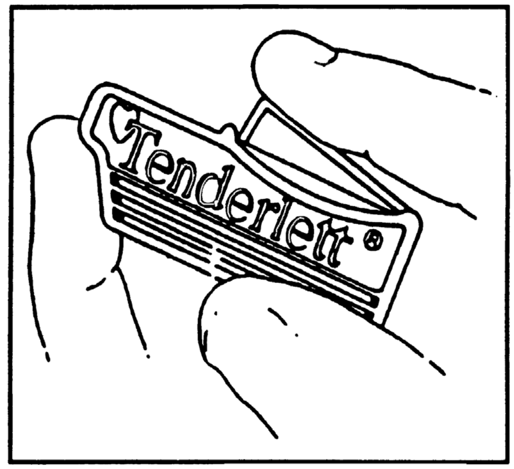
- The VanishPoint® syringe has a retractable needle. Once the plunger is pushed all the way in needle retracts inside the barrel the syringe.

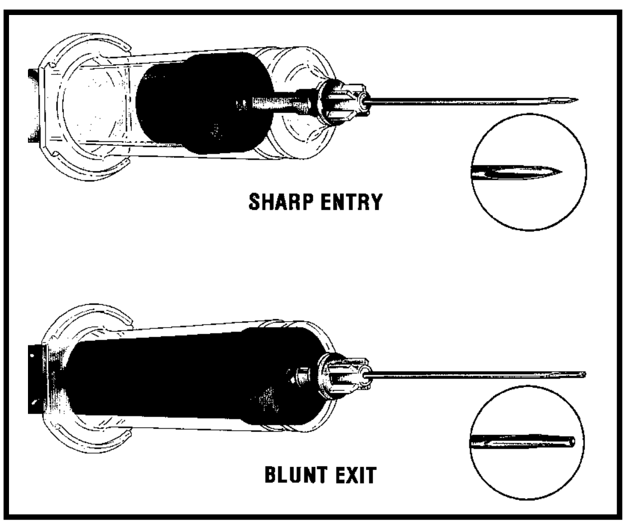


J. (continued)

- The SAFSITE Needle-free I.V. Access System is a connector for IV lines that does not use a needle at all.

- The Tenderlett Automated Skin Incision Device is a lancet for taking drops of blood It has a cover over the blade so that no one can stick themselves after it is used.





- The Punctur-Guard® needle contains a blunt metal tube inside the needle. Once the needle has been inserted in the patient the device is activated and the blunt tube descends past the sharp needle point. The end of the needle is now blunt instead of sharp. The needle can be blunted while it is still inside the patient.

Sources: Janine Jagger and Richard D. Pearson, "Universal Precautions: Still Missing The Point on Needlesticks," *Infection Control and Hospital Epidemiology*, Vol. 12, No. 4 (1991), pp. 45-47; Janine Jagger, Ella H. Hunt, and Richard D. Pearson, "Estimated Cost of Needlestick Injuries for Six Major Needled Devices;" and Janine Jagger et al., "Rates of Needle-Stick Injury Caused by Various Devices in a University Hospital," *New England Journal Of Medicine*, Vol. 319 (1988), pp. 284-288.

K. Latex: Itching for Safety?

Latex gloves are very important for protecting you from germs in blood, skin, and other body fluids. But some workers and a few patients are allergic to latex. Gloves and other equipment can:

- make you break out in a rash
- make your eyes and nose run
- cause trouble breathing (wheezing)—sometimes very serious
- in very serious cases, cause shock which can kill.

Some scientists believe that powdered gloves make latex allergies worse. They think the powder spreads latex in the air, where it can get in your lungs. They recommend powder-free gloves or non-latex gloves for all workers. Latex is natural rubber (from rubber trees). Non-latex gloves are made from chemical rubber.

Other equipment like catheters, IV tubing, nipples for baby bottles, condoms, and even latex paint cause fewer allergies. They give off much less of the invisible latex dust that your body reacts to. Some studies show that well-made gloves cause fewer allergies, because the gloves are cleaned several times at the factory.

One study done in 1996 found that 3 out of 5 nurses with a latex allergy reacted to powder-free gloves. A severe latex allergy may mean that you can never be around latex again. Even walking into a medical office where latex is used could cause trouble breathing. If you have a severe latex allergy that keeps you from working, talk to your union rep about disability benefits.

The good news is that there are latex free, hypo-allergenic gloves available. And, **your employer must provide you with gloves you can use—ones that are the right size and that don't make you itch! It's the law.**

Source: Caryle Murphy, "Latex Allergy Can Be an Occupational Hazard," *Washington Post*, 7/16/96, p. HM8 and Reuters, "Low-Allergy Gloves Not Very Hypoallergenic," 3/18/96.

L. The Hepatitis B Vaccine

Hepatitis B used to kill 200-300 health care workers every year. Now it can be prevented with a vaccine (a series of shots). **The Hepatitis B vaccine is given in 3 shots over 6 months.** No one has ever gotten Hepatitis B or any other disease from the vaccine. The vaccine is made in a factory, and it does not have any blood or viruses—alive or dead—in it. About 1 worker out of 5 does have a sore arm, fever, or feels a little sick after the shots.

By law your employer has to offer you the vaccine for free if you work with blood. You should get the shots when you start working at the hospital. This is part of the OSHA bloodborne disease regulation (standard). Everyone who works with blood has the right to the Hepatitis B vaccine for free.

Source: Bergamini and Zanetti, "Immunogenicity of Yeast-Derived Hepatitis B Vaccines in Young Adults," *Postgraduate Medical Journal*, Vol. 63 (Supplement 2), pp. 137-138.

M. Titer Means How Much

The blood test that shows whether you are protected against Hepatitis B is called a **titer**. Titer means how many antibodies your body has produced to protect you from the virus. A positive titer means your body has the antibodies that can protect you from infection. A doctor may do a titer before or after giving the Hepatitis B vaccine.

Before the vaccine

Before giving the Hepatitis B vaccine, some doctors do a titer to see if your body is already protected against Hepatitis B. If you got the virus in your blood and your body fought it off, you are already protected. The blood test shows whether your body has already reacted to the virus and made antibodies. This test should be done **before the first shot**, in case you don't need the shots because you are already protected. Even if you don't get a titer and already have antibodies, the vaccine will not hurt you.

After the vaccine

After giving the Hepatitis B vaccine, some doctors do a titer to figure out if the vaccine has worked. The blood test shows whether your body has reacted to the vaccine and made enough antibodies. This test should be done **after the third shot**, so your body has enough time to react.

N. If You Are Exposed…Get the Treatment

If you are exposed to blood on your job, you should immediately tell your supervisor and get tested! Workers usually get exposed by:

- getting stuck with a bloody needle or cut with a bloody razor,
- having blood splashed into your face, or in your eyes, nose or mouth,
- getting blood on a cut or on cracked skin.

Tests and Treatment for HIV

When to get treated: If you are exposed to blood talk to a doctor! The CDC (Centers for Disease Control) has issued some recommendations for how to medically treat workers who are exposed to blood containing HIV:

- If you are exposed to a patient's blood you should get help immediately. If you can, talk to a doctor within 1-2 hours. If you need treatment, getting it quickly can help prevent the HIV from infecting you. You should definitely talk to a doctor with a day or two.
- If you are exposed to someone's blood and you don't know if he or she is HIV positive or not, you should still talk to a doctor. You should have a baseline blood test and you may need treatment.

What is the treatment: The treatment consists of taking a combination of 2 or 3 drugs (often ZDV, 3TC, or IDV) for 4 weeks. Some people do get sick from the drugs, so you should be sure to be in a doctor's care while you are taking them.

You should also be tested for HIV at the time of your exposure, and again 6 months later. Until you are sure that you did not get HIV, you should practice safe sex (use latex condoms), not get pregnant or breastfeed, to be sure you don't pass it on.

IF YOU HAVE ANY QUESTIONS ABOUT PROPER TREATMENT, CALL THIS HOTLINE: (888) 448-4911

N. (continued)

Test and Treatment for Hepatitis B

If you are exposed to a patient's blood you should tell your supervisor and get treatment quickly. The health care provider you talk to will ask you if you had a vaccine against Hepatitis B, and will take a blood sample to do a titer test.

- If you had a vaccine and your titer is high (10 or more) this means that you are protected against Hepatitis B, and you do not need to be treated.
- If you had a vaccine and your titer is low (less than 10), you should be given a booster vaccine, and maybe another shot (HBV hyperimmune globulin) to prevent you from getting Hepatitis B.
- If you never had a vaccine against Hepatitis B, you should be given the vaccine (3 shots over 6 months), **and** a shot of HBV hyperimmune globulin.

This treatment should keep you from developing Hepatitis B. If you receive this treatment you will probably not pass Hepatitis on to members of your family or sexual partners.

Test and Treatment for Hepatitis C

If you are exposed to blood from a patient you should report the exposure to your supervisor. There is no immediate treatment to prevent you from getting the disease, but it is important to know if you have it. You should be tested for Hepatitis C soon after your exposure, and tested again 6 to 9 months later. If your tests come up negative, then you did not get the disease. If they are positive, there are treatments you could try to protect your health.

(continued on the next page)

Source: "CDC Recommendations for Chemoprophylaxis after Occupation Exposure to HIV," *Morbidity and Mortality Weekly Report*, 6/7/96; and Gerberding, JL, "Drug therapy: management of occupational exposures to bloodborne viruses," *The New England Journal of Medicine*, volume 332, 2/16/95, pp 444-451.

N. (continued)

With any tests for diseases you get at work, there are a few things you should look for:

- Do they put a code number, not your name, on the blood sample?
- Will they give you the results in person? Results should not be sent in the mail or given over the phone.
- Will they offer you counseling, before and after the test? Even if you test negative, you will probably be worried about it.
- Will your employer keep the test results private or confidential?

If you test positive (have the viruses in your blood), you need to:

- Be sure the lab double-checked the results.
- Stop having sex, or start using latex condoms every time you have sex (vaginal, oral or anal). Do this even if you are married or have been with one partner for years.
- Think about telling all your sex partners (present and past) that you tested positive, so they can have a test too. In some states, it's the law.
- In order to get the hospital to pay your doctor's bills (Workers' Compensation), you need test results that show you were infected on the job. Your medical information is confidential—it is against the law to fire someone just because they are infected or sick.
- Think about telling your family doctor or a virus specialist you tested positive. This way you can get the best treatment anytime you get sick.
- A positive test is not a death sentence. Many people with Hepatitis B or C and HIV have lived healthy lives for years and years.

IF YOU HAVE ANY QUESTIONS ABOUT PROPER TREATMENT, CALL THIS HOTLINE: (888) 448-4911

O. OSHA Is On Your Side

By law, your employer has to do certain things to protect you from Hepatitis B and C, HIV/AIDS, and other bloodborne diseases. Every health care worker has the right to these protections. Here are some key parts of the bloodborne diseases standard:

- Hospitals have to find ways to prevent exposure* by getting rid of needles and by other methods. Getting rid of dangers (instead of putting protective gear on workers) is called an engineering control.
- Hospitals have to train workers about diseases and how to protect themselves.
- Hospitals have to offer workers the Hepatitis B vaccine for free. These shots keep you from getting the disease.
- Hospitals must write a plan for protecting workers, called an **Exposure Control Plan.** The "Infection Control Plan" is for patients, the "Exposure Control Plan" is for workers.
- Workers have the right to get, review, and improve the Exposure Control Plan.
- Workers have the right to enough gloves, that fit right, and that they are not allergic to.
- Workers have the right to strong needle boxes that are near where needles are used.
- Workers have the right to medical exams if they are exposed.

Workers have other rights that are not in the bloodborne disease standard.

* The word "exposure" means any time blood can get into or on your body. This includes getting stuck by a needle, spilling blood, or splashing blood in your face or on a cut.

Source: OSHA Bloodborne Pathogens Standard, 29 CFR 1910.1030 [The California Standard is 8 CCR 5193.]

P. Testing Our Patients?

Given the following information, most health care workers, unions, hospitals, and government feel it is not a good use of time, money, or staff to test all patients for Hepatitis B or C or HIV:

- A patient can have the viruses in their blood, but test negative for up to 6 months. So some of our "negative" tests have HBV/HCV or HIV. We may have a false sense of security with patients who test "negative."

- All patients (including us) have the right to confidentiality.

- The test can be done as quickly as 2 days, but many patients can't wait to be treated, especially in an emergency. Do we test patients who aren't in a hurry and skip those who are?

- Any patient could have HBV, HCV or HIV in their blood, so all patients would have to be tested.

- If we test for HBV, HCV or HIV, what about all the other diseases we could get from patients?

We can ask a patient to have a test after a worker is exposed to their blood. Patients have the right to refuse the test.

Summary: Blood And Other Spills

1. Blood can kill you or make you very sick from Hepatitis B or C, HIV/AIDS, or other diseases. To get Hepatitis B or C, or HIV/AIDS, you have to get blood (with the virus in it) into your blood.
2. In the past, Hepatitis B has killed 40 times more health care workers than HIV/AIDS has. There is a safe vaccine to protect workers from Hepatitis B. Get all 3 shots.
3. Anyone can get Hepatitis B or C, or HIV/AIDS. You can't tell by looking whether someone has a virus in their blood.
4. Health care workers are more likely to get Hepatitis B than HIV because there are more HBV viruses in the blood. HBV is also in saliva.
5. Because there is no vaccine, more health care workers are likely to get Hepatitis C at work than Hepatitis B.
6. You can't get Hepatitis B or C or HIV from casual contact (like sharing toilets or telephones). You can get them from sex without a condom or from used needles. You can also get Hepatitis B or C if infected saliva gets into your blood.
7. OSHA has a regulation (standard) to protect workers from Hepatitis B and C, HIV/AIDS, and other diseases carried in blood.
8. On the job, most health care workers get Hepatitis B or C, and HIV/AIDS from needles. This can be prevented by using needles with safety designs (retracting needle, self-blunting needle, etc.).
9. If you are stuck, tell your supervisor. You may need to get treatment for HIV/AIDS within 1 to 2 hours. You should get tested for HIV, Hepatitis B and C. You should get counseling before and after the tests.
10. It is not accurate or practical to test our patients for HBV, HCV or HIV. We should act as if everyone has these viruses, and protect ourselves from all blood.

NOTES

NOTES

12. Looking For Safer Needles

Purpose

To prepare ourselves to play an active role in the evaluation and selection of safer needle devices in our workplaces.

Task 1

You and your co-workers have been asked to pilot test a new safety syringe that your hospital is thinking about purchasing. You decide to get together and make a checklist of the things you will be looking for when you try this new syringe.

Look at fact sheets A through E on pages 256 - 261.

1) With your group, make a checklist of items you will want to consider when you evaluate the new syringe. List them on the large sheet of paper given to you by the trainers.

2) Discuss which are the three most important items on the checklist. Put them in order of importance by placing a number next to the item (1, 2, 3).

A. SMART SHOPPERS COMPARE

There are many kinds of needle safety devices on the market. If you are using an old-fashioned unsafe needle you may feel like any safety needle is better than none. But we deserve the best protection available. The only way we can know we're getting it is to evaluate and compare a broad range of safer products.

Recently the Centers for Disease Control (CDC) published an evaluation of three types of needles with built in safety protection that are used for drawing blood. The first reduced needlesticks by 23%, which sounds pretty good. But the other two types of needles brought sticks down 66% and 76%.

Don't rush to judgement, compare.

Source: Centers for Disease Control and Prevention, "Evaluation of Safety Devices for Preventing Percutaneous Injuries Among Health-Care Workers During Phlebotomy Procedures – Minneapolis-St. Paul, New York City, and San Francisco, 1993-1995" Morbidity and Mortality Weekly Report, Vol. 46, No. 2, January 17, 1997, p. 24.

Note: Much of the information and ideas in this Activity come from the work of the TDICT (Training for Development of Innovative Control Technology) Project. We want to acknowledge their contribution to our understanding of this important issue. To contact them, see our resource list at the end of this activity.

B. PASSIVE OR ACTIVE?

Passive

Safety devices fall into two broad categories. They can be either passive or active. With a **passive device** the worker doesn't have to turn on the safety feature in order to be protected. **It's automatic**. An I.V. connection with a recessed needle is a passive device.

Active

Most safer needles have **active safety devices**. The worker using the needle has to do something special to "turn on" the safety feature. They might have to slide a sheath over the needle once it's been used. Or they might have to press extra hard on the plunger of the syringe at the end of an injection. Whatever it is, **if they don't do it they're not protected**.

In the CDC study mentioned in fact sheet A, the safety devices on two types of needle were only used a little over half the time. That means that almost half the time the health care worker had no protection, even though she was using a safety device.

Passive is Better

We often work under a lot of stress, either because of a heavy workload or because we are dealing with emergency situations. If we have to choose to turn on the safety feature each time we use a needle there will always be times when we choose not to – or forget. We need manufacturers to design more needles with passive safety features.

Source: Service Employees International Union, *SEIU's Guide to Preventing Needlestick Injuries*, (SEIU: Washington, D.C.) 1998, p.8

C. USE IT OR LOSE IT

Often there is no passive safety device available. The worker has to choose to turn on the safety feature each time she or he uses a needle.

A safety needle that is hard to use may not be used at all. Or it may be used without turning on the safety feature, so that it offers no protection.

Every health care worker who may come across a needle should care whether its safety feature is easy to use. Whether you're the EVS worker who finds a needle accidentally thrown in the garbage, or the CNA who comes across the one left in the sheets, you hope that the person who used it turned on the safety feature.

So when you evaluate a new safety needle, ask yourself whether it is easy to use.

- Does the user have to change the way they usually do their job in order to use it?
- Does it take two hands to activate the safety feature? (Often the worker needs to keep one hand on the patient.)
- Is it awkward to hold or clumsy to use?
- Can you do the same procedures as with the old, unsafe needle?

There are many factors that might make someone choose not to use the needle's safety feature. When you look at a safety needle think about how a worker in a hurry might use it (or not use it). If you don't use that type of needle yourself, ask a co-worker who does.

D. Before, During or After?

Besides asking how a needle's safety device works, you may want to ask when it works. Does it protect you all the time you are using it or just some of the time?

BEFORE

Because a needleless I.V. system doesn't use any needles, you are protected before, during and after you use it. In most cases the needle is sterile before use so there is little danger of infection if you are stuck.

AFTER

Some safety needles can be activated only after they have been withdrawn from the patient, when you are getting ready to dispose of them. But as the chart below shows, many needlesticks happen while the needle is still in use.

NEEDLESTICKS – BUTTERFLY NEEDLES

Before, during or after use	% of all needlesticks	Will an "after use" safety device protect?
While needle is being used in patient	32%	No
While needle is being disposed of	28%	Yes, if activated promptly and properly
During transfer of needle or other types of handling	40%	Maybe. Depends on how quickly after use the device is activated

D. (Continued)

DURING

Recently, manufacturers have developed a couple of types of needles that can be activated while the needle is still in the patient. For instance, self-blunting needles can be made blunt as soon as they have been inserted in the patient so that if they accidentally come out during a blood draw the worker is protected.

Source: Chiarello, Linda, RN, *Needlestick Prevention Technology: The National Perspective*, presentation at conference on Implementing a Compliant Sharp-Injury Prevention Program…, California Healthcare Association, Los Angeles, CA, December 9, 1998. Copies of overheads.

E. Oops, I Didn't See That One Coming

Occasionally a "safety device" can create a new hazard for the health care worker. For example, in order to activate one safety device you have to bring your hand forward over the needle. So you are forced to bring your hand into a position where you may get stuck. If it weren't for the safety device, your hand would not be in harms' way.

This is why it is best if safer needles don't require two handed use.

Ask yourself whether the safety device creates any new dangers for the workers who use it. Think about how the new needle changes the way you do your jobs.

Task 2

Your group is now being asked to evaluate some new safety syringes and make a recommendation. This is not a full evaluation – that would require you to use the needles in a clinical setting over a period of time.

Use the Safety Feature Evaluation Forms on the following pages as a checklist for evaluating each of the syringes. Look over the questions on the list. **Only the questions in bold type need to be answered today.** (The other questions would be used for a longer evaluation.) If the questions are not clear, ask your trainers. **Your table may add to the list any of the criteria your group came up with in the last task**.

Your trainer will give everyone at your table a syringe and an orange. After the syringe has been demonstrated by your trainer, try giving an injection to the orange. Then fill out the Safety Feature Evaluation Form.

You will be given several syringes to evaluate. When everyone at your table is finished trying the syringes discuss which one your table will recommend.

Your reporter should be prepared to give your recommendation to the whole class **and explain the reasons for your decision** (both what you liked about your favorite, what could be improved and what you disliked about the ones you didn't choose).

Safety Feature Evaluation Form – Syringes

Date:_________ Department:____________ Occupation:____________

Product Evaluated:_____________________ Number of times used:___

Please circle the most appropriate answer for each question. A rating of one (1) indicates the highest level of agreement with the statement, five (5) the lowest. Not Applicable (N/A) may be used if the question does not apply to this product (We have printed in bold type the questions which we think you can answer based on a one-time trial.)

