

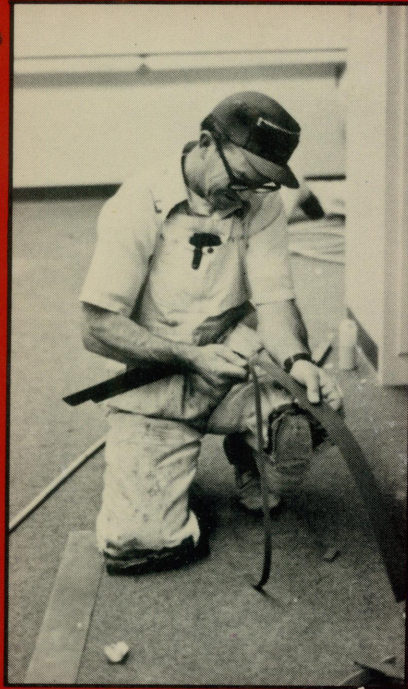


# Occupational Health & Safety

a manual  
for floor covering  
apprentices

By Janet Bertinuson  
and Sidney Weinstein

With Contributions from  
Morris Davis  
Bob Fowler  
Andrea Hricko  
Donald Whorton

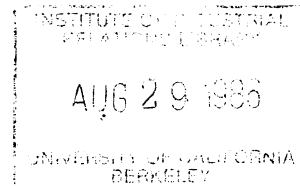


California University of International  
Relations & Commerce Center for Labor Research  
1000 University Avenue, Berkeley, California 94702-1300

California University, Institute of Industrial Relations  
(Berkeley). Center for Labor Research and