	Agree……………Disagree					
1. The safety feature can be activated using a one-handed technique.	1	2	3	4	5	N/A
2. The safety feature does not obstruct vision of the tip of the sharp.	1	2	3	4	5	N/A
3. Use of this product requires you to use the safety feature.	1	2	3	4	5	N/A
4. This product does not require more time to use than a non-safety device.	1	2	3	4	5	N/A
5. The safety feature works well with a variety of hand sizes.	1	2	3	4	5	N/A
6. The device is easy to handle while wearing gloves.	1	2	3	4	5	N/A
7. This device does not interfere with uses that do not require a needle.	1	2	3	4	5	N/A
8. This device offers a good view of the fluid inside the syringe.	1	2	3	4	5	N/A
9. This device will work with required syringe and needle sizes.	1	2	3	4	5	N/A
10. The device provides a better alternative to traditional capping.	1	2	3	4	5	N/A
11. There is a clear and unmistakable change (either audible or visible) that occurs when the safety feature is activated.	1	2	3	4	5	N/A
12. The safety feature operates reliably.	1	2	3	4	5	N/A
13. The exposed sharp is permanently blunted or covered after use and prior to disposal.	1	2	3	4	5	N/A

14. This device is no more difficult to process after use	1	2	3	4	5	N/A

than non-safety devices.						
15. The user does not need extensive training for correct operation.	1	2	3	4	5	N/A
16. The design of the device suggests proper use.	1	2	3	4	5	N/A
17. It is not easy to skip a crucial step in proper use of the device.	1	2	3	4	5	N/A
18.	1	2	3	4	5	N/A
19	1	2	3	4	5	N/A
20.	1	2	3	4	5	N/A

Date:_________ Department:____________ Occupation:____________

Product Evaluated:_____________________ Number of times used:___

Please circle the most appropriate answer for each question. A rating of one (1) indicates the highest level of agreement with the statement, five (5) the lowest. Not Applicable (N/A) may be used if the question does not apply to this product (We have printed in bold type the questions which we think you can answer based on a one-time trial.)

Agree…………..Disagree						
1. The safety feature can be activated using a one-handed technique.	1	2	3	4	5	N/A
2. The safety feature does not obstruct vision of the tip of the sharp.	1	2	3	4	5	N/A
3. Use of this product requires you to use the safety feature.	1	2	3	4	5	N/A
4. This product does not require more time to use than a non-safety device.	1	2	3	4	5	N/A
5. The safety feature works well with a variety of hand sizes.	1	2	3	4	5	N/A
6. The device is easy to handle while wearing gloves.	1	2	3	4	5	N/A
7. This device does not interfere with uses that do not require a needle.	1	2	3	4	5	N/A
8. This device offers a good view of the fluid inside the syringe.	1	2	3	4	5	N/A
9. This device will work with required syringe and needle sizes.	1	2	3	4	5	N/A
10. The device provides a better alternative to traditional capping.	1	2	3	4	5	N/A
11. There is a clear and unmistakable change (either audible or visible) that occurs when the safety feature is activated.	1	2	3	4	5	N/A
12. The safety feature operates reliably.	1	2	3	4	5	N/A
13. The exposed sharp is permanently blunted or covered after use and prior to disposal.	1	2	3	4	5	N/A

14. This device is no more difficult to process after use than non-safety devices.	1	2	3	4	5	N/A
15. The user does not need extensive training for correct	1	2	3	4	5	N/A

operation.						
16. The design of the device suggests proper use.	1	2	3	4	5	N/A
17. It is not easy to skip a crucial step in proper use of the device.	1	2	3	4	5	N/A
18.	1	2	3	4	5	N/A
19	1	2	3	4	5	N/A
20.	1	2	3	4	5	N/A

Safety Feature Evaluation Form – Syringes

Date:__________ Department:_____________ Occupation:_____________

Product Evaluated:_____________________ Number of times used:___

Please circle the most appropriate answer for each question. A rating of one (1) indicates the highest level of agreement with the statement, five (5) the lowest. Not Applicable (N/A) may be used if the question does not apply to this product (We have printed in bold type the questions which we think you can answer based on a one-time trial.)

	Agree	……………		Disagree		
1. The safety feature can be activated using a one-handed technique.	1	2	3	4	5	N/A
2. The safety feature does not obstruct vision of the tip of the sharp.	1	2	3	4	5	N/A
3. Use of this product requires you to use the safety feature.	1	2	3	4	5	N/A
4. This product does not require more time to use than a non-safety device.	1	2	3	4	5	N/A
5. The safety feature works well with a variety of hand sizes.	1	2	3	4	5	N/A
6. The device is easy to handle while wearing gloves.	1	2	3	4	5	N/A
7. This device does not interfere with uses that do not require a needle.	1	2	3	4	5	N/A
8. This device offers a good view of the fluid inside the syringe.	1	2	3	4	5	N/A
9. This device will work with required syringe and needle sizes.	1	2	3	4	5	N/A
10. The device provides a better alternative to traditional capping.	1	2	3	4	5	N/A
11. There is a clear and unmistakable change (either audible or visible) that occurs when the safety feature is activated.	1	2	3	4	5	N/A
12. The safety feature operates reliably.	1	2	3	4	5	N/A
13. The exposed sharp is permanently blunted or covered after use and prior to disposal.	1	2	3	4	5	N/A

14. This device is no more difficult to process after use than non-safety devices.	1	2	3	4	5	N/A
15. The user does not need extensive training for correct operation.	1	2	3	4	5	N/A
16. The design of the device suggests proper use.	1	2	3	4	5	N/A
17. It is not easy to skip a crucial step in proper use of	1	2	3	4	5	N/A

the device.						
18.	1	2	3	4	5	N/A
19	1	2	3	4	5	N/A
20.	1	2	3	4	5	N/A

Safety Feature Evaluation Form – Syringes

Date:__________ Department:_____________ Occupation:_____________

Product Evaluated:_______________________ Number of times used:___

Please circle the most appropriate answer for each question. A rating of one (1) indicates the highest level of agreement with the statement, five (5) the lowest. Not Applicable (N/A) may be used if the question does not apply to this product (We have printed in bold type the questions which we think you can answer based on a one-time trial.)

	Agree……………				Disagree	
1. The safety feature can be activated using a one-handed technique.	1	2	3	4	5	N/A
2. The safety feature does not obstruct vision of the tip of the sharp.	1	2	3	4	5	N/A
3. Use of this product requires you to use the safety feature.	1	2	3	4	5	N/A
4. This product does not require more time to use than a non-safety device.	1	2	3	4	5	N/A
5. The safety feature works well with a variety of hand sizes.	1	2	3	4	5	N/A
6. The device is easy to handle while wearing gloves.	1	2	3	4	5	N/A
7. This device does not interfere with uses that do not require a needle.	1	2	3	4	5	N/A
8. This device offers a good view of the fluid inside the syringe.	1	2	3	4	5	N/A
9. This device will work with required syringe and needle sizes.	1	2	3	4	5	N/A
10. The device provides a better alternative to traditional capping.	1	2	3	4	5	N/A
11. There is a clear and unmistakable change (either audible or visible) that occurs when the safety feature is activated.	1	2	3	4	5	N/A
12. The safety feature operates reliably.	1	2	3	4	5	N/A
13. The exposed sharp is permanently blunted or covered after use and prior to disposal.	1	2	3	4	5	N/A

14. This device is no more difficult to process after use than non-safety devices.	1	2	3	4	5	N/A
15. The user does not need extensive training for correct operation.	1	2	3	4	5	N/A
16. The design of the device suggests proper use.	1	2	3	4	5	N/A
17. It is not easy to skip a crucial step in proper use of the device.	1	2	3	4	5	N/A
18.	1	2	3	4	5	N/A

19	1	2	3	4	5	N/A
20.	1	2	3	4	5	N/A

Safety Feature Evaluation Form – Syringes

Date:_________ Department:____________ Occupation:____________

Product Evaluated:_____________________ Number of times used:___

Please circle the most appropriate answer for each question. A rating of one (1) indicates the highest level of agreement with the statement, five (5) the lowest. Not Applicable (N/A) may be used if the question does not apply to this product (We have printed in bold type the questions which we think you can answer based on a one-time trial.)

Agree..............Disagree						
1. The safety feature can be activated using a one-handed technique.	1	2	3	4	5	N/A
2. The safety feature does not obstruct vision of the tip of the sharp.	1	2	3	4	5	N/A
3. Use of this product requires you to use the safety feature.	1	2	3	4	5	N/A
4. This product does not require more time to use than a non-safety device.	1	2	3	4	5	N/A
5. The safety feature works well with a variety of hand sizes.	1	2	3	4	5	N/A
6. The device is easy to handle while wearing gloves.	1	2	3	4	5	N/A
7. This device does not interfere with uses that do not require a needle.	1	2	3	4	5	N/A
8. This device offers a good view of the fluid inside the syringe.	1	2	3	4	5	N/A
9. This device will work with required syringe and needle sizes.	1	2	3	4	5	N/A
10. The device provides a better alternative to traditional capping.	1	2	3	4	5	N/A
11. There is a clear and unmistakable change (either audible or visible) that occurs when the safety feature is activated.	1	2	3	4	5	N/A
12. The safety feature operates reliably.	1	2	3	4	5	N/A
13. The exposed sharp is permanently blunted or covered after use and prior to disposal.	1	2	3	4	5	N/A

14. This device is no more difficult to process after use than non-safety devices.	1	2	3	4	5	N/A
15. The user does not need extensive training for correct operation.	1	2	3	4	5	N/A
16. The design of the device suggests proper use.	1	2	3	4	5	N/A
17. It is not easy to skip a crucial step in proper use of the device.	1	2	3	4	5	N/A
18.	1	2	3	4	5	N/A
19	1	2	3	4	5	N/A

20.	1	2	3	4	5	N/A

Task 3

Your group is made up of union members who are on the new labor/management committee that your hospital has set up to reduce needlestick injuries. At the next meeting the committee is going to discuss the hospital's procedures for evaluating safer needles.

A union steward from a different hospital has written a report on a pilot test that took place in her department (see below). Using that report, plus **Fact Sheets A through G on pages 256 - 266**, discuss what makes a good evaluation. Put together a proposal to take to management at the next meeting. Your group will present its proposal in a role play presentation so be prepared with arguments to back up your ideas. Your trainer will play the role of management.

****

Report of Beatrice Sharpe, Local 94 Shop Steward

Last month our facility evaluated a new 3cc syringe and needle with built-in safety device. As the steward for Units A & B I am making this report to Local 94 on the evaluation process.

The first time any of us knew we would be pilot testing a new syringe was on Monday morning when we had unit meetings. We were told that we would be trying out a new device that week and one of the managers gave a brief training on the new syringe and its safety feature. We were told that we would be asked to fill out a questionnaire at the end of the week but if there were serious problems with the syringe during the week we should notify our manager. Materials Management then delivered the new syringe to us and we proceeded with our regular activities.

Unit A uses a substantial number of 3cc syringes in the course of their work, but in Unit B almost all of the patients are on I.V.s and we almost never use the syringe. When we pilot tested a different syringe the month before it was done in Units A and D, which both use the syringe frequently.

The census was high in Unit A last week and we were short staffed. Because there was so much work to do and so little time, I noticed a number of times when workers would use the old syringe rather than the one we were supposed to be testing. I guess it was just easier when they were in a hurry. I don't know how many times this happened during the week.

The training on the use of the new device was pretty quick and it took some of us several days to get comfortable with it. By the time we were getting used to it, the evaluation was finished.

The pilot test ended Friday evening. Monday morning an administrator came by and left a stack of questionnaires for us to fill out about our experience. The questionnaire seemed pretty good, as far as it went. But there were a couple of questions that I would have liked to have seen added to it.

We were told to drop the completed questionnaires off in the office of our infection control nurse. That's the last we heard about it, officially. Unofficially, I heard that this device wasn't adopted.

F. Key Steps in a Needle Evaluation Program

In order to insure that your hospital or clinic purchases the best available safety devices your needle evaluation program needs to be well planned and fair. Below are listed some of the key steps in a good evaluation program.

- The hospital should establish a representative committee to oversee the program. Rank and file health care workers who use the needles need to be on the committee.
- The committee should collect and evaluate all of the hospital's information on needlesticks.
- The committee should gather information on as many new safety devices as possible. They should also request samples from the manufacturer.
- After reviewing the information and trying the samples, the committee should decide which devices are promising enough to be pilot tested.
- A pilot test is an evaluation where the new device is actually used in a patient care setting. A good pilot test includes the following steps:

    -- Decide which group of workers will test the new device (the target group)
    -- Decide how long the test will run
    -- Develop the questionnaire
    -- Train the target group
    -- Collect the results of the test and review with the target group

- The committee should review the results of the pilot test and make a decision whether to recommend purchase of the new device.

Source: Chiarello, Linda, R.N., "Evaluation of Needlestick Prevention Technology: A Perspective from the New York State Pilot Study Experience", *Advances in Exposure Prevention*, Vol. 1, No. 5, July/August 1995, pp.3-5.

Fisher, June, M.D., "Strategies for Integrating Health Care Workers Into the Process of Design, Selection and Use of Control Technology", in *Essentials of Modern Hospital Safety, Vol. 3*, William Charney, ed. (Lewis Publishers, Boca Raton), 1994, pp.249-252.

G. Who's Who?

Most hospitals and clinics have a committee that is responsible for evaluating and implementing safer needle devices. It might be a needlestick committee, a product evaluation committee or a health and safety committee. If you don't know who is making these decisions, find out – the union has a right to know.

It is essential that the workers who use needles have a voice in decisions about which needles they will use. The union should have designated positions on the committee.

On management's side, it is important that key administrators participate on the committee so that it has the resources to do its job and the backing to make changes. This may mean representatives from management in:

- Materials Management
- Infection Control
- Risk Management
- Central Supply
- Waste Management
- Occupational Health
- Industrial Hygiene

There should be a representative of upper management as well.

Source: Chiarello, Linda, RN., "Evaluation of Needlestick Prevention Technology" and Fisher, June, M.D., "Strategies for Integrating Health Care Workers Into the Process of Design, Selection and Use of Control Technology" [see Fact Sheet A for complete citations].

H. You've Got to Know the Territory

In order to begin the evaluation process the committee needs to gather as much information as they can about needlesticks in the facility: where they've happened, how many, the classification of workers and the device involve. If the hospital has been keeping a good needlestick log all of this information should be available going back several years. **Make sure that all members of the committee have access to the information, including labor representatives.**

The committee also needs to understand how each needle device is actually used in the facility. A syringe may be used for many procedures in addition to IM injections and blood draws.

When you set up a pilot test you will want to make sure that you are testing the device for all of its uses in your facility.

Source: Chiarello, Linda, RN., "Evaluation of Needlestick Prevention Technology" and Fisher, June, M.D., "Strategies for Integrating Health Care Workers Into the Process of Design, Selection and Use of Control Technology" [see Fact Sheet A for complete citations].

I. Laying the Groundwork

The workers who will be involved in the pilot test **must be adequately trained on the new safety device**. Ideally, the training should be conducted jointly by a representative of the product manufacturer and someone from the hospital.

The introduction of a new device should be carefully planned. **All of the old devices should be removed from the area** unless there is some procedure for which the new device cannot be used. Workers involved in the pilot test should not have a choice about which device to use during the test.

Source: Chiarello, Linda, RN., "Evaluation of Needlestick Prevention Technology" and Fisher, June, M.D., "Strategies for Integrating Health Care Workers Into the Process of Design, Selection and Use of Control Technology" [see Fact Sheet A for complete citations].

J. How Long Has This Been Going On?

A good pilot test has to last long enough to give you results that are accurate and fair. The test period should be long enough for workers to get past the learning period and become comfortable using the device.

The pilot test should run long enough to allow multiple uses of the device. Workers cannot evaluate how a device will work under many different conditions if they only get to try it once or twice.

So the length of a pilot test should be based on the "learning curve" and the number of uses. One researcher has recommended a period between two and four weeks.

Source: Chiarello, Linda, R.N., "Evaluation of Needlestick Prevention Technology"

K. How to Pop the Question

A pilot test is no better that the questionnaire that is used to gather the results. **Some of the workers who use the device should be involved in developing the questionnaire.**

The questionnaire should

- Be easy to complete and to score
- Be unbiased (doesn't favor or disfavor any particular brand)
- Be distributed directly to the workers who are participating in the test (not left for them to pick up)
- Be collected while the experience is still fresh, and after participants have had some undisturbed time to fill them out
- Record the number of uses upon which the evaluation is based
- Allow participants to express a range of approval or disapproval, not just "yes or no"
- Provide a place for participants to add any comments they choose.

Once the results of the questionnaire are tabulated they should be reviewed and discussed with the participants before they are brought back to the needlestick committee. The meaning of the results may be different to the participants than to the committee and it is important to understand why the workers made their judgements.

Source: Chiarello, Linda, RN., "Evaluation of Needlestick Prevention Technology" and Fisher, June, M.D., "Strategies for Integrating Health Care Workers Into the Process of Design, Selection and Use of Control Technology" [see Fact Sheet A for complete citations].

L. Apples and Oranges

In most cases your hospital will test more than one brand of each type device. In order to make a comparison between different brands and types they must be tested under similar conditions.

If possible they should be evaluated

- By the same test group
- For a similar length of time
- After thorough and unbiased training

M. How You Can Find Out About Your Hospital's Program

Unions and workers have a right to information about health and safety and needlesticks in particular. Below is a sample letter, which your union can use to find out what is being done at your facility.

Dear [Labor Relations Manager or Safety Officer]:

In order to protect the health and safety of our members employed by [Employer], we hereby request the following information:

1. A copy of the Exposure Control Plan as provided for under OSHA's Bloodborne Pathogens standard (29 CFR 1910.1030) [8 CCR 5193 in California].

2. A list of all medical devices (engineering controls) currently available in the hospital which prevent needlestick and sharp object injuries.

3. A copy of the complete Needlestick Injury (or Sharp Object Injury) Log for the past three years, including the type and brand of device involved in each injury. [In California, documentation of the type and brand of device involved in a sharps injury incident is provided for under Section 105330 of the Health and Safety Code.]

4. A description of the product evaluation process used to select safer needle devices for the facility, including: a list of the members of the product evaluation committee (or its equivalent); a list of the criteria used by the employer to select such medical devices; how a product evaluation is initiated, and; the length of a product evaluation.

[If private sector employer, add] In addition to the OSHA regulations we are requesting this information under the National Labor Relations Act so that we can ascertain working conditions in order to represent our members.

Please send the above information to: [name and address] or contact [name] at [phone number] to arrange a time and place for examining and copying the information.

Sincerely,

[Chief Shop Steward, Field Rep., or Division Director]

Source: Information request developed by Local 250, SEIU

N. RESOURCES

The TDICT (Training for Development of Innovative Control Technology) Project

Dr. June Fisher, Director
TDICT Project
Trauma Foundation Bldg. #1, Rm. #30
San Francisco General Hospital
1001 Potrero Ave
San Francisco, CA 94110

(415) 431-4336 http://members.aol.com/tdictproj.

Federal OSHA has a web site with information on preventing bloodborne disease. Go to the OSHA site at http://www.osha.gov and click on the search button. Enter the word "needlestick" in the search field and click search.

The California Department of Health Service (DHS) is compiling a comprehensive list of safer needle devices.

Occupational Health Branch/DHS
1515 Clay Street, Suite 1901
Oakland, CA 94612

SEIU. The Service Employees International Union

For a copy of SEIU's Guide to Preventing Needlestick Injuries write to:

Bill Borwegen
Director of Health and Safety
SEIU
1313 "L" Street, NW
Washington, D.C. 20005

(202) 898-3200

SUMMARY

1. Health care workers need to be involved in every part of the process for selecting and purchasing safer needle devices.

2. Passive safety devices provide better protection than active devices.

3. A good safety device allows the worker to do the same procedures in much the same way as the old, unsafe device.

4. Your hospital or clinic must have a written plan to prevent blood exposures, and you have a right to see and copy it.

5. When your facility pilot tests safer devices they need a thorough and fair plan. Front line workers should be involved in developing that plan.

NOTES

Activity 13: Tuberculosis

Purpose

To explore the risks to health care workers of getting tuberculosis in a hospital.

Task 1

Your small group is sitting around the table in the cafeteria at Pleasant Valley Hospital when Brenda, a co-worker represented by Local 94, comes to you with the following statement.

> **"I just found out that Sue, one of my co-workers, has TB, or tested positive, or something. I can't believe she has TB, she doesn't look sick. I mean, she's a strong young woman. It's not like she was already weakened by AIDS or cancer or something.**
>
> **Now I'm worried about whether I could get it from her. I don't know whether it's ok to work around her.**
>
> **And what if I already have it and I don't know? Could I make my kids sick?**
>
> **What should I do?"**

Please respond to Brenda's statement by answering the questions on the next page. You may want to review Factsheets A through H (pages 279 - 288).

(continued on the next page)

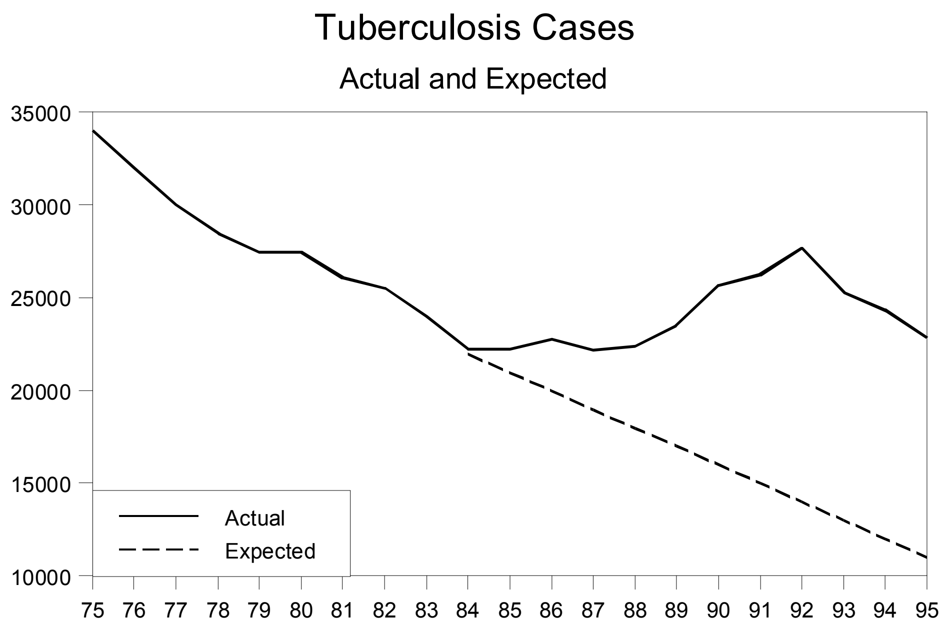
Task 1 (continued)

1) How would your group respond to Brenda if her co-worker tested positive but is not sick with TB?

2) How would your group respond to Brenda if her co-worker is actually sick with TB (not just tested positive)?

A. It's Baaaaack

For years, people thought TB was going away. Every year there were fewer cases. But in 1985, TB cases suddenly began to rise suddenly. Even though the number of cases have been dropping again since 1992, they are still far above what had been expected.



Why did TB come back? Three things probably explain it:

1) living conditions got worse,
2) the government cut back on social services, and
3) the number of people with poor defenses against diseases (lowered immune systems) went up.

(continued on the next page)

A. (continued)

Living Conditions

We know TB spreads faster when:

- many people are cramped into small living spaces because they cannot afford housing
- people are homeless and their body's defenses are down
- people can't afford to go to a doctor
- people drink alcohol or do drugs, which weakens the body
- people don't have enough money to eat healthy food
- people are unemployed, so they don't have enough money

And since 1985 unemployment has gone up, wages have gone down, the cost of health care has gone up, and homelessness has gone up.

Social services

Many city and county governments have cut back on social services in recent years. For example, New York City had 28 TB clinics in the late 1960s. In the early 1980s, the city started to cut health spending. In 1994 there were only 10 TB clinics in New York, even though the number of TB cases went up 38% just from 1989 to 1990.

Poor defenses against diseases

The number of TB cases rose in the late 1980's because of alcohol, hunger, and HIV/AIDS. People who don't get enough food, drink too much or are infected with the AIDS virus are much more likely to get sick from TB than others. Their body's ability to fight off diseases is weaker than normal. Also, if people with HIV/AIDS get TB, they may be sicker than people without HIV/AIDS who have TB.

Sources: *Morbidity and Mortality Weekly Report*, Vol. 44, No 20; Elisabeth Rosenthal, "The Public Health is Imperiled Again by Tuberculosis," *New York Times*, 7/15/90, A1; and "Tuberculosis in the Workplace," *Industrial Safety & Hygiene News*, January 1993, p. 18.

B. Tuberculosis Spreads in the Air

Tuberculosis (TB) is spread through the air when someone sick with TB coughs, sneezes, talks or sings. The TB germs usually live in the lungs. When the person coughs or sneezes, the germs come out in tiny drops.

These drops can dry out and hang in the air for a long time. They can settle on surfaces and dry out. Then the TB nuclei (germs) can get in the air again. TB germs live for about a day outside the body. Luckily, it's hard for the TB to get past your body's defenses.

Some symptoms of TB sickness are:

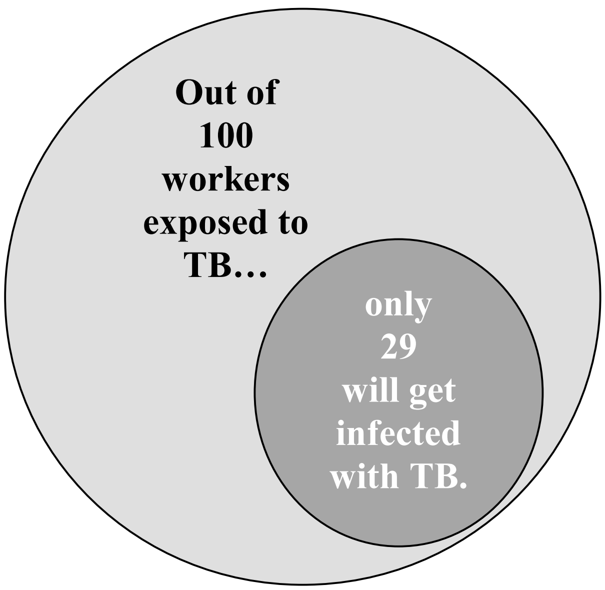
- X fever
- X cough, or coughing up blood
- X heavy sweating at night that soaks the sheets
- X weight loss
- X feeling tired all the time

Source: US Centers for Disease Control, *Core Curriculum on Tuberculosis*, 2nd ed., April 1991.

C. You Can't Catch It On the Street

TB is much harder to catch than the flu. If it was easy to catch, many more people would have it. People who work with people who have TB—or who live in crowded housing —are most likely to get it.

Being in a room with someone sick with TB is called being **exposed** to TB. If you actually get the TB germ in your body, then you are **infected** with TB. There's a big difference between the two.



Here's an example. Imagine that there are 100 workers in your hospital who work around patients sick with TB all day (without the protection of respirators). All 100 of these workers are *exposed* to TB.

But, only around 29 of these workers will be *infected* with TB—most of them will never even get the TB germ in their body.

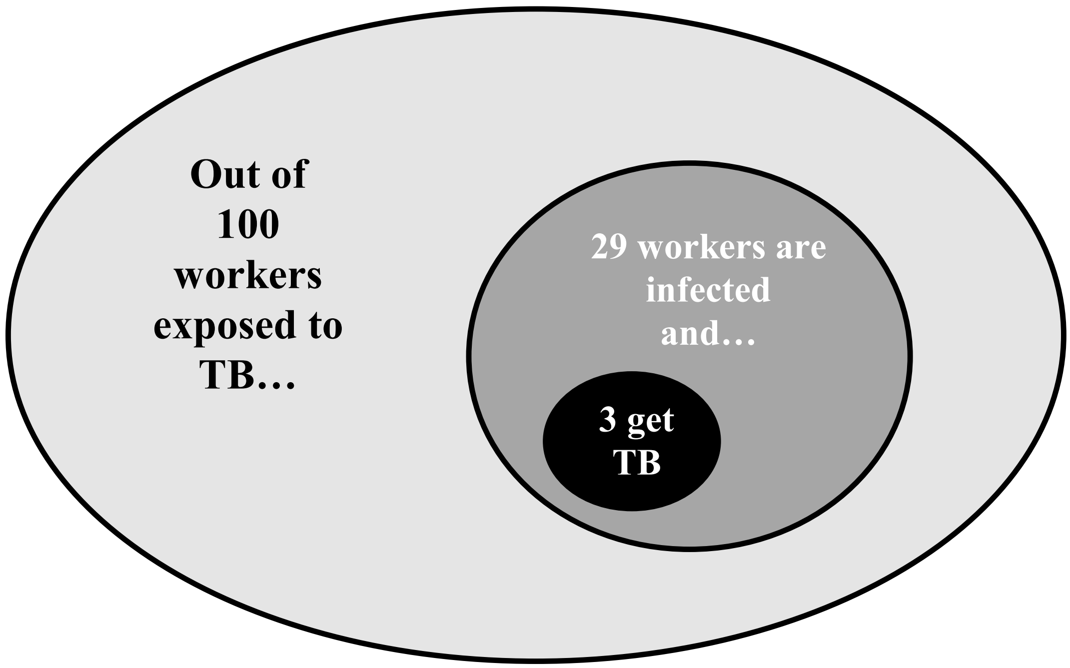
You can't get TB from someone who just has the germ in their body, either. They have to be sick with TB and have a cough before you can catch it. So, you can be in a room with somebody who has active TB (who is coughing) for hours and still not get the disease. Or, you can talk to somebody with active TB for a few minutes and become infected. **Nobody knows how long you have to be exposed to catch TB.**

Sources: "Tuberculosis," p. 572-81 in Weeks, Levy and Wagner, *Preventing Occupational Disease and Injury*, Washington, DC: American Public Health Association, 1991 and "Tuberculosis," p. 488-99 in *Control of Communicable Diseases Manual*, Abram Benenson, Ed., Washington, DC: American Public Health Association, 1995.

D. Even If You Catch The TB Germ You Probably Won't Get Sick

Not everyone who has TB in their body—who is infected with the TB germ—is actually sick. Only about 10% of healthy people who get the TB germ in their body will actually get sick and develop active TB.

Remember the 100 workers who were exposed to TB and the 29 who got the germ in their bodies? Only 3 of them are likely to get sick with TB (active TB). This can happen from 3 weeks to 40 years later.



There is no way to know which 3 will get sick. And in any one group, there won't be exactly 3 people who get TB. In one group, no one might get sick, and in another group 10 or more might get sick. Doctors also have drugs that can keep you from getting sick if you get the germ in your body.

If your immune system is not working right, you are more likely to get sick with TB. Many older people and people with HIV/AIDS, cancer, lupus, or other diseases are at risk.

Sources: K. Bowden and M. McDiarmid, "Occupationally Acquired Tuberculosis: What's Known," *Journal of Occupational Medicine*, 36(3), March 1994 and American Thoracic Society, "Control of Tuberculosis in the United States," *Amer Rev of Resp Dis,* Vol. 146, p. 1623-1633.

E. No One Is Immune

Anyone can get TB, not just people with HIV/AIDS or people with a weak immune system. Many doctors and nurses have gotten TB over the years. They had strong immune systems, but they worked around a lot of people who were sick with TB. Anyone can get infected with the TB germ. You are more likely to be infected if you:

- work around people who are sick with TB (in health care, social services, or corrections)
- live with someone who is sick with TB (in your family or in crowded housing).

Some people are also more likely to get sick once they are infected with the TB germ. Anyone who has a weak immune system is more likely to get sick with TB once the germ is in their body. The immune system is weakened by many things, including:

- HIV/AIDS
- cancer (especially with cancer drugs or radiation)
- diabetes
- drugs that lower the immune system (for organ transplants)
- steroids
- drug abuse
- alcoholism
- very old age.

Source: "Guidelines for Preventing the Transmission of Mycobacterium Tuberculosis ...," *Morbidity and Mortality Weekly Report*, v43 RR-13, 10/28/94.

F. Drug-Resistant TB

There is a dangerous kind of TB called **Multi-Drug Resistant TB** (MDRTB) that is much harder to cure than regular TB. To cure this type of TB patients must take drugs that can make them feel sick, for 6 months to a year and a half. Even then, the drugs may not cure the disease.

People with drug-resistant TB are more likely to die than people with regular TB. The symptoms of drug-resistant TB are the same as those for regular TB. There is no way to tell by looking which kind of TB a person might have. Only a lab test taken from what you cough up (sputum or phlegm) can tell them apart.

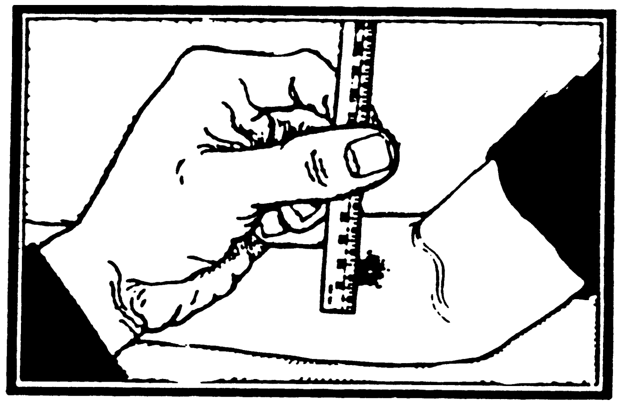
Drug-resistant TB came about because some patients took their TB drugs for less than 6 months. Maybe they took it for a month, then felt better, and stopped taking the drugs. The germs that survived the first month were really strong, and the drugs couldn't kill them any more. They become resistant to the common TB drugs.

It's important to remember that this type of TB is <u>not</u> easier to catch, and it does <u>not</u> make you sicker. It is just much harder to cure.

Source: US Centers for Disease Control, *Core Curriculum on Tuberculosis*, 2nd ed., April 1991.

G. Testing, Testing, 1, 2, 3

There is a test that can tell you if you have the TB germ in your body. It is called the **Purified Protein Derivative (PPD) skin test**. A nurse or tech gives you a shot in your forearm with a very short needle. 2 to 3 days later they measure the bump caused by the shot.



With the PPD test, the shot will make an infected person's skin swell up and get hard for a few days. The nurse or tech measures the size of the bump (called the induration). A large bump means that you have had the TB germ in your body—this is a positive test. Do not measure the bump yourself. A nurse or tech must measure it for you in order for the test to be accurate.

Most health care workers should have a PPD test when they start work and once a year after that. **If you work in isolation rooms or respiratory therapy, you should have a test every 6 months.** If you get the TB germ in your body (if you are infected), you won't test positive until about 4-12 weeks later.

Some people will not react to the shot even if they have TB in their bodies. This could happen if your immune system is not working right. Many older people and people with HIV/AIDS, cancer, lupus, or other diseases may not react to the PPD test. Not reacting to the test is called "anergy." If you do not react to the test, the doctor may give you another test and see if you react then.

G. (Continued)

Some people have received a TB vaccine called BCG (the Bacille of Calmette and Guerin). The vaccine is not used in this country because it doesn't always work. Someone who has had the BCG vaccine may appear to test positive when given the PPD skin test, even though they have not been infected with TB. People who have had the vaccine will probably not be able to rely on the results of the skin test.

Source: Clare Cornnell, "Tuberculosis in Hospital Employees," *American Journal of Nursing*, April 1988, p. 484 and Debra Brewin-Wilson, "TB: The Disease That's Not Dead Yet," *RN*, September 1984, p. 49.

H. Treatment for TB

What if I test positive?

If you test positive, that does not mean you are sick. It means that you have had TB bacilli (germs) in your body at some time in your life. Your body reacted by making certain substances (called antibodies). The test just shows you have antibodies. Once you test positive, you probably will test positive for the rest of your life.

If you test positive the doctor may ask you to take TB drugs. The drugs can keep you from ever getting sick with TB. The doctor also wants to make sure you don't spread TB in case you are sick. If you choose to take the TB drugs, make sure you complete the treatment or you may develop drug-resistant TB.

If you test positive, you need to get a medical checkup to be sure you do not have TB. A doctor's exam usually includes a chest x-ray and questions about our health. The doctor may also make you cough hard, and send what you cough up (sputum or phlegm) to the lab. It may take 2-8 weeks to get the results of this test.

What if I get sick?

If you are sick with TB, you should not work until you take medication and your doctor says it's OK. You could make your co-workers or your patients sick. After you take TB drugs for 2-3 weeks, your doctor may say it's safe for you to go back to work. You will start to feel better soon. But you have to keep taking the drugs, If you don't you may not completely get rid of the disease and the remaining germs may be able to resist drugs in the future. Talk to your union about workers' compensation, which will cover your doctor's bill and some of your wages.

If you are infected with TB but you do not react to the test, you need to watch your health carefully. Speak to your doctor if you get any of the signs of TB.

Source: Department of Health, the City of New York, *Tuberculosis at a Glance: A Reference Guide for Practitioners Covering the Basic Elements of Tuberculosis Care*, no date.

Task 2

Your group is the health and safety committee for Local 94. You have been reviewing the incident reports of workers' exposures to TB. Some workers have been exposed directly from patients with active TB. Others have been exposed in the laboratories. Below are statements from two workers:

> **"I had to go clean this room that had a TB patient in it. They handed me this surgical mask, like the doctors wear, and told me I'd be OK. Well, in the hospital I used to work at, those TB rooms had special filters in the windows, and all kinds of stuff. This room had nothing. I don't think a surgical mask will protect me from TB. And even if I had the right kind of mask, how come they don't have the filters and everything?"**

> **"I had to go clean up a mess in the lab the other day. They were doing lab tests for TB and something must have blown up. There was glass and samples and stuff all over the place. They gave me a surgical mask and some rubber gloves and told me to clean it up. So, I did."**

Based on these incidents, your experience as a health care worker, and Factsheets I through L (pages 291 - 295), please answer the following questions in your group.

1) What was done wrong in the incidents described above?

Task 2 (continued)

2) What controls should be in place to protect workers from TB?

3) There is not yet an OSHA standard for TB. OSHA will still try to get your employer to follow widely respected guidelines for protecting workers from TB. But what other ways could your committee act to protect workers from TB on the job?

I. There's No Knight In Shining Armor

OSHA does not have a regulation to protect workers from TB, yet. After 5 years of pressure from several unions, OSHA issued a proposed TB standard in October 1997. This proposed standard says:

- hospitals have to identify patients who may have TB
- workers have to get training about TB and how to protect themselves
- TB patients have to be in isolation rooms with special ventilation (negative pressure)
- workers in isolation rooms and respiratory therapy have to wear special masks (called N95 respirators), and
- hospitals must test their employees to make sure they have not been exposed to TB and keep records of exposures.

Even without an OSHA regulation, there are a few things you can do to be sure that our workplace is safe. Review your facility's TB control plan. Does the plan meet the guidelines put out by the Centers for Diseases Control (CDC)? ("Guidelines for Preventing the Transmission of Mycobacterium Tuberculosis ...," *Morbidity and Mortality Weekly Report,* v43 RR-13, 10/28/94.) Is the plan being followed?

If you have concerns about TB control which cannot be resolved by discussions with management, you may consider the following

- Get contract language in your union contract. This should include sections on early identification of patients with TB, respirators, ventilation, worker testing, and training.
- Keep track of areas where members have positive tests or get sick with TB. (See "Activity 18: Legal Rights" for more.) Records can help show the hospital where more ventilation is needed.

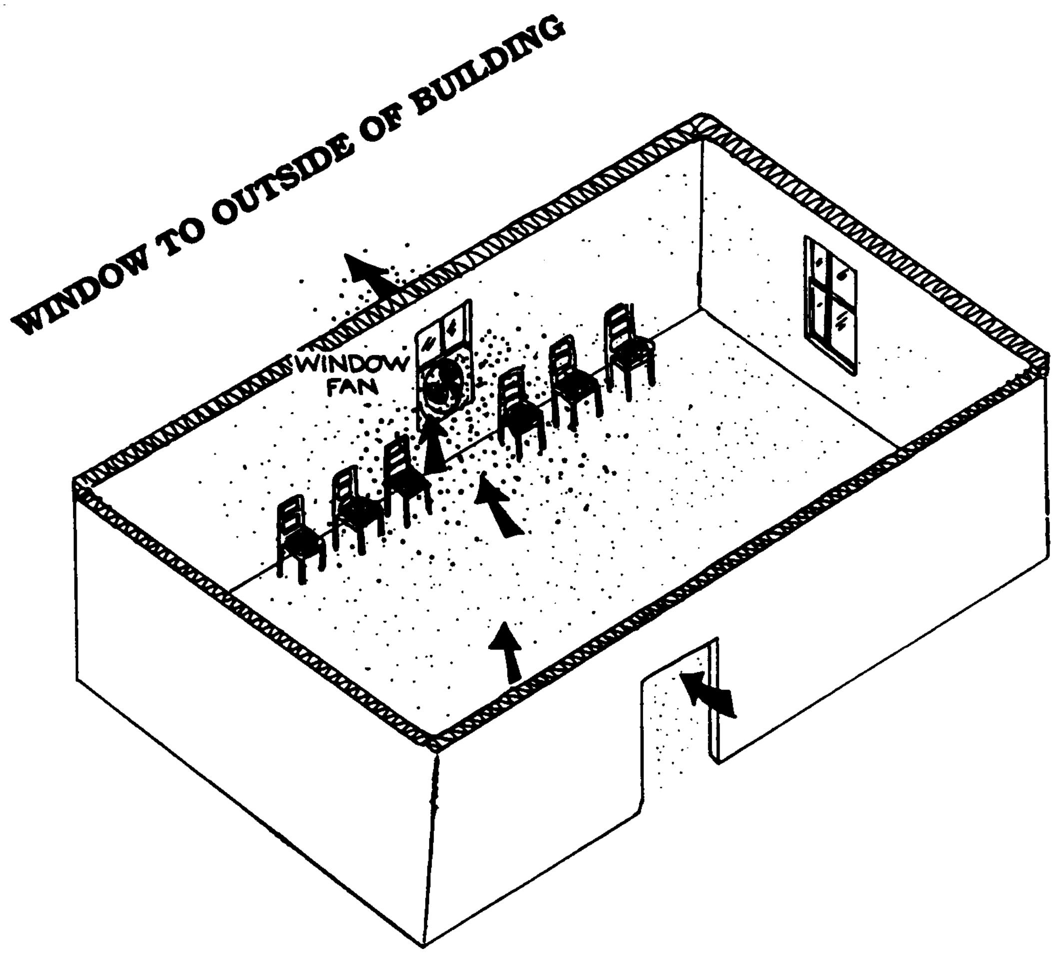
Because TB is a recognized hazard, Cal/OSHA can make sure employers are taking some of the most important steps to protect workers from TB.

J. Controlling TB In Patient Rooms

Every patient who might have TB must be in a room with special ventilation called a respiratory isolation room. These rooms have 3 features:

1. Air in the room can't leak out into the rest of the hospital. It can only leak into the room because there is a powerful fan pulling air out of the room. This is called negative pressure. It keeps TB nuclei from spreading in the air to other rooms in the hospital.

2. All air that leaves the room goes directly outside the building, not back into the hallway. (In older buildings where this is not possible, the air must past through a HEPA filter before returning to the general ventilation system.)



Source: The Center for Occupational and Environmental Health, *Reducing the Spread of Tuberculosis in Your Workplace*, no date.

J. (continued)

3. There is a sign on the door to keep other people out.

Airborne Isolation

Visitors – Report to Nurses' Station Before Entering Room

The door to the isolation room must be kept closed when there is a patient inside who could infect others.

When isolation rooms have special air filters (high-efficiency or HEPA filters), maintenance workers need special training so they know how to change the filters without getting sick themselves.

Some hospitals have used special lights (ultraviolet or UV lights) to kill TB bacilli in the air. These lights need to be near the ceiling of the room. The lights can burn your eyes if you look at them. The light can also burn your skin. Maintenance workers also need special training for these.

K. Airborne Diseases—Controls Are Not Enough

If the hospital can't control a hazard with engineering controls, then the only thing that can protect us is a respirator. And that's the case with TB and other airborne diseases, such as chickenpox and measles.

We do have some engineering controls for TB, and they are needed, but they're not enough.

Hospitals <u>must</u> use:

- respiratory isolation rooms
- negative pressure ventilation

Hospitals <u>may</u> use:

- HEPA (high-efficiency) filtered ventilation (especially if air from isolation rooms has to be exhausted near people)

Hospitals <u>can</u> use:

- ultraviolet light (UV lamps), which can cause health problems itself

Workers still have to enter isolation rooms to care for the patient. **When we do, we need respirators not just surgical masks.** The newest respirators for TB are called "N95" respirators. The "N95" should be printed right on the respirator (hospitals may also use HEPA respirators or supplied air respirators).

If your hospital says you have to wear a respirator (not just a surgical mask), then they have to follow all of the OSHA respirator rules, including a fit test for every worker once a year (see "Activity 14: Respirators").

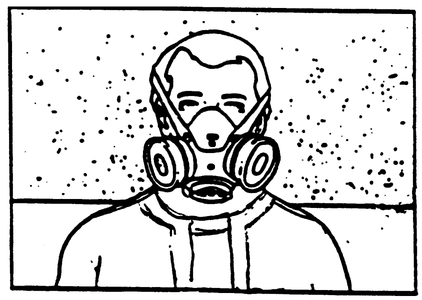
Please note: An OSHA standard on Tuberculosis is being developed and should be in place by 1999.

Source: OSHA, "Enforcement Policy and Procedures for Occupational Exposure to Tuberculosis," October 8, 1993.

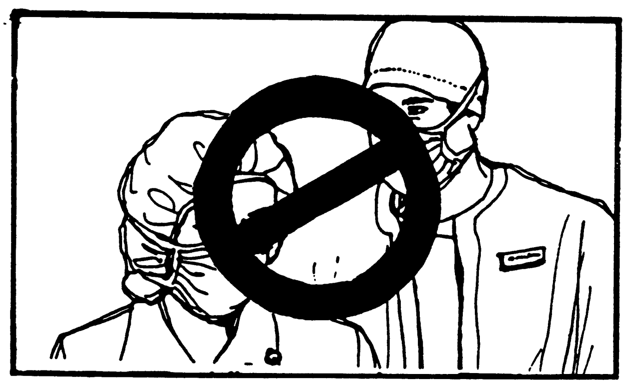
L. Respirators: A Necessary Evil

We need respirators in isolation rooms and respiratory therapy areas to protect us from TB. Ventilation alone is not enough. Since there may be TB nuclei in the air, we also need to wear respirators to keep TB out of our lungs. **A surgical mask is not a respirator.** Every worker who wears a respirator must be fit tested first. Your employer should have several sizes so that you can find one that fits tightly. If respirators aren't worn properly they can't protect us.

A disposable N95 respirator



A tight-fitting respirator



A surgical mask is **not** a respirator

Respirators used for TB must have a filter called an N95 filter. Respirators are hard to fit and maintain. "Activity 15: Respirators" explains the rules that must be followed when your employer gives you a respirator.

Sources: Marc Nicas, "Risk Assessment in Respiratory Protection Against M. Tuberculosis Aerosols," American Public Health Association Annual Meeting, October 26, 1993 and OSHA's "Enforcement Policy and Procedures for Occupational Exposure to Tuberculosis," October 8, 1993.

Summary: Tuberculosis

1. More people have TB now because living conditions have gotten worse, government has cut back on social services, and because more people have HIV/AIDS.

2. Tuberculosis (TB) is spread through the air when someone sick with TB coughs or sneezes. Most people who are exposed won't even get the TB germ in their body. People with weak immune systems are much more likely to get sick from TB than others.

3. The Purified Protein Derivative (PPD) skin test can tell you if you have had the TB germ in your body.

4. If you have the TB germ in your body you are **infected**, but you are not necessarily sick with TB.

5. Patients who are sick with TB should be identified as soon as they come into the hospital. Every patient who might be sick with TB should be in a respiratory isolation room.

6. All health care workers should wear respirators in TB isolation rooms and in respiratory therapy areas. Respirators must have a filter called an N95 filter. A surgical mask is not a respirator.

7. There is a special kind of TB called Multi-Drug Resistant TB (MDRTB) that is harder to treat than regular TB. It is very hard to cure. Patients must take drugs that may make them feel sick, for 6 months to a year and a half.

8. OSHA does not have a regulation (standard) to protect workers from TB. OSHA does have an enforcement guideline. OSHA also has issued a draft standard in October 1997, which should become law by 1999.

NOTES

NOTES

Activity 14: Controlling Hazards— The Best and Worst Ways

Purpose

To review the types of controls that can be used in your workplace, and to evaluate their strengths and weaknesses.

Task 1

There are many ways of controlling hazards on the job. In this task you will be asked to consider 4 different ways of controlling hazards, and to develop a hierarchy—a list in order from best to worst. When we talk about the types of controls we are not talking about **who** controls things but how workers are protected from hazards.

Be sure to look at Factsheets A through G (pages 301-308) because these 4 types of controls have very specific meanings. Then follow the directions below to complete this task.

1) Write the 4 controls listed in Factsheet B (page 302) onto post-it notes—one control on each post-it note.

   Then, in your groups, make a "hierarchy of controls" by putting the 4 types of controls in order from best to worst. The one your group thinks is the best way to control a hazard should be first… and the worst should be last. We are looking for the most effective controls, not the easiest.

   There are 3 questions we would like you to think about as you decide which controls are better than others:

   A. Does the control make sure that the worker is exposed to as little as possible of the hazardous material?

   B. Does the control rely on the worker's awareness of a hazard to protect him or herself, or would the control protect anybody in the area of the hazard?

   C. Does the control remove the need for other types of controls?

(continued on the next page)

Task 1 (continued)

Be prepared to explain WHY you thought one control was better than another.

Best control : ___________________________ Why?

2nd best: ___________________________ Why?

3rd best: ___________________________ Why?

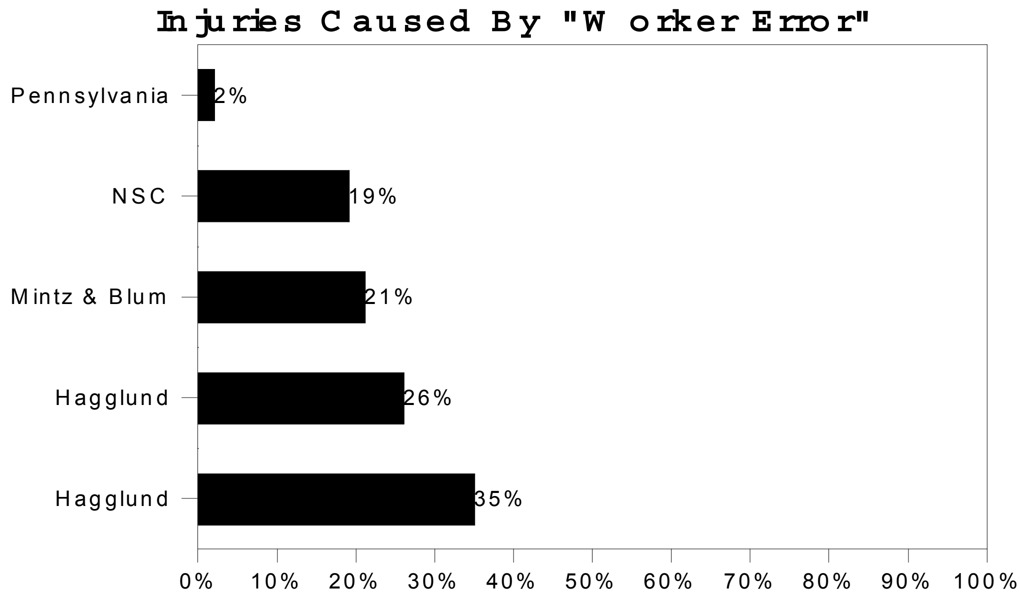
4th best: ___________________________ Why?

2) Once you have decided upon your "hierarchy," please stick your notes on the flip-chart at the front of the class with the best control at the top.

3) During report back we will compare the hierarchies that each group developed. Each group's reporter will be asked to explain why they decided that one control was better than another.

A. The Myth of the Careless Worker

Often when workers get sick or hurt on the job it is blamed on "worker error". But, five studies show that unsafe working conditions—not careless workers—cause most accidents.



Whenever the cause of an injury appears to be worker error we should consider what led that worker to make a mistake. This is called looking for **root causes**. We may find that the pace of work was too fast or that a safer chemical could have been substituted for the one that caused the injury. Unless we identify and correct the underlying cause, mistakes and injuries will continue to happen.

The best solution to health and safety problems is not just for us to "work safe." **We need hospitals to make the workplace safe for us.**

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

B. The Four Controls

For every task you do at work, there are lots of ways to keep dangerous materials from coming into contact with workers. These are called "controls." But, some controls work better than others. OSHA says that employers have to try other controls before workers have to use protective equipment like respirators (masks).

The best kinds of controls try to keep the chemical from getting into the air or on the floor. These kinds of controls focus on the source of the problem, and make it hard to do the job in an unsafe way. The next best kind of controls let the chemical get in the air, but then limit the amount of time the worker is exposed. The worst kind of controls are those that try to fix the problem after it has already reached the workers. These often shift the responsibility for a safe workplace from the employer to the worker.

Four basic types of controls are:

- **Administrative Controls**
- **Engineering Controls**
- **Hazard Elimination**
- **Personal Protective Equipment**

Each task you do at work 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 is important to understand the advantages and limitations of any control method. This is the only thing that stands between us and a hazard.

Sources: *Hazardous Materials Workbook*, OCAW, New York: Apex, 1993; *Health and Safety Manual*, SEIU, Washington, D.C., 1990.

C. Administrative Controls

Administrative controls are changes to the way work is organized. These controls usually take one of the following 3 forms:

Reducing the Length of Time Each Worker Is Exposed

This can be done by sharing hazardous work so that each person receives less exposure than before. For example, limit each housekeeper to 1 room a day with patients who are radioactive. Or rotate the workers who go into isolation rooms with TB patients in them. This solution may exposure more workers to the hazard, and it will only work for hazards that are not dangerous at low exposures.

Reducing the Number of Workers Exposed

Moving dangerous work or limiting the number of workers in a dangerous area can be done in a couple of different ways:

- Move the process to an area with fewer workers, or separate it from other parts of the facility. This would limit the number of people exposed. For example, build a separate building for laboratories.
- Restrict certain categories of workers from certain areas. For example, tell pregnant women they may not work with ethylene oxide.

Adequate Staffing

Under-staffing makes hazardous situations much more dangerous. Without enough help, workers rush around to complete their tasks and accidents happen. Working safely requires time! Also, often workers find themselves trying to do tasks by themselves that really need 2 or more people to do.

All of these solutions are limited—while they may limit the numbers of people exposed, they do nothing to lower the amount of the hazard in the workplace. Further, they may be discriminatory and illegal.

D. Engineering Controls

Engineering controls use devices, machines, and construction to make sure that a hazardous material does not reach the worker. Some examples are given below.

Redesign or Change the Process

In many cases the problem is with the tools and equipment used to do a job. For example, workers are much more likely to spill blood if reusable suction canisters are used in surgery. Changing equipment can often make work dramatically safer. Hospitals will often use new technologies for reasons of "efficiency"—why not use them to keep workers healthy and safe? Some other examples of safer equipment are:

- Using an IV instead of a liquid anesthetic that can get in the air.
- Changing the dispenser (nebulizer) for drugs in respiratory therapy so that it has a filtered valve.
- Using IV systems that don't use needles.

Enclose the Process

If a hazard can't be removed, then the process should be enclosed. An enclosure keeps the material out of the air and away from workers. For example, giving aerosolized drugs in a booth with a fan that pulls air out of the building, instead of in an open room where workers can breathe the drugs. Hospitals should look at this before they decide to use respirators. In fact, this is OSHA law. Here are some examples of enclosure:

- A glove box in a lab
- Using lead walls in X-ray areas.
- A tent for giving ribavirin.

Mechanize the Process

Automating an operation may be the best answer to a dangerous job. Some examples of mechanization are:

- Using automatic pill dispensers in a pharmacy, especially with dusty antibiotics.

D. (continued)

- Using a mercury vacuum instead of a dustpan and broom to clean up spilled mercury.
- Using ethylene oxide sterilizers that both sterilize and aerate (offgas), so workers don't have to move trays from one to the other by hand.
- Using pumps to handle paint thinner rather than measuring and pouring by hand.

Ventilation

Ventilation is used to control hazardous materials by removing them from the air. Two basic types of ventilation are common: local exhaust ventilation and general ventilation.

Local exhaust ventilation (LEV)—the better kind of ventilation—uses ducts and hoods placed as close as possible to the source, or around it, to control hazardous materials. A ventilation hood in a laboratory is a good example of local exhaust ventilation. Some other examples are:

- Using a hood in pharmacy to mix chemo drugs
- Using a fan with a filter in a pentamidine booth
- Using a scavenging system to collect anesthetic gases in surgery

General ventilation—the worse kind—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.

Sources: *Fundamentals of Industrial Hygiene*, National Safety Council, Chicago, 1988; Thomas J. Smith, "Industrial Hygiene," in Levy and Wegman, *Occupational Health: Recognizing and Preventing Work-Related Disease*, Boston: Little, Brown, 1983; NIOSH, *The Industrial Environment--Its Evaluation and Control*, Washington DC, 1973; ACGIH, *Industrial Ventilation: A Manual Of Recommended Practice*, 16th Edition, 1980.

E. Hazard Elimination

The best solution to problems with hazardous materials is to remove the hazards entirely from the workplace. This prevents all exposure.

This is difficult to do, but it is often possible. For example, substituting anesthetic halothane for ether, which is explosive. 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 chemical substitution are:

- Using Bactrim (a pill) instead of pentamidine (a spray that workers may breathe) for lung infections.
- Sterilizing medical devices with steam or glutaraldehyde instead of ethylene oxide.
- Using detergents instead of germicides, when you don't need to disinfect, you just need to clean.
- Using water-based paints instead of oil-based paints.

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

F. Personal Protective Equipment (PPE)

Sometimes all the controls in the world can't make your work safe, and you must use gloves or respirators. That's definitely the case for viruses like HIV and Hepatitis B (gloves and gowns). When workers have to enter a hazardous area, such as an isolation room with a TB patient they need respirators and gloves. In most cases involving hazardous chemicals the employer can find either a safer product or use engineering controls.

PPE may not work if it doesn't fit properly. This is especially true of respirators.

PPE may also create new hazards. Respirators can make it harder for some workers to breathe. They can also make it hard to communicate and this can lead to accidents. Latex gloves may cause some workers to have an allergic reaction.

PPE puts the burden of safety on the worker, rather than the employer. If the worker fails to use it properly because they haven't been trained, or they don't have the time, they may be exposed to hazardous materials. If the PPE isn't readily available when it's needed, workers may be exposed. If the PPE isn't working properly (gloves tear and respirators leak), workers may be exposed. If patients, family members or workers from other areas are around they may not know when and how to use PPE. They may be exposed.

Gloves and respirators are our last line of defense against germs. We should look for better ways to protect ourselves from chemicals.
It is the employer's responsibility to create a workplace free from hazards.

Source: *Health and Safety Manual*, SEIU, Washington D.C., 1990, page 2-2.

G. Training

Worker training is a key component of any safe workplace. Workers are on the front line each and every day—you handle hazardous materials, you move them from supply to the hospital units, you administer them to patients, you treat them as wastes, and you are often the first people there when an emergency happens.

To complete your work safely, you must be provided with training by your employer. The training program should include sessions about:

- basic health and safety
- hazard identification
- emergency response
- personal protective equipment
- safe work practices
- rights and responsibilities
- specific hazards, including:
  - radiation
  - blood
  - TB
  - ethylene oxide
  – formaldehyde

Only a trained workforce can make sure that the various controls put in place by the employer are really working.

Task 2

As a group, please read the case study below then answer the questions on the next page.

Central Supply Case Study

Your group is a union health and safety committee. You are investigating a leak in the ethylene oxide area in Central Supply, where a worker got knocked out by the gas last week.

Workers in Central Supply sterilize some medical devices with ethylene oxide gas (EtO). The sterilizers are quite old, and they leak. The hospital has done some air tests, and says that workers must wear masks (respirators) in the EtO area. Workers do not wear gloves, since they feel the gloves make them clumsy.

The workers put trays of clean instruments inside the sterilizer. They close the door and turn a knob to let the gas into the sterilizer. Then they turn off the gas and let the instruments sit for a while to "offgas."

Workers who unload the sterilizer get burning eyes and sore throats. They try to keep their faces away from the trays, and this seems to help a bit. They also switch off jobs, so that no one unloads all day. Management put a big fan in the area, and that also seemed to help some of the workers.

(continued on the next page)

Task 2 (continued)

1) What problems, if any, do you see with the controls that are being used?

2) Which of the 4 controls do you think the union should ask for in this situation? Why?

3) Think of one situation at your work where you think controls are needed to protect you and your co-workers. Which controls do you think are needed?

Summary: Controlling Hazards— The Best and Worst Ways

1. **Personal Protective Equipment (PPE) like respirators and gloves should be used as a last resort** when there is no other way to control the hazard. Otherwise, one is just shifting the responsibility for safety from management to workers. That's wrong, and it's also against the law.

2. There is a hierarchy of controls that is accepted by most health and safety professionals. It is also written into OSHA regulations:
   ∃ hazard elimination
   ∃ engineering controls
   - administrative controls
   - personal protective equipment

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

4. Workers need to be trained to demand the best types of control for the hazards they face.

NOTES

Activity 15: Respirators

Purpose

To discuss the limited uses of respirators to protect hospital workers' health, and to review employers' responsibilities for respirators.

Task 1

In your groups, please review Factsheets A through C (pages 314-316), 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 give specific examples from your own work.)

2) As a group, decide if you agree or disagree with this statement:

   Respirators are not a good way to protect workers' health.

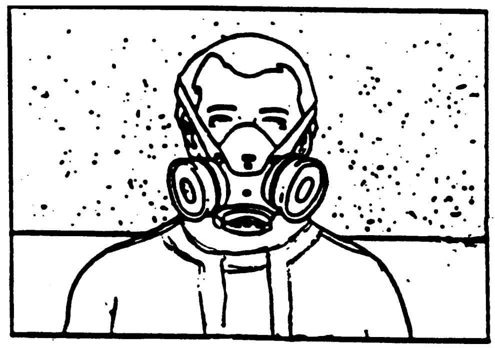
   ❑ Agree ❑ Disagree

   Why?

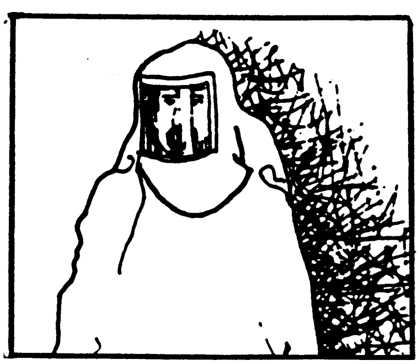
A. What is a Respirator?

A respirator is a mask that fits your face tightly. It is made to protect your lungs. A surgical mask is not a respirator. Surgical masks are made to protect patients from health care workers. They are not made to protect health care workers from inhaling germs or chemicals.

A disposable
N95 respirator



A tight-fitting
respirator



A hooded
respirator

A surgical mask is **not** a respirator

Sources: WC Beck, "The Surgical Mask: Another 'Sacred Cow'?," *AORNJ*, April, 1992, pp. 955-957 and OSHA "Enforcement Policy and Procedures for Occupational Exposure to Tuberculosis," (October 8, 1993).

B. Respirators: A Last Ditch Control

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

Respirators . . .

- leak
- are hot and uncomfortable
- depend on workers putting them on every time they work
- often fit poorly, which allows the chemical or germ to get in
- make it harder to breathe, putting extra stress on the heart and lungs
- make it hard to talk to patients and co-workers, which affects 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 in the right way
- 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*, OCAW Union, New York: Apex, 1993.

C. Don't Forget The Law

OSHA's Respiratory Protection Standard* requires your employer to try every other way to control a hazard 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. It's the law!

For example, your employer could try to:

1. **Use a less dangerous product.** For example, using nitrous oxide instead of ether.

2. **Enclose the work.** For example, using a booth for aerosolized ribavirin.

3. **Put in a hood or fan to pull chemicals away from workers.** For example, using a hood for mixing chemo drugs.

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.

* This standard was revised January 8, 1998, and the revised standard will be enforceable beginning April 8, 1998.

Source: OSHA Respiratory Protection Standard, 29 CFR 1910.134.

Task 2

Please read the case study below, review Factsheets D through H (pages 319-324), and answer the questions as a group.

For the last few months, the Pleasant Valley hospital has had a "Think Safe/Work Safe" campaign. Supervisors are supposed to make sure that workers wear their safety equipment.

Joe, a workers in maintenance, comes to the union hall to report that he was written up for not wearing his respirator one day while working with formaldehyde. 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 paint brushes in the shop and when we clean out the air filters once a month. It's not fair!"

1) What are some problems with the way Joe is being asked to use his respirator?

(continued on the next page)

Task 2 (continued)

2) If the only way to protect Joe is by wearing a respirator, what specifically does the hospital have to do to make sure it protects him?

3) How would your group respond to the hospital's "Think Safe/Work Safe" campaign?

4) Are there problems with respirators at your workplace? If so, what are they?

D. What's Your Respiratory Protection Program?

Respirators are not a good way to protect your health. There are many ways that they can fail. But, if your employer cannot find another way to protect you, you may have to wear a respirator. To be sure that your respirator is a safe one there are some things that your employer is required to do. There are also some things you can do, too.

Your employer is required to write a plan—and follow the plan—to ensure that the following steps happen:

1. Your employer must **test the air**. The air testing should tell what hazards are in the air and how much of each hazard there is.
2. Your employer must provide you with **the right respirator for the job**. All respirators must be certified by NIOSH.
3. Your employer provide you with a **medical exam** before you are required to wear a respirator. This exam should consist of a questionnaire that you fill out, and (probably) a physical. Both should be confidential, take place during work hours, and be free. A respirator makes your heart and lungs work harder. Be sure you are healthy before you put on a respirator.
4. 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.
   There is no "one size fits all." Respirators come in different sizes and brands. Your employer must give you "freedom of choice" until you find one that protects you.
5. Your employer must get you **training**. You should be trained about the specific hazard(s) you need the respirator for, and about the proper use of respirators. It's the law.

(continued on the next page)

D. (continued)

6. Your employer must give you **the right filter** for the danger. A solvent filter won't protect you from asbestos dust. All filters must be labeled so that you can tell what type of filter it is.
7. 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. Your employer must also **disinfect, store and inspect your respirator**. If your respirator is defective or needs repair, don't use it.
8. Your employer must **evaluate this program**. If part of it isn't working, then you should insist that they change your respiratory protection program. If it doesn't work, it's not protecting you.

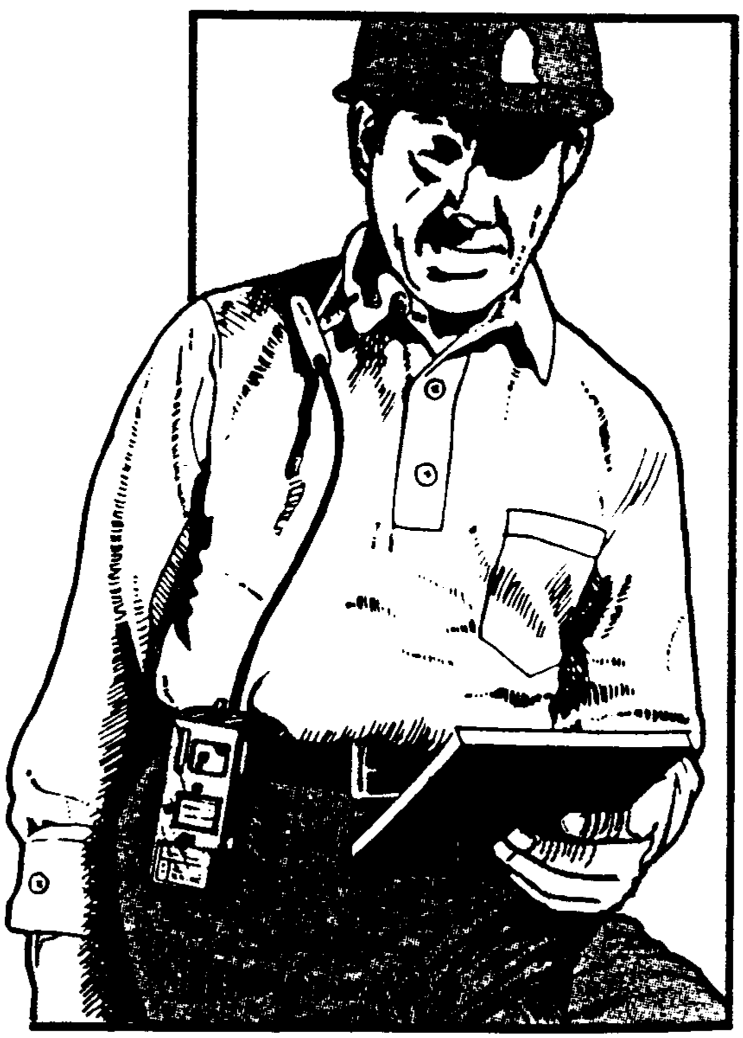
Some things you can do to make sure your respirator is working:

- **Demand training and a medical exam.** If you haven't been trained or had an exam, don't put on a respirator.
- **Make sure you have the right filter** on your respirator. All filters must be labeled. If the label is damaged and you can't read it, don't use that filter.
- 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.
- **Check your respirator** every time you use it. Make sure there are no holes—even a tiny hole, rip, or crack in the rubber can let poisons leak in. And make sure it's clean.

E. Testing the Air

Before you put on a respirator, the hospital 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.

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. There is no test to measure how much TB is in the air yet.



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. Here are 6 things that can go wrong with air sampling:

1. **Measuring the wrong workers.** For example, measuring the OR attendant instead of the nurse anesthetist for Halothane (an anesthetic). 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.

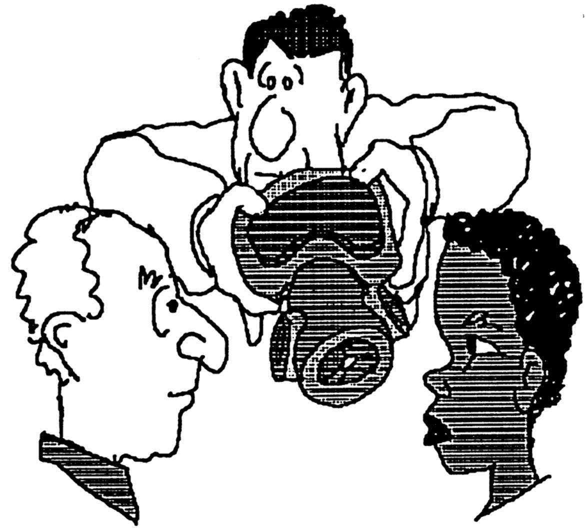
3. **Taking an "average" measurement when there are "bursts" of chemicals.** For example, you may only use Betadine before lunch and at the end of the day. But if the test runs all day, the average will be low, even though there are short periods when levels are very high. It can be very hard to choose 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 magic gizmo like the "Tricorder" from Star Trek. Each type of filter, meter, or badge is made to test a specific chemical. For example, you can't use a formaldehyde tube to measure mercury. Some tests are very expensive. It is also important to make sure that the equipment has been tested recently (calibrated) and is working properly.

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 hospital may have to offer you a number of respirators made by several different 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*, OCAW 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.

Atmospheric Contaminants to be Protected Against	Color of cartridge*
Acid gases like hydrochloric acid, sulfuric acid, or sulfur dioxide	White
Hydrocyanic acid gas	White with ½" green stripe completely around the canister near the bottom
Chlorine gas	White with ½" yellow stripe completely around the canister near the bottom
Organic vapors	Black
Ammonia gas	Green
Acid gases and ammonia gas (mixed)	Green with ½" white stripe completely around the canister near the bottom
Carbon monoxide	Blue
Acid gases and organic vapors (mixed)	Yellow
Hydrocyanic acid gas and chloropicrin vapor	Yellow with ½" blue stripe completely around the canister near the bottom
Acid gases, organic vapors, and ammonia gases (mixed)	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 ½" 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 strip 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.

Summary: Respirators

1. A respirator is a tight-fitting mask made to keep hazardous materials out of your lungs. A surgical mask is not a respirator.

2. 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 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 medical 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
   - selecting the right respirator for the job
   - cleaning and storage

5. Respirators are a very important protection against TB. Engineering controls must be used, but they are not enough by themselves.

NOTES

Activity 16: Protective Clothing

Purpose

To help understand the limits of surgical gowns and masks in protecting you from chemicals.

Task 1

Your group is made up of Local 94 union stewards at Pleasant Valley Hospital. A laundry worker has come to you with the following statement. Please use your own experience as health care workers and Factsheets A through G (pages 328-334) to respond to the statement as a group.

> **"I look out for my health, so I always wear my protective clothing when I'm working. For example, we use an acid wash in the laundry and I always wear my surgical gown and mask and latex gloves.**
>
> **This equipment is very important to keep you safe. Of course, you have to wear it right, but as long as you do that, it will protect you."**

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

A. What is Chemical Protective Clothing?

Chemical protective clothing means gloves, aprons, and other clothing that is made to protect you from chemicals. **Surgical gowns and surgical gloves will not protect you from most chemicals.** They are made to protect patients from germs. They are not made to protect health care workers from chemicals. Some hospitals give workers surgical gowns when they really need chemical protective clothing.

Chemical protective clothing may be made of many different materials, including:

- nitrile rubber
- butyl rubber
- neoprene
- PVA (polyvinyl acetate)
- PVC (polyvinyl chloride)

Each different material can protect your skin from different chemicals. For example, nitrile will protect you from acids, but will let phenol soak right through. PVA will fall apart in acids, but will keep phenol off your skin. (See Factsheet I in "Activity 8: MSDS" on page 178 for more information.)

It takes a lot of experience and practice to pick the right material. Your employer has to inspect your hospital, figure out what protective equipment is needed, and train workers to use it. Unfortunately, most MSDSs are not very useful for picking the right equipment. The MSDS may say, "Wear appropriate chemical protective clothing," but it usually won't tell you whether to use butyl gloves, or nitrile gloves, or some other material.

Latex should <u>not</u> be used to protect from any chemicals because most chemicals soak right through it. (See Factsheet D on page 331 for information about allergies to latex.)

Source: *Guidelines for the Selection of Chemical Protective Clothing*, Cincinnati, OH: ACGIH, 1983 and OSHA Personal Protective Equipment standard, 29 CFR 1910.132 (d) and (f).

B. 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 and ventilation 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/CEILING (C)	
Substance	[CAS #]	ppm[a)]	mg/m^{3}[b)]	ppm[a)]	mg/m^{3}[b)]
Perlite [93763-70-3] (1986)..................		—	10[(e)]	—	—
Petroleum distillates, see Gasoline; Stoddard solvent; VM&P napththa					
Phenacyl chloride, *see* α-Chloroacetophenone					
◂ Phenol [108-95-2] —Skin (1987)		5	19	—	—
Phenothizaine[92-84-2] —Skin (1986		—	5	—	—
■ N-Phenyl-beta-naphthylamine [135-88-6] (1979)		A2	A2	—	—
o-Phenylenediamine [95-54-5] (1991)................................		—	0.1, A2	—	—

Source: *1995-1996 Threshold Limit Values*, Cincinnati, OH: ACGIH, 1995.

C. Clothing and Germs

Gowns and gloves are very important when you work around patients who can spread diseases. This clothing protects you from diseases, and it also keeps diseases from spreading to other patients. Equipment alone is not enough. It is also very important to wash your hands, use sterile equipment, and follow isolation signs.

Germs do not soak through your skin, but they can get in through a tiny cut, even a hangnail. Protective clothing for HIV, tuberculosis, and other germs is much thinner than chemical protective clothing. Most clothing is thrown out after one use, not washed and used again, like chemical suits.

Clothing includes:

- gowns
- masks and face shields
- shoe covers
- gloves

OSHA says that clothing used to protect you from blood has to keep it off your clothes—it must be an "impervious barrier." This means that in surgery or ER, where there is a lot of blood, gowns are usually thicker and more waterproof. If blood does soak through your gown, change it as soon as you can. If you get blood on your uniform, don't take it home to wash it. The standard says that your employer must clean it for you and give you a clean uniform to wear.

Sources: Leigh G. Donowitz, M.D., *Infection Control for the Healthcare Worker* and OSHA Bloodborne Pathogens Standard, 29 CFR 1910.1030 (d)(3)(i)-(vi).

D. Latex Allergies

Latex gloves are very important for protecting you from germs in blood, skin, and other body parts. But some workers and a few patients are allergic to latex. Gloves and other equipment can:

- make you break out in a rash
- make your eyes and nose run
- cause trouble breathing (wheezing)—sometimes very serious
- in very serious cases, cause shock which can kill.

Some scientists believe that powdered gloves make latex allergies worse. They think the powder spreads latex in the air, where it can get in your lungs. They recommend powder-free gloves or non-latex gloves for all workers. Latex is natural rubber (from rubber trees). Non-latex gloves are made from chemical rubber.

Other equipment like catheters, IV tubing, nipples for baby bottles, condoms, and even latex paint cause fewer allergies. They give off much less of the invisible latex dust that your body reacts to. Some studies show that well-made gloves cause fewer allergies, because the gloves are cleaned several times at the factory.

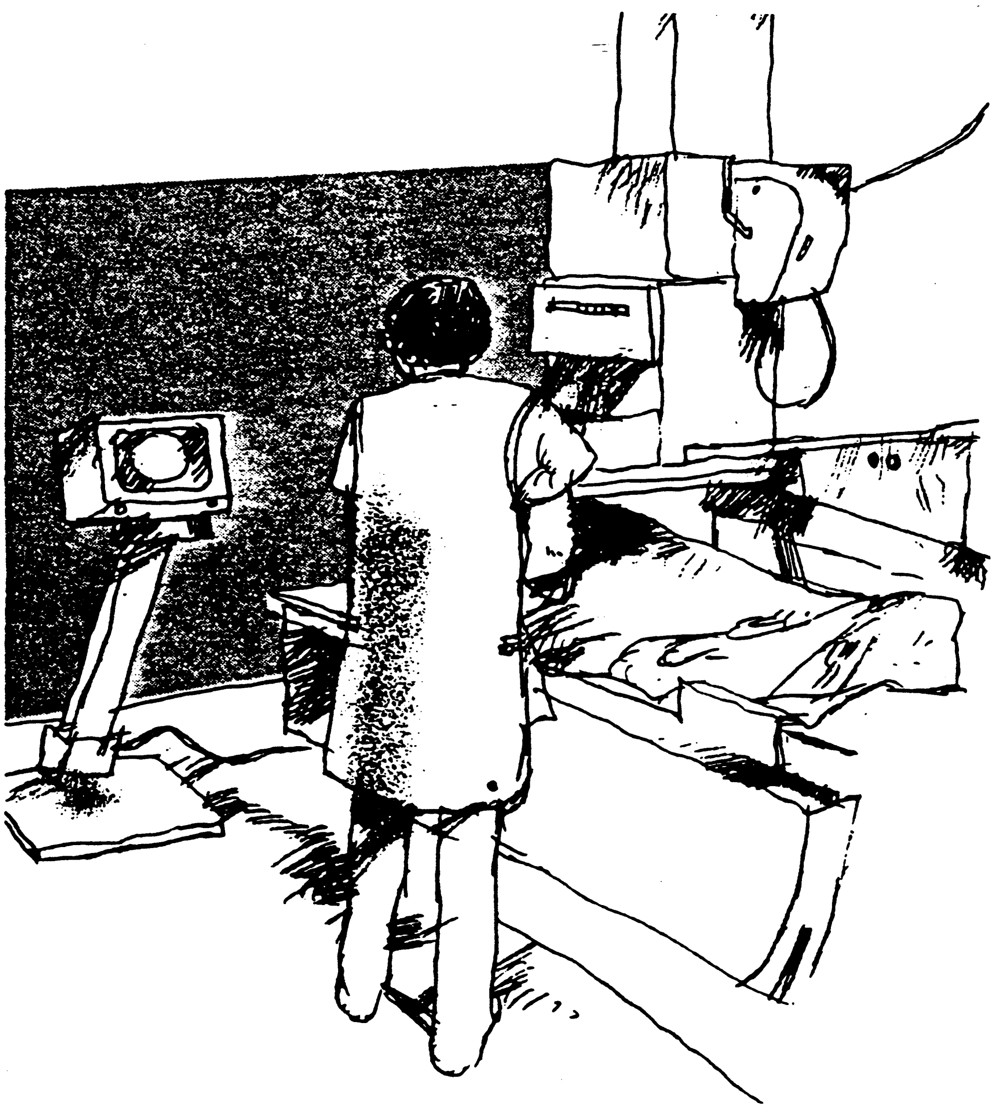
One study done in 1996 found that 3 out of 5 nurses with a latex allergy reacted to powder-free gloves. A severe latex allergy may mean that you can never be around latex again. Even walking into a medical office where latex is used could cause trouble breathing. If you have a severe latex allergy that keeps you from working, talk to your union rep about disability benefits.

Source: Caryle Murphy, "Latex Allergy Can Be an Occupational Hazard," *Washington Post*, 7/16/96, p. HM8 and Reuters, "Low-Allergy Gloves Not Very Hypoallergenic," 3/18/96.

E. Clothing and Radiation

Radiation comes in different forms. You need different kinds of protection for each type of radiation. For X-rays, a lead apron is always needed, and sometimes lead gloves too. For Iodine-131 drinks or waste from patients with implants, a cloth gown and latex gloves will protect you. Lab workers sometimes use special gloves or finger covers when working with radioactive materials.

Remember that **keeping your distance** will protect you more than special equipment will.



Source: *The National Institutes of Health Radiation Safety Guide*, DHEW Publication No. (NIH) 79-18, 1979.

F. The Emperor Has No Clothes

Just as the "emperor" in the children's story was caught without the proper clothing, spill cleanup workers 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 pass through.

2. Can the chemical corrode, dissolve or otherwise damage the 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 the garment/glove by way of holes or imperfections? Holes can occur at zippers or stitch seams or through pin holes or tears in the garment.

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

G. A Word of Warning:
Protective Equipment For Spill Cleanup Workers

Anyone who cleans up large 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: Protective Clothing

1. Chemical protective clothing means gloves, aprons, and other clothing that is made to protect you from chemicals. Surgical gowns and surgical gloves are not made to protect you from chemicals.

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

3. Disposable gowns and latex gloves are important to protect you from germs, but they do nothing to protect you from chemicals. Washing your hands and following isolation signs are important too.

4. Some health care workers and a few patients are allergic to latex. Powder-free gloves may prevent some allergies. Workers with allergies may need non-latex gloves.

5. Anyone who cleans up spills must wear special protective equipment. 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.

NOTES

Activity 17: Strengthening Your Health & Safety Committee

Purpose

To understand how to make joint labor-management committees more effective in solving health and safety problems.

Task 1

In your groups, think about the health and safety committee at your hospital (if you have one) and answer the following questions. Please use Factsheets A through F (pages 338 - 347) 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 do you think your committee should do to avoid these pitfalls?

3) Every health and safety committee has to start with a few issues. How do you think your committee should choose these issues?

Source: Oil, Chemical, and Atomic Workers' Union, *Hazardous Materials Workbook.*

A. What's Different About Our Committees?

Health care workers across the country have found a very strong way to solve health and safety problems—union health and safety committees. Hospitals already have a lot of committees, but our committees are different because:

- Union committees are made up of the health care workers who are on the front lines. Hospital committees are often made up of administrators who work in offices.
- Union committees work on health care worker health and safety. Many hospital committees work on other topics, like infection control or life safety. Those areas can help protect health care workers, but the main focus is on patients.
- Union committee members are chosen by their co-workers. Hospital committees are usually appointed by the head of the hospital.
- Union committees get health care workers from all departments and all shifts. Hospital committees often just involve a few departments, and they represent the day shift.
- Union committees meet once a month. Many hospital committees only meet four times a year.

In Washington and Oregon (and in Canada) every hospital **must** have a Joint Labor-Management Health and Safety Committee. Committees are the most effective way of solving problems because they bring together the health and safety work of every union member.

B. The Committee Structure

Possibly the 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.

Committees that have no real power to change things—ones that focus on "think safety" campaigns, or that conduct no regular activities—are very frustrating and dangerous for health care 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!

- Make sure there are at least as many union representatives as managers. The chair of the committee should rotate regularly between the union and management representatives.

- The union members of the joint committee need to meet among themselves on a regular basis.

- Meet on a regular schedule (weekly, monthly, or whatever)

- The contract needs to allow worker representatives time for committee activities, including meetings, inspections, and training. Co-workers can't be expected to pick up the slack.

(continued on the next page)

B. (continued)

- At meetings, 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 union side of the committee needs the backing—moral and financial—of the local union leadership.

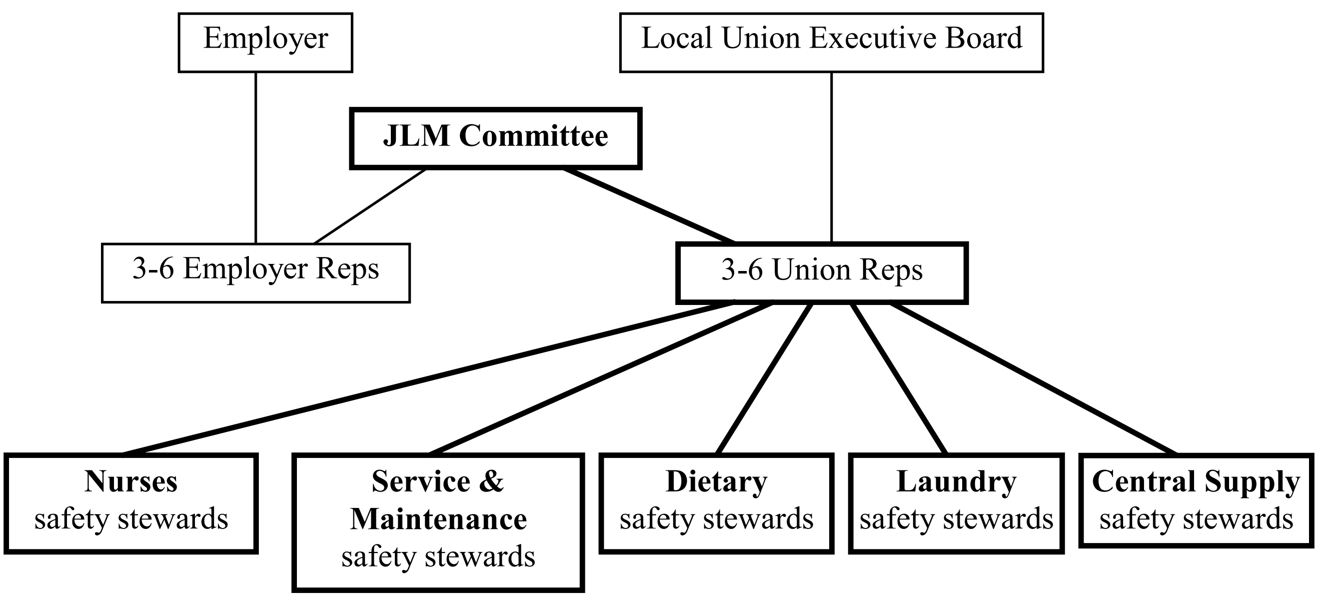
- The union members of the safety committee need to keep in touch with the local union officers and union members.

C. Eyes, Ears, and Voices

The joint labor-management committee may 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 health care workers employed and how the hospital is organized. However, to make sure that the concerns of all health care 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 committee will need help to effectively address the health and safety concerns of health care workers employed in different departments. The union already has a group of workers who help solve contract problems called "stewards." The committee may use the union stewards to gather information, or they may choose special "safety stewards."

For example, here is how the union side of a health and safety committee might look:



D. 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 community-based "Coalitions for Safety and Health." See the list in Chapter 20: Resources.
- Get access to resource materials your hospital has.
- Subscribe to safety magazines and/or newsletters (some of these are free or low cost).

E. Common Reasons Why JLM Committees Fail

1. The List-making Committee

If a Committee spends a lot of time in their meetings talking about specific repairs or about specific workers breaking safety rules, then it is probably not very effective. 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. Committee meetings should be times to discuss broader issues such as policies, preventing accidents, looking at monitoring reports, and other activities that can't be done at any other time.

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 health care 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 management's 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 be people who have the power to make decisions.

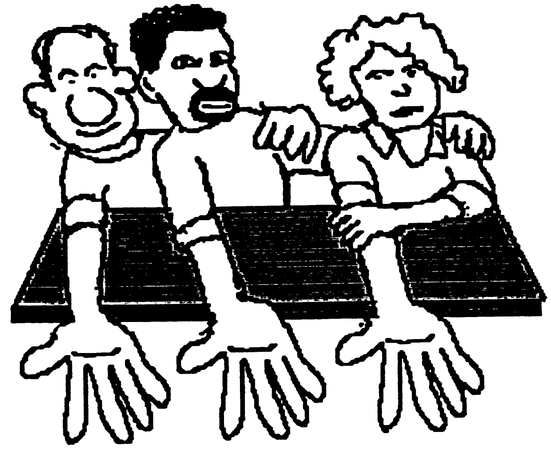
4. Sorry, but there just isn't time

If the employer promises time off work for committee activities, but supervisors routinely deny it, the committee can't function. Time off **with replacements** needs to be negotiated into the contract. Then the contract needs to be enforced, with grievances if necessary.

F. Road Map for Union Health and Safety Committees

An effective health and safety committee will need to think of its work 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.
You can also do a survey like the one used by SEIU Local 205 on pages 10-11. 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 and document problems.

2. Develop a list of health and safety problems.
After you have talked with your co-workers and done a survey, write down what you have found out. This will help you choose which issues to address and in what order. It also lets your members know that the committee is listening.

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. Some problems affect a lot of health care 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 quickly in order to show that the Committee is effective.

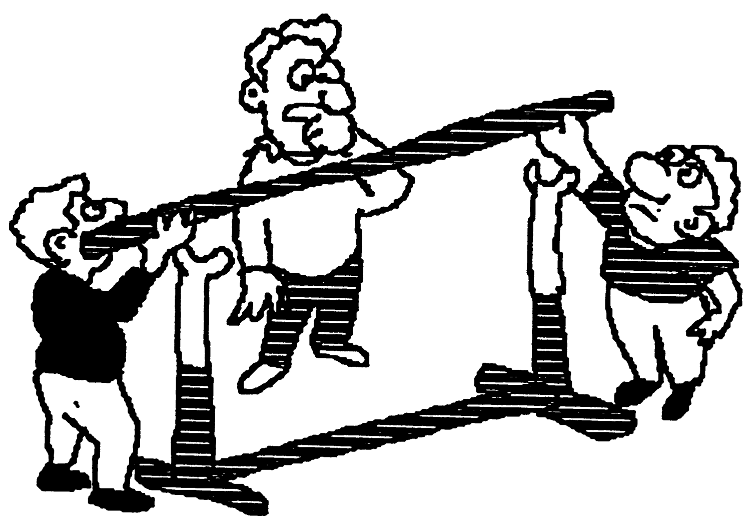
F. (continued)

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 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.

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. A group of health care 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.



The point is that there are many levels of activity and there are many different ways for people to participate. The job of a health and safety committee is to find the best actions and increase the level of activity as the group's experience, knowledge and commitment grows.

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F. (continued)

Here is an example of a survey an SEIU local used.

SERVICE EMPLOYEES UNION

LOCAL 205

1030 Maxwell Avenue, Nashville, Tennessee 37206
(615)-227-5070

Hospital Worker Safety Survey

Please return to your Local 205 Field Representative by March 4, 1994.

<u>Hazardous Chemicals</u>

1. What are some of the chemicals you work with or around? (For example, cleaners, drugs, radioactive materials, germicides, paints.) Please list as many as you can think of

2. Has the hospital provided you with training on these products.

   _____ Yes _____ No

   _____ 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.

(over)

F. (continued)

_____ You were told where the hospital keeps detailed factsheets (sometimes called "material safety data sheets" or "MSDSs") on each product and how you can get this information.

_____ You received training on how to read these factsheets.

3. If you received some training, do you have any comments on the training?

<u>Emergency Response</u>

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 chemotherapy spills in the pharmacy, formaldehyde spills in the lab, or EtO leaks in central stores.)

   _____ Yes _____ No

2. Have you received training in responding to chemical emergencies?

   _____ Yes _____ No

   If yes, briefly describe this training:

Task 2

Please read the scenario below. Your small group is the health and safety committee for SEIU local 94. Using Factsheets G through J (pages 349-354) and your own experience and knowledge from 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 hospital. Health and safety issues were among the concerns expressed by workers during the organizing drive. The newly organized unit includes nurses as well as service and maintenance workers, including housekeeping, dietary, central supply, and laundry.**
>
> **The leadership of Local 124 has 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:

G. 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. Select 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:

1) pick a problem that the membership is concerned about and

2) start small or with an issue you can solve.

Step 3. Develop a plan of action.

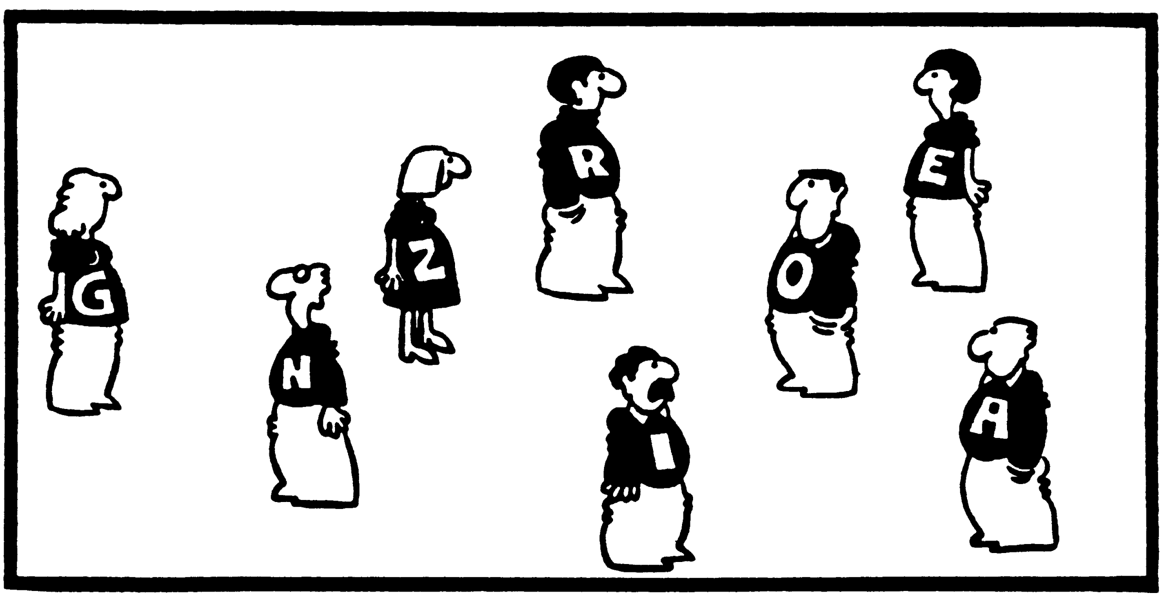
This can be simple or more complicated. Sometimes just bringing a health and safety matter to the hospital's attention will do the trick. For some issues the committee will have to rely on members' concerns, document the problem, show how it can be solved, and bring in experts. Here it's important to keep the membership informed and to involve as many people as possible. Don't be afraid to share responsibility.

Step 4. Evaluate 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.

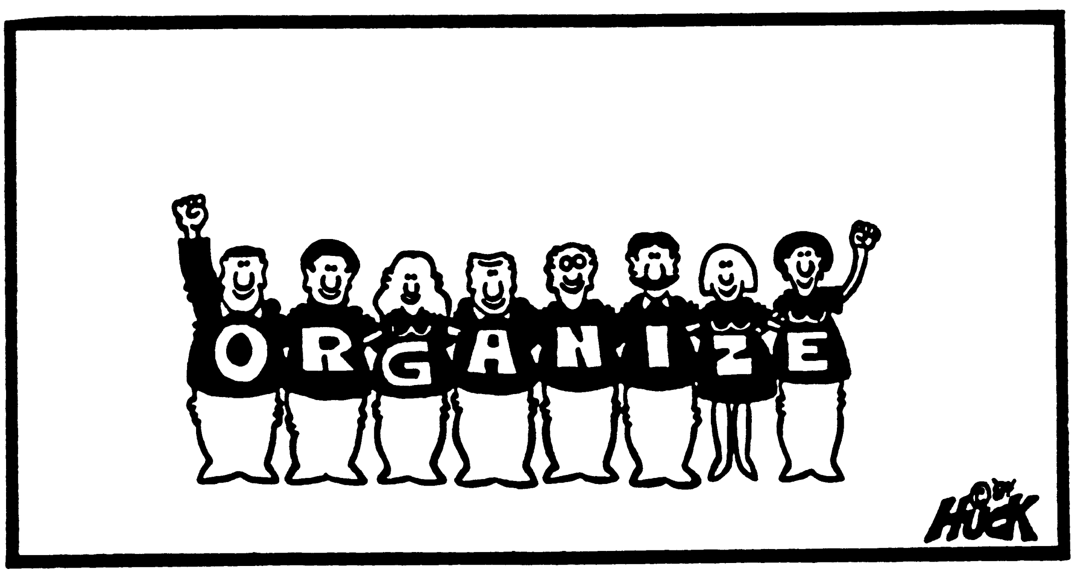
H. Tips on Small Group Union Meetings at Work

- 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.
- 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!



H. (continued)

- 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.



I. Information is Power

Health and safety committees need information in order to work. Knowing the laws, health and safety principles, and solutions will give credibility to the committee. Here are some free resources you can use:

1. **Your Union's Health and Safety Department** (and the folks who wrote this manual) can help in many ways. They provide technical assistance, share information from other SEIU locals, help with bargaining, and providing training. See the list of SEIU regional offices in "Chapter 20: Resources" for the office near you.

2. **COSH Groups** are community-based "coalitions on occupational safety and health." They support unions and can help in many ways. See the list in Chapter 20 for the office near you.

3. **Universities** sometimes have programs that provide worker- oriented health and safety services.

4. **NIOSH** is the National Institute for Occupational Safety and Health. They do research on workplace health and safety. They have a handy toll free number where you can get information on specific hazards. Call 1-800-35-NIOSH (1-800-356-4674).

5. **Other government agencies,** like the health department, environmental protection or fire department may be able to help. 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,** like environmental groups, charities, and research institutes can be good sources of information. You can get the names of these folks from your local SEIU health and safety representative, COSH group, or university program.

J. 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 Factsheet F (pages 344-347) 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 health care workers.
   - Posters on the bulletin board.
   - Classes conducted by outside health and safety experts, open to all health care 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 "Activity 2: Hazards" for more information.

4. **Get copies of your employer's written plans** like the hazardous materials emergency plan and the chemical management plan.

5. **Product evaluation committees.** These committees review new devices and drugs. Front-line health care workers at many SEIU locals have been part of these committees. They have convinced hospitals to buy safer medical devices.

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J. (continued)

6. **Keep records.** The committee will need facts to make changes. It's crucial that the committee have data about health care 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 hospital.

7. **Maintain a library or resource center.** See Factsheet I (page 352) for more information.

8. **Do inspections.** This might be done on a departmental basis, or on a hospital-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 health care workers in the areas being inspected.

9. **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.

Summary: Strengthening Your Health & Safety Committee

1. A health and safety committee needs to be rooted on the shop floor. The union committee should have representatives from all major departments (including service and maintenance), shifts, and job classifications.

2. There needs to be a formal, systematic way to communicate with the hospital 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 hospital-paid lost time for training.

4. Information is power. You get this information from the workers, 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.

NOTES

Activity 18: Taking Action to Make Your Job Safer

Purpose

To practice action planning so that you can work with your co-workers to follow-up on health and safety problems raised during this training.

Task 1

Two key parts of taking action in your workplace are (1) to get other workers involved, and (2) to use resources inside and outside of your workplace to help you. On the classroom walls your trainer has placed 3 large pieces of paper. Each piece of paper has one of the following questions written on it:

1) What can you do as a group to get your co-workers involved in solving health and safety problems on the job?

2) What sources of assistance or information can you use to help you document health and safety problems at work?

3) What sources of assistance or information can you use to help identify possible solutions?

Your trainer will assign your group a starting question on the wall. As a group, please come up with as many ideas as you can to answer each question. This is a “brainstorm” – which means your group should list as many ideas as you can in a short period of time. When the trainer calls time, your group will stop and rotate to another station. At the next station try to come up with new ideas that haven’t been written by previous groups. We’ll continue this process until each group gets at least one chance at every station.

Remember to pick a reporter to write your group’s answers on the large piece of paper.

Task 2

During the earlier activities, you have identified health and safety problems at the hospital. Now your group should choose just one of the problems and develop a strategic plan to solve the problem.

Which health and safety problem will your group tackle?

Fact Sheets A through I on pages 363-377 provide examples of some organizing tools that have been used to wage union campaigns for health and safety. Using your own experience and the fact sheets, please work with your group to make an action plan. This should be a plan that you and your group can use to fix this health and safety problem at your job. The questions below are meant to help guide you through the process.

STEP 1: DOCUMENTING THE PROBLEM— Gather evidence about the health and safety problem

What steps will your group take to document the problem?

How will you involve other workers?

What technical resources will you use?

Task 2 (continued)

STEP 2: FINDING THE BEST SOLUTION—Choose a solution or "control" to make your workplace safer

Do you already know how you want the problem solved, or do you need to find a solution?

If you already know how you want the problem solved, why did you choose this solution?

If you need to come up with a solution, how will you involve other workers in developing a proposal to take to management?

What union and/or technical resources will you use?

(continued on the next page)

Task 2 (continued)

STEP 3: CHOOSING A STRATEGY—Develop a game plan to convince management to fix the problem your way

Who has the authority to say "yes"?

What actions will your group take to "get to yes"?

How will you involve other workers?

What do you think your biggest obstacles will be?

How will you overcome these obstacles?

Task 2 (continued)

STEP 4: FOLLOWING THROUGH—
Assigning responsibilities and setting dead-lines

Create a “to-do list” from your plan for Steps 1 through 3. Make a calendar for when each task and step will be completed. Assign individuals responsibilities to do each task. Following is an example of a planning chart you can use.

Task	When (deadline)	Who

Task 2 (continued)

STEP 5: COMMUNICATING AND CELEBRATING — Plan ways to keep members informed about the campaign and its victories

How will you let other workers know about the problem and what is being done to fix it?

How can you celebrate your victory and recognize those co-workers who contributed time and energy?

A. Organizing Steps

Educate and Involve Co-Workers

When you are selecting tactics for a health and safety campaign **the first goal should be to educate and involve as many of the affected workers as possible**.

Often, only the collective effort and pressure of a group of workers can make a change for the better in working conditions.

Even if you could solve a problem yourself, doing this does not give other workers the experience of coming together to take care of their issues. It does not build a group that is ready to take on future issues.

Document the Problem

Whether you hope to convince an employer to do the right thing, or plan to apply pressure by going to the media, community groups or OSHA, you will need evidence which demonstrates the problem. Your co-workers may be the best source of information and in the process of getting it you can get them involved.

Choose Solutions

Choosing the best solution to health and safety problems isn't always easy. Talk it over with co-workers and get outside advice from union health and safety staff or labor-friendly university programs. Just make sure you have a concrete solution to offer.

Pressure for Improvements

There are many ways to apply pressure to an employer who is resisting his responsibility to provide a safe workplace. Pressure can come from workers who are ready to act. It can come from the press, from community groups, from patients and from government regulators. Be creative, look for many different ways to apply steadily increasing pressure. Start out with something that is familiar and comfortable to members, and then build in level of commitment, difficulty, and impact.

Involve Co-Workers

B. One on One Interviews

One-on-one interviews are a powerful way to document health and safety problems at work. They are also a great way to recruit new people to participate in efforts to improve workplace conditions. And, the interviewers themselves become a stronger leadership group for the campaign.

The following are some basic types of questions you can use when talking to workers about health and safety issues.

WHAT exactly is the problem? (Example: What kinds of needles cause the most injuries?)

WHO does it affect? (Who gets the most needlesticks?)

WHEN does it happen? (Do more people get stuck on the 1^{st}, 2^{nd} or 3^{rd} shift?)

WHERE is this a problem? (In what units have the most needlesticks occurred?)

WHY does it happen? (Why do so many workers get stuck?)

HOW to fix the problem? (What should management do to prevent needlesticks?)

Your questions should be open-ended ones. Your co-worker should not be able to answer only "yes" or "no". Listen closely to the person’s concerns and ideas. Remember to ask the person to participate. Have a list of specific things people can do to help. Write down what the person says they will do.

B. (continued)

Learning to Listen

During an interview you should listen more than you talk. Here are three keys to being a good listener.

1) Keep your mouth closed.
2) Don't let your attention wander from the person who is speaking.
3) Show that you are listening by repeating some of it back.

Here are some DO's and DON'Ts to help you become a really good listener:

DO

- Look the person in the eye
- Try to see the issue from your co-worker's point of view
- Show respect, even if you disagree
- Sit close enough to talk easily, but not too close
- Take a deep breath and relax
- Exchange facts and information, if asked

DON'T

- Interrupt
- Try to solve the problem for the other person
- Raise your voice, or use an angry or hostile voice
- Give advice, lecture, preach, judge, blame or criticize
- Be sarcastic, or try to make a joke that might backfire
- Touch the other person, except to shake hands

On the following page is a sample form you can use to make a record of your interview

Source: Anne Hope and Sally Timmel, 1987, *Training for Transformation: a handbook for community workers.* Gweru, Zimbabwe: Mambo Press, book 2

Member contact report form

Date__________Workplace____

Organizer(s)____

Method of contact ___ phone ___ face to face(Location ____________)

Worker's name____

Home address____

City/state/zip____

Home phone________________Work phone____________OK to call at work___

Employer/worksite____

Job title________________________________Shift hours___________________

General workplace issues

Health symptoms/Past injuries

Possible sources/workplace hazards

Rate employer health and safety program

Concerns about organizing/how to overcome

Other workers that the contact felt we should talk to(similar symptoms or injuries)

Name/address/city/zip	work/home phone	job title/shift

Organizing activity/follow-up date:

Additional comments:

Document the Problem
Involve Co-Workers

C. Health and Safety Surveys

Types of Surveys

- Generic -- covers a general range of hazards
- Hazard specific -- examples include, TB, back injury, indoor air quality and assault.

Uses of Surveys

- To alert workers and involve them in the union health and safety campaign
- To collect information so that the union better understands the health and safety problems
- To document problems and solutions to give to the boss or OSHA as evidence

Organizing Potential

- Surveys help identify worksite leaders (these are the people who get the surveys out and collect them)
- Surveys help assess rank and file support for the union (workers who fill out and return surveys and give answers sympathetic to the union program are supporters)
- Surveys help identify issues that workers care about and are willing to organize around.

C. Surveys (continued)

Before survey distribution

1. Where are the departments or workspaces where members are located?
2. Which areas are priorities? Why?
3. What are the names of members who work in each department or workspace?
4. How should flyers be distributed and collected?
5. When should flyers be distributed and collected?

Survey distribution

1. What should be said to workers when they are handed the survey? It is helpful to have a short written message for survey distributors to use.
2. Use workplace maps and charts to make sure that all workers get the survey.

After surveys are collected

1. How should we tabulate the surveys?
2. How should we get the survey results out to the workers?
3. How can we use the results to pressure the boss?

On the next page is a form you can use or modify to track the distribution of your survey.

Health and Safety Survey Squad Sheet

Survey Distributor ____________________ Work Area ______________

Number of surveys distributed _____ Number of surveys returned ____

Name	Building/ Workplace/ Department	Date Distributed	Date Returned

Document the Problem
Involve Co-Workers

D. Map It!

Risk Mapping (see Activity 2, Task 2) can be a powerful organizing tool. The risk mapping task can be used as a stand alone activity to help you:

- Gather information on health and safety issues
- Involve workers in collective action
- Strategize with groups of workers (sometimes seeing the situation helps you see things more clearly)

While you are mapping the various dangers you face at work you can also collect and chart other information which may help you in your campaign (information like who supports the union, who has been willing to act during the early stages of your campaign, who talks to who…)

Apply Pressure
Involve Co-Workers

E. Health and Safety Petitions

Why use health and safety petitions?

- Petitions are a way to identify support of rank and file workers for a union program.
  - People who circulate petitions successfully are leaders
  - Petitions identify who works where
  - Petitions may provide addresses and phone numbers needed for organizing

- Petitioning is a protected activity under OSHA 11(c) anti-discrimination section, which can give union activists additional protection from employer harassment.

- Petitions may be used to generate positive media coverage of organizing and the importance of health and safety issues.

- Petitions, when combined with other collective activities, can be very effective in demonstrating workers' power.

Remember to recruit a *group* of workers to deliver copies of the petition to the employer. A delegation of workers sends a stronger message than a petition alone. It is also another way to for people to participate.

Document the Problem
Choose Solutions
Involve Co-Workers

F. Sources of Information

Government agency reports and employer records are also very helpful in documenting problems and uncovering which groups of workers are most affected. Reports and records, combined with the first-hand experiences of workers (surveys, interviews, risk mapping), can be a very effective way to clearly show that a problem exists. Other organizations can also provide articles, books, and technical assistance on health and safety topics.

- Employer Documents – The laws says that employers must keep the certain health and safety records. The laws says that workers have the right to see these records. Here are some examples of useful records:
  - OSHA 200 Logs
  - Sharps Injury Logs (lists needlesticks)
  - Air Sampling and Other Monitoring Records
  - Emergency Response Plan
  - List of Hazardous Materials
  - Training Records
  - (see Legal Rights Activity for more details)

- OSHA – Call your local OSHA office to find out how you can review past OSHA complaints filed on your employer. This might help determine if there is a pattern regarding a current problem and what was done in the past to fix the situation.

- Community & University Resources
  Community groups, like Committees on Occupational Safety and Health (COSH) and university programs, like the UCLA Labor Occupational Safety and Health Program, often have factsheets, library resources, and training that can help you learn more about specific hazards in your workplace and ways to solve specific health and safety problems. See the Resource section for more details.

Educating Co-Workers
Choosing Solutions

G. Know Your Rights

The law gives workers legal backing. The law says what an employer must do to keep the workplace safe. But, the law will only protect us if we use it and enforce it with our collective action. Sometimes laws are helpful sources of information for choosing solutions to health and safety problems. It is important that we educate members on their rights.
Here are some key laws:

Right to Know

Legal rights	Law or regulation
Right to know results of hazard monitoring	29 CFR 1910.1020
Right to see your medical records	29 CFR 1910.1020
Right to see and copy the complete OSHA 200 log of recordable injuries and illnesses	29 CFR 1904.7
Right to the list of hazardous chemicals in the workplace	29 CFR 1910.1200
Right to see the employer's emergency response plan	29 CFR 1910.120

Right to Act

Legal Right	Law or regulation
Non-discrimination for organizing around health and safety	11 (c)
Meet with health and safety agency officials	11 (c)
File formal OSHA complaints	
File injured worker compensation claim	State law

G. (continued)

Right to Refuse Unsafe Work

Step 1	Offer to do the job when it's made safe and remain at the job site unless ordered to leave by the employer
Step 2	Always work with the union and co-workers in the situation and call OSHA to file a formal complaint about the uncorrected hazard
Step 3	Given the real danger of death or serious physical injury to a worker and employer knowledge of the hazard and failure to correct it, a worker may refuse to do the unsafe work.

Apply Pressure
Involve Co-Workers

H. Health & Safety Action Tactics

Remember to make a plan that builds the support of your co-workers while increasing the level of pressure. The activities you choose to do should take into consideration how to unify your co-workers, how to connect the immediate problem with larger workplace issues, how management would likely respond, and how to keep turning up the heat if the problem does not get fixed the way you want. Make sure you involve your co-workers in deciding what actions to take first.

- **Nurse-out**
  All workers get "sick" and go to the occupational nurse for help on a single day (or rotating)

- **Band-aid Days**
  Workers wear band-aids (with or without a slogan on them) on a designated day

- **Red Tag Hazards**
  Use the traditional safety "red tag" to highlight workplace hazards and to report a dangerous situation

- **Work to Rule**
  Follow employer's work rules completely and to the letter even if it takes longer to do the work

- **Wearing Dust Masks**
  All workers wear a white dust mask on the same day to draw attention to a problem with an airborne hazard

- **Group Information Requests**
  As a group, request from your employer health and safety information which you have a legal right to (for instance, copies of the OSHA 200 log

H. (continued)

of injuries and illnesses, Material Safety Data Sheets, Bloodborne Pathogens Control Plan, Injury and Illness Prevention Program [California only])

- **Direct Action**
  March on the boss with your demands, organize an action at corporate headquarters or at the office of a member of the board of directors.

- **Awareness-Raising Actions**
  Conduct a health and safety fair in the cafeteria. Display samples of safer needles, show a health and safety video, distribute leaflets, talk with workers. Post a “report card” with the results of your research on the problem. This will let co-workers know how your employer rates on health and safety.

- **File Grievances**
  File a large number of grievances all at once. File a general grievance. Be creative. One union local filed 35 grievances all at once citing only numbered sections of standards, not names, and requested that the violations be fixed immediately. The personnel manager had time limits for answering grievances, and he panicked because he didn’t know what the standards were referring to. This showed how much the stewards knew. They only way the company could get all 35 grievances resolved was to sit down with the union and be reasonable.

- **File Complaints with Government Agencies**
  File complaints with OSHA, fire department, FDA, state health department, etc.

- **File Notice of Injury/Illness or Hazard Exposure**
  File an incident or notice of first injury form for every possible hazardous exposure

- **File Worker Compensation Claims**

I. Workplace Hazards and Their Effect on the Community

The health and safety hazards we face at work may be affecting others besides the workers in our hospitals. Health and safety issues can provide a way to reach out and form alliances with patients and community members.

Understaffing and patient transfers: Understaffing in health care facilities hurts the quality of patient care due to less personal attention. There is also added risk when patients are moved without adequate staff.

Needlesticks and Infection Control: Patients and visitors are at risk of contracting contagious diseases (including TB) if the infection control program is not effective.

Chemicals: Toxic chemicals in the workplace can pollute the community either through legal use or illegal actions.

Asbestos: Asbestos insulation and ceiling tiles can expose the public in many commercial and public buildings.

Indoor Air Quality: Biological contaminants from poorly maintained ventilation systems can affect everyone in the building.

Summary: Taking Action

1. Health and safety can be a powerful organizing issue.

2. Four key steps in organizing around health and safety are:
   - Educate and Involve Co-Workers
   - Document the Problem
   - Find Solutions
   - Pressure the Boss

2. There are many possible tools that can be used to organize for health and safety. Find the one that best suits the circumstances you face.

NOTES

NOTES

Activity 19: Your Legal Rights

Purpose

To help understand the regulations that you or your health and safety committee can use to help solve health and safety problems.

Workers have many legal rights on the job. In this activity there are factsheets about all your health and safety rights (see page 418 for a summary), but we do not have enough time to review all of them. Instead, we will focus on 2 of the most important ones in Task 1 and Task 2.

Task 1

Your group is the Local 94 union health and safety committee. Your task is to make a one-page poster for your co-workers explaining how to refuse unsafe work without being punished. Please use Factsheets A and C (pages 383, 384 and 386), and your own experience to draft a poster on a piece of flip chart paper.

Task 2

As a group, please read the following quote from a union member.

> **"I know that we have some health and safety problems here, but I'm not going to stick my neck out. Every time someone tries to do something, they get harassed by their supervisor. I'm not that dumb."**

Please use Factsheets D through I (pages 387-397), and your own experience, to answer the questions that follow. Choose one person from your group to be your reporter.

1.) What would your group say to this worker?

2.) How could you use OSHA rights to help you improve health and safety conditions at your workplace?

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.

(continued on the next page)

A. (continued)

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 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 with 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. A Guide to Health and Safety Rights and Regulations

There are many more rights and regulations that all workers should understand and use than we can cover in an 8-hour training. The factsheets in this activity are really here for you to use as a reference about some of the most basic rights and regulations protecting your health and safety on the job. Here is a list of what they are and where you can find them:

C. OSHA Rights: Your Rights 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 HIV/AIDS from a patient), **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.

D. OSHA Rights: Your Right to No Retaliation

Section 11(c) of the OSHA law* protects you from discrimination or punishment by your employer if you:

- **complain to your employer** about job safety or health conditions,
- **discuss health or safety matters with other workers** or participate in union activities concerning health and safety matters,
- **participate in workplace health and safety committee** activities,
- **file health or safety grievances or file a complaint** about workplace health and safety hazards with OSHA, state agencies, you local health department or fire department, or any other government agency, or participate in OSHA inspections,
- **file 11(c) complaints or give evidence** in connection with such complaints or testify before any panel, agency or court about job hazards.

Under this OSHA law, employers cannot:

- **fire, demote or assign** you to any undesirable job or shift,
- take away your seniority or **deny you a promotion**,
- **deny you benefits you have earned**, such as sick leave or vacation time,
- **spy or harass you or blacklist you** with other employers,
- take away your company housing, or **try to cut off your credit** at banks or credit unions.

This is the law, but if you have been discriminated against you must take action. **If we don't use our rights, we'll lose them!**

* In California this right is protected under section 6310 of the California Labor Code. It is not enforced by Cal/OSHA but by the state labor commissioner.

(continued on the next page)

D. (continued)

To use your OSHA 11(c) 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. You can file late if:

- your employer concealed or mislead you about why you were discriminated against
- you tried to handle the situation through a grievance under your union contract, or through another agency
- your employer is continuing to discriminate against you.

A successful anti-discrimination case should have these four components:

- the worker was taking actions that are protected by the law
- the employer knew what the worker was doing
- the employer retaliated against the workers
- there must be a connection between the worker's activity and the employer's retaliation

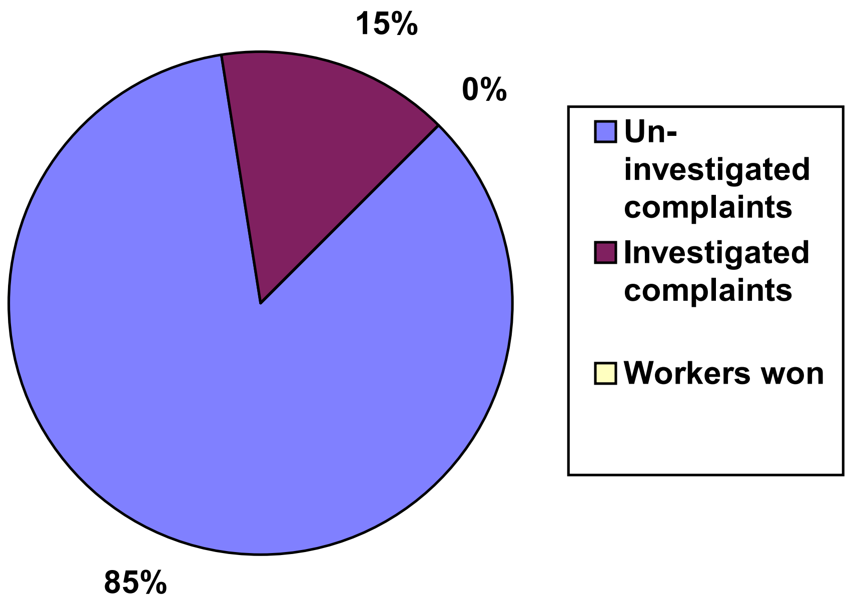
Within 90 days of filing an 11(c) complaint, the Secretary of Labor must respond. The Secretary of Labor does not have to conduct an investigation before deciding to enforce the 11(c) law.

If OSHA agrees that a worker was discriminated against, it can:

- get the worker's job back
- get the worker back pay with interest
- make sure the worker receives no negative references
- clean the worker's record of the illegal discharge or disciplinary action
- post a notice in the workplace to let other worker know what happened.

E. Is It For Real?

In 1992, Federal OSHA got 3,380 complaints from workers about discrimination. OSHA decided that 1/3 of these cases did not have enough evidence. Another 1/3 were never investigated. Only 510 cases were investigated. Of these, we don't know how many cases were won by workers.



Since employers often fight OSHA and NLRB, discrimination cases can take years. 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: OSHA 11c Office, Washington, DC.

F. Tweeeeet!

Several states have more laws to protect public workers who complain 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 "20: Resources" for addresses and phone numbers.

G. OSHA's Chemical Hazard Communication Standard (Right-To-Know Law) (29 CFR 1910.1200*)

In 1986, OSHA gave health care 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 health care 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 health care workers. health care workers and to the union have the right to see the policy.

Labels on Containers

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)

MSDSs 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 MSDSs must be "readily accessible" to health care workers during the work shift.

Use the sample letter on page 13 to get copies of MSDSs from your employer.

* In California the number of this standard is 8 CCR 5194.

(continued on the next page)

G. (continued)

Health care worker Education and Training

This is probably the most important part of the law. Employers must tell health care workers about the various parts of the Right-To-Know law. Employers must inform their health care 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 MSDSs.

Many government health care workers are covered by OSHA or by a state Right-To-Know law. Please see the map on page 379 to see if you are covered by OSHA. Public Employees in eleven states (AL, AR, CO, ID, KS, LA, NE, OH, OK, MS and SD) are not covered by any Right-To-Know law.

G. (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 OSHA's Hazard Communication Standard (29 CFR 1910.1200).

[If private sector employer, add] In addition to the Cal/OSHA standard, we are requesting this information under the National Labor Relations Act so that we can ascertain working conditions in order to represent our members.

It is our understanding that under 29 CFR 1910.1200, you have one workshift to provide the MSDSs.

Sincerely,

H. The Right to Act

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. However, many states have a Public Employee Bargaining law that gives you similar rights if you work for the government.

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)

If your employer punishes you for refusing to do life-threatening work, you have to file a complaint to the NLRB within 6 months of being punished.

I. 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 health care 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 health care workers in Maine have no OSHA protections at all. California has its own OSHA agency (Cal/OSHA). State health care workers in California have the same OSHA protections as health care 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 in 1992 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 Health Care Workers

Federal health care workers: If you are a federal health care 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 health care workers.

These rules are part of Executive Order 12196 (February 26, 1980) and in Section 19 of the Occupational Safety and Health Act. (Copies are available in many libraries, from the Government Printing Office, Washington, D.C. 20402, or from the SEIU Health and Safety Department.)

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I. (continued)

State, county, and city health care workers: If you work for a state, county, or city agency, you may be protected by a state OSHA law. 22 states have state OSHAs, which must protect public health care workers. 2 other states have OSHA-approved state plans for state and local health care workers only. (Private sector health care workers in these states are covered by the federal OSHAct.) 6 more states have chosen to set up their own programs for government workers. These plans are not approved by OSHA. They do not have to protect workers as well as federal OSHA. 20 states have no OSHA protection for state, county, or city agency workers. To find out what kind of OSHA coverage you have, see the map on the next page.

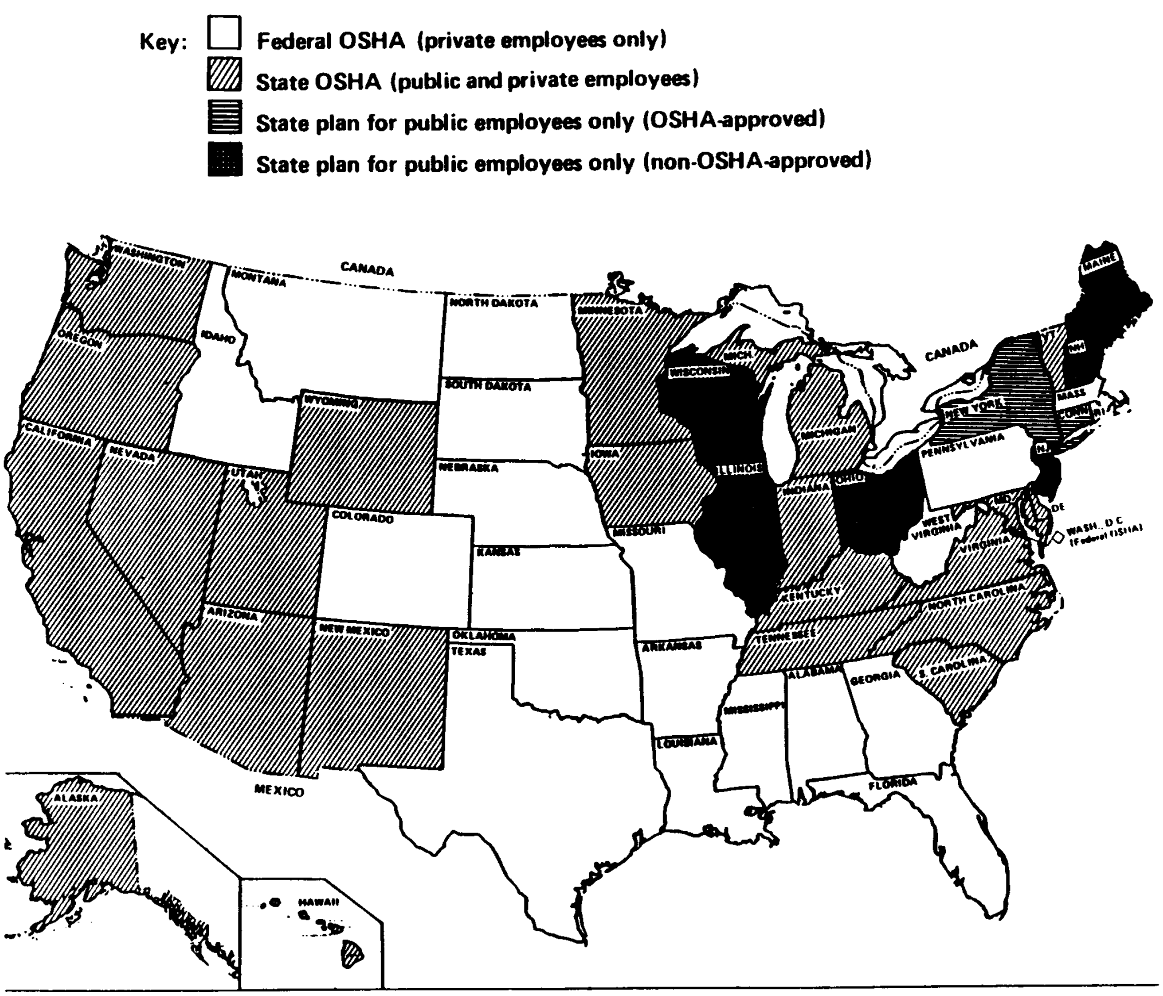
Worker Rights and Employer Responsibilities under OSHA

All health care 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).
- Health care 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."
- Health care workers and their unions have the right to be part of the whole inspection. The inspection includes a first meeting (opening conference), the "walk around" inspection, and a final meeting (closing conference). The employer does not have the right to choose which workers are part of the inspection.

I. (continued)

- Employers cannot fire, demote, take seniority from, or in any way discriminate against health care workers for safety and health activities.
- Most employers with more than 10 employees must keep records of who gets hurt or sick from their job. Health care 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.



J. Access To Exposure and Medical Records
(29 CFR 1910.1020*)

Under this rule, health care 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 health care 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 not 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 health care workers and their unions. Union representatives need written permission from health care 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.

* In California this standard is 8 CCR 3204.

J. (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 OSHA regulation 29 CFR 1910.1020:

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 non-ionizing 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. Pursuant to 29 CFR 1910.1020, 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 Cal/OSHA regulations, we are requesting this information under the National Labor Relations Act so that we can ascertain working conditions in order to represent our members.

Sincerely,

K. OSHA Form 200 (OSHA Log)—Injuries and Illnesses (29 CFR 1904.7*)

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
- transfer to another job
- unconsciousness, or
- lost workdays
- medical treatment
- light duty

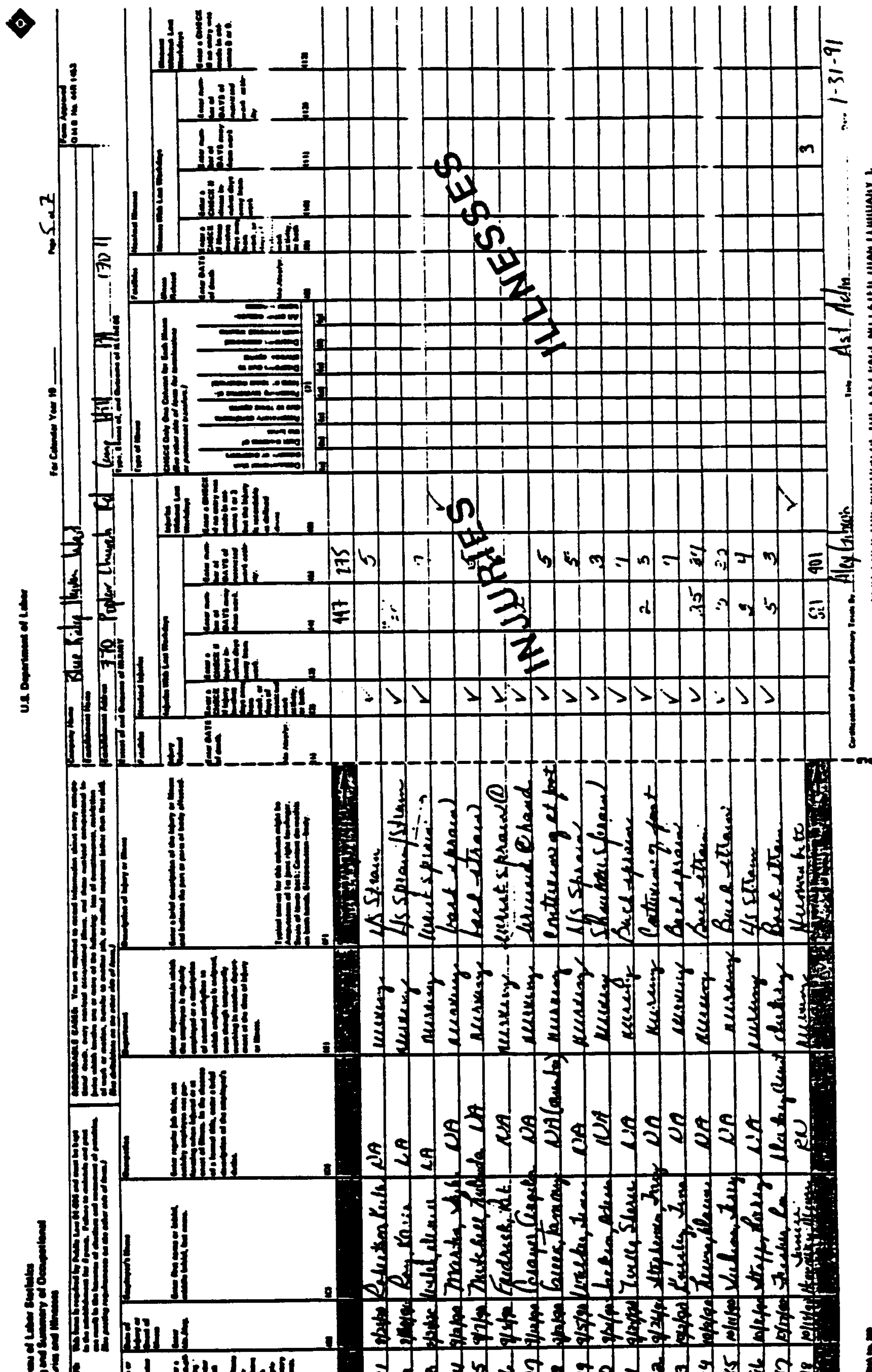
Management must make this log and an annual summary available upon request to any past or present health care workers and their representatives for examination and copying. (See the sample request letter on page 22.) A summary of the log must be posted by February 1 of each year and must remain up for 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 health care employers must keep a log.

It is important for unions to review the log to know how and where health care workers are being injured. Injuries, and especially illnesses, are not always recorded. The union should check the log whenever there is an injury to make sure it is recorded properly.

* In California the standard is 8 CCR 14301-14316.

K. (continued)


U.S. Department of Labor

Bureau of Labor Statistics
Log and Summary of Occupational Injuries and Illnesses

INJURIES

ILLNESSES

Asst. Adm.

1-31-91

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K. (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, unedited "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 regulation 29 CFR 1904.7(b)(1) and [if private sector employer] the National Labor Relations Act.

Once again, we are seeking the complete, unedited log, not the annual summary. Please contact me to discuss a time and place for examining and copying the logs. Thank you.

Sincerely,

Local Union Representative

L. The OSHA/EPA Emergency Response Regulation
(29 CFR 1910.120*)

Thousands of SEIU members respond to emergencies involving hazardous materials every year. These materials can be dangerous to both health care workers and communities. OSHA and EPA have developed a regulation for hazardous materials emergency response. It requires employers to:

- develop plans for responding to emergencies
- provide health care workers with training on their role in emergency response
- provide health care workers with training on how to protect themselves while doing emergency response

For example, the regulations require workers in the following situations to be trained:

- A pharmacist drops an IV bag of chemotherapy drug. The drug can kill your skin on contact.
- Two chemicals in the lab mix, forcing you and your co- workers out of the room.
- A cylinder of ethylene oxide leaks, making you and your co- workers sick.
- A doctor drops an IV bag of iodine-131 (a radioactive material) in X-ray.
- A patient comes into the emergency room covered with parathion, a very poisonous pesticide.

* In California the standard is 8 CCR 5192.

(continued on the next page)

L. (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 page 27 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 formaldehyde spill in a hospital lab that forces lab 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))

L. (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 health care 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 compressed gas springs a leak at your hospital, and your members spot the accident while they are working. 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 cones. They do not touch or go near the material.

The fire department may then send fire crews. Their job is to keep the gases that have already leaked from spreading. Even they may not have enough protection to touch the material. They may block off ventilation. They must wear firefighter's respirators 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

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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 health care 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.

What Kind of Training Must Workers Have?

Employers must train health care workers in how to respond to emergencies. Even health care workers who do not handle hazardous materials must be trained in how to recognize spills and who to call in

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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.

INCIDENT	TRAINING	PROTECTIVE EQUIPMENT
Clean up small spill on countertop	Right-to-know	• Gloves • Respirator
Witness large leak from gas cylinder	Right-to-know *plus* 8-hours Hazardous Materials (HazMat) training	None—worker is not qualified to handle materials in this situation
Stop leaked material from spreading	Right-to-know *plus* 24-hours HazMat training	• Firefighter's respirator
Turn off leaking cylinder	Right-to-know *plus* 48-hours HazMat training	• Fully-encapsulating chemical protective suit • Firefighter's respirator • Air sampling equipment

M. 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 clean up	3 types of training (taking at least 4 hours): • training in your employer's emergency action plan • training in chemical hazards (Hazards communication) • training in any other hazards at the site (for example, heat or cold, what to do if you are exposed 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.

N. Ethylene Oxide, Formaldehyde, and Asbestos

Although these chemicals have different dangers, the OSHA standards for all three are similar. They include:

Special signs and labels in areas with high levels of the chemicals.

Training for workers including health information and how to protect yourself.

Legal limits for how much workers are allowed to breathe.

Air monitoring to figure out if levels are above those limits.

Controls, like ventilation that must be used, along with

Respirators that workers must wear above certain levels.

Protective gloves and clothing in some situations.

Showers in areas with high levels of the chemicals, to wash off chemicals when you leave the work area.

Sources: OSHA Ethylene Oxide, Formaldehyde, and Asbestos standards, 29 CFR 1910.1047; .1048; and .1101. In California the standards are 8 CCR 5220; 5217; and 5208.

O. OSHA's Respirator Standard
(29 CFR 1910.134*)

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 if you ever have to wear a respirator. You can think of this as the "health care 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.
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

*** In California the standard is 8 CCR 5144.**

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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 the National Institute for Occupational Safety and Health (NIOSH).

7. **Your employer must choose a respirator based on the danger.** 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.

   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 should have another fit test every year if you have a negative pressure respirator. You should also have a fit

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test if the shape of your face changes. This could happen if you:

- gain or lose more than 10 pounds
- break your nose
- lose teeth or get new dentures
- get pregnant
- have surgery on your face

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.

P. 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 health care 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 "unfit" health care workers.

3. **The OSHA standard for respirators is long and complicated.** This standard has many requirements, all of which must be implemented by an employer who wants to use respirators to control health care worker exposures.

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.

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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 bump to the mask and it doesn't fit anymore.

P. (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 health care worker must be evaluated for fitness to wear a respirator by having a physician check the heart and lungs.

   If a health care 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" health care workers—particularly those with seniority.)

Q. The Joint Commission (JCAHO)

Most hospitals are inspected every 3 years by a private group called the Joint Commission on Accreditation of Healthcare Organizations (JCAHO). JCAHO is not a government agency, so hospitals don't have to have their inspection by law. But hospitals do have to have JCAHO inspections to get Medicare or Medicaid money. JCAHO also has a lot of prestige. So JCAHO is very important to most hospitals.

In 1989, JCAHO strengthened the health and safety sections of the inspection. The JCAHO inspection includes 6 main health and safety items that cover all hospital workers. These sections are also written to protect patients. JCAHO says that hospitals must have:

- A **written safety program** for each department, which meets all OSHA and EPA standards (Section EC.1.3)
- A **written security program** for each department, addressing violence in the workplace (Section EC.1.4)
- One person who is in charge of safety, who must do ongoing **inspections** (Section EC.3.1)
- A **management safety committee**, which must meet every 2 months (Section EC.3.2)
- Ongoing **training** for health care workers, based on health and safety problems that are found (Sections EC.2.1, HR.4.2 and HR.4.3)
- A **program for managing hazardous materials**, from the time they come into the hospital until they are thrown out (Section EC.1.5)

Q. (continued)

The inspection also has sections on:

- **Electrical safety** (Section EC.1.1)
- **Emergency plans**, if there is a chemical spill or other emergency in the community (Section EC.1.6)
- **Fire safety** (Section EC.1.1 and EC.1.7)
- **Infection control**, which may also protect health care workers from getting sick (Sections IC.1 through IC.6)
- **Safe use of equipment** (including radiation) (Section EC.1.8)

Source: JCAHO, 1996, *Accreditation Manual For Hospitals*, Vol. 1, Standards; CWA, *Health and Safety Manual for Hospital Workers*.

Summary: Your Legal Rights

1. OSHA gives all 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. For private sector (non-government) workers, the NLRB gives workers some more rights. Workers must act together to protest unsafe working conditions in order to be protected by NLRB.

3. Workers can get their jobs back, along with wages or benefits they lost if they win their cases.

4. In reality, OSHA accepts very few cases, and workers win very few of those.

5. Even when workers win, it can take years and years.

6. The best protection for workers is to get good language in your union contract.

NOTES

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20: Resources—For Help, Call . . .

SEIU Health & Safety Staff

Bill Borwegen
SEIU, Health and Safety Director
1313 L St., NW
Washington, DC 20005
(202) 898-3200 / Fax: (202) 898-3348
e-mail: Borwegeb@seiu.org

Michael Kushner
Project Coordinator
SEIU HazMat Training Project
704 S. Hartford Ave., Rm. 8
Los Angeles, CA 90017
(213) 833-1979 / Fax: (213) 833-1977
e-mail: kushnerm@seiu.org

Steve Schrag
SEIU H&S Representative / East
14 Quentin Street, Waterbury, CT 06706
(203) 574-7966 / Fax: (203) 574-0423
e-mail: Schrags@worldnet.att.net

SEIU HazMat Project at the SWEC

Laura Kurre
Jim Lane
Shirley Ware Education Center (Local 250)
560 20th Street
Oakland, CA 94612
(510) 869-2250 / Fax: (510) 763-2680
e-mail: lkurre@seiu250.org

:

Governmental Agencies and Resources

Agency for Toxic Substances
and Disease Registry
Public Health Service, Atlanta GA 30332
404-639-0700

Cal/OSHA (Division of Occupational Safety and Health [DOSH])
P.O Box 420603
San Francisco, CA 94142
(415) 972-8500 / Fax (415) 972-8656

Department of Transportation (DOT)
Hotline: 202-426-2075

EPA Hotline: 800-424-9346

National Technical Information Services (NTIS), Springfield VA 22161
703-487-4650 Fax 703-321-8547

NIOSH Headquarters, Building 1, Room 3007
Centers for Disease Control
1600 Clifton Road, Atlanta GA 30333
800-356-4674

Nuclear Regulatory Commission (NRC)
215-337-5000

Occupational Safety and Health Administration
U.S. Department of Labor
200 Constitution Ave., NW
Washington DC 20210
202-523-1452

Non-Governmental Agencies and Resources

American Conference of Governmental Industrial Hygienists (ACGIH)
Kemper Woods, 1330 Kemper Meadow Dr.
Cincinnati OH 45240
513-742-2020 Fax 513-742-3355

American Industrial Hygiene Assoc. (AIHA)
2700 Prosperity Ave., Suite 250
Fairfax VA 22031
703-849-8888 Fax 703-207-3561

American National Standards Institute (ANSI)
11 West 42nd St., NY NY 10036
212-642-4900

American Society of Safety Engineers (ASSE)
1800 East Oakton St., Des Plaines IL 60018
312-692-4121

American Society for Testing and Materials
1916 Race St., Philadelphia PA 19103
215-299-5585 Fax 215-977-9679

Citizens Clearinghouse for Hazardous Waste
PO Box 926, Arlington VA 22216
703-276-7070

Hazardous Materials Control Research Institute
7237 Hanover Parkway, Greenbelt MD 20770
301-587-9390

Hazardous Waste Treatment Council
1440 New York Ave., NW, Suite 310
Washington DC 20005
202-783-0870

National Environmental Law Center
29 Temple Place, Boston MA 02111
617-422-0880

National Fire Protection Association (NFPA)
1 Batterymarch park, PO Box 9101
Quincy, MA 02269
617-770-3000

National Safety Council
444 N. Michigan Ave., Chicago IL 60611
312-527-4800

Pesticide Action Network
116 Montgomery #810
San Francisco CA 94105
415-541-9140

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

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 95112
408-998-4050/Fax: 408-998-4051

CONNECTICUT
ConnectiCOSH
77 Huyshope 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)
Fax: 202-546-2331 (DC)
301-731-8530 (MD)
Fax: 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

COSH Groups (continued)

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

ENYCOSH (Eastern New York)
c/o Larry Rafferty
121 Erie Blvd
Schenectady, NY 12305
518-372-4308/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
Dick Edgington c/o ICWU-Portland
7440 SW 87 St., Portland, OR 07223
503-244-8429

PENNSYLVANIA
PhilaPOSH (Philadelphia)
3001 Walnut Street, 5th Floor
Philadelphia, PA 19104
215-386-7000/Fax: 215-386-3529

RHODE ISLAND
RICOSH (Rhode Island)
741 Westminster Street
Providence, RI 02903
401-751-2015/Fax: 401-751-7520

TENNESSEE
TNCOSH (Tennessee)
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

WISCONSIN
WisCOSH (Wisconsin COSH)
734 North 26th Street
Milwaukee, WI 53233
414-933-2338

CANADA
WOSH (Windsor, Ontario)
547 Victoria Ave., Windsor, Ontario N9A 4N1
519-254-5157/Fax: 519-254-4192

University Programs

CALIFORNIA
Labor Occupational Health Program
2223 Fulton St., 4th Floor
Berkeley, CA 94720-5120
510-642-5507/fax: 510-643-5698

UCLA Labor Occupational Safety and Health Program
6350 B Public Policy Building
Box 951478
Los Angeles, CA 90095-1478
310-794-5964/fax: 310-794-6410

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

NEW JERSEY
New Jersey Work Environment Council
452 East Third St.
Moorestown, NJ 08057
609-866-9405/fax: 609-866-9708

OHIO
Greater Cincinnati Occupational Health Center
10475 Reading Rd.
Cincinnati, OH 45241
513-769-0561/513-769-0766

DISTRICT OF COLUMBIA
Workers Institute for Occupational Safety and Health
1125 16th St., NW, Room 403
Washington, DC 20036
202-887-1980/fax: 202-887-0191

MICHIGAN
Michigan Right-to-Act Campaign
Ecology Center of Ann Arbor
417 Detroit St.
Ann Arbor, MI 48104
313-663-240/fax: 313-663-2414

NEW YORK
Tompkins Courtland Labor Coalition
109 West State St.
Ithaca, NY 14850
607-277-5670

WEST VIRGINIA
Institute of Labor Studies
710 Knapp Rd.
West Virginia University
Morgantown, WV 26506
304-293-3323/fax: 304-293-7163

World Wide WEB Sites

OSHA
http://www.osha.gov

Center to Protect Workers Rights
http://www.cpwr.com

EPA
http://www.epa.gov

NIOSH
http://www.cdc.niosh/homepage.html

Indexes of safety and health resources on the internet:
http://turva.me.tut.fi/~tuusital/oshlink.html
http://users.aol.com/dehawes2/pnsaiha.html

Federal and State Regulations:
http://www.gate.net/~gwarbis/solutions

US workplace safety and health law:
http://www.seton.com/safety.html

National Safety Council—Environmental health centers: http://envirolink.org

Your Favorite Contacts

Union local's health and safety rep:

________________________________ Phone number: ____________________

Members of joint health and safety committee:

____

____

____

____

____

____

Health and safety officer at work:

________________________________ Phone number: ____________________

Regional OSHA office:

________________________________ Phone number: ____________________

Regional EPA office:

________________________________ Phone number: ____________________

Regional Department of Labor office:

________________________________ Phone number: ____________________

Others:

________________________________ Phone number: ____________________

________________________________ Phone number: ____________________

________________________________ Phone number: ____________________

________________________________ Phone number: ____________________

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21: Glossary

Words in **bold** are defined 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.
anergy	Not reacting to a tuberculosis test. Caused by a weak **immune system**.
asphyxiant	Anything that causes a lack of oxygen in the blood so a person looses consciousness—chemicals and suffocation can do this.
awareness-level first responders	Workers who are trained about the dangers of spills, but are not trained to clean them up.
BBD	See bloodborne diseases
bloodborne diseases	Diseases that are carried in the blood, like **hepatitis B, HIV/AIDS, or malaria**.
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

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 nitrous oxide 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 groups of people who get sick, and figuring out what causes that sickness.
exposed	Getting chemicals or germs on your skin or in your body.
exposure control plan	A written plan for protecting workers from blood on the job.
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 chemical that can hurt a child in the womb (a fetus).
film badge	A small piece of film that can measure how much radiation a worker gets.
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.
Food and Drug Administration (FDA)	A U.S. government agency that covers the safety of drugs and food.

fume	For a respirator—a tiny speck of metal. Not the same as a gas or vapor (as in "diesel fumes").
gastrointestinal system	The mouth, throat, stomach, and guts.
geiger counter	A machine that measures radiation right away. Does not measure all kinds of radiation.
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 plan	A written policy for what to do with chemicals in a hospital. It must cover chemicals from the time they come in the hospital until they are thrown out.
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 together help fix health and safety problems. A joint labor-management committee 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.

health physics	The hospital department that protects workers from **radioactive materials**.
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.
HIV/AIDS	A disease that damages the **immune system**. It is carried in the blood. Caused by the Human Immunodeficiency Virus (HIV).
hood	A box with a fan used in pharmacies. 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.
human immunodeficiency virus (HIV)	The germ that causes HIV/AIDS.
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.
induration	A hard patch of skin caused by a **PPD test** when a person has the tuberculosis germ.
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.
life safety	Protecting people from fires, storms, or other safety problems.
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.
MDRTB	See multi-drug resistant tuberculosis
Mine Safety and Health Administration (MSHA)	A U.S. government agency that used to test respirators. Now tested by **NIOSH**.
MSDS	See Material Safety Data Sheet
MSHA	See Mine Safety and Health Administration
multi-drug resistant tuberculosis	A more dangerous kind of tuberculosis. The drugs that are usually used to treat TB will not kill these germs.

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 hospitals.
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 or Nuclear Regulatory Commission
NTP	See National Toxicology Program
nuclear medicine	The hospital department that uses **radioactive materials**.
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.
PPD test	See purified protein derivative test

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**.
radioactive material	Materials that are give off X-rays or tiny particles. Used to treat cancer and for other uses. They can cause cancer years after working with them.
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 isolation room	A special room for patients sick with tuberculosis. It has special ventilation.
respiratory therapy	A hospital department that treats patients with lung or chest diseases.
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 (report back), 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 and knows about radiation, pesticides, or other special dangers.
sterilization	Killing germs on surfaces or instruments with steam or chemicals (sterilants).
stewards, union	Workers who represent the union in the workplace. They have special training in solving problems and sometimes write **grievances.**
TB	See tuberculosis
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.
titer	A test given to some workers after **Hepatitis B** shots (vaccine). It tests whether the **vaccine** has worked.
TLVs	See threshold limit values
toxic	Poisonous. A chemical that can damage people's health.
tuberculosis	A disease that damages the lungs. It is spread in the air.

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.

NOTES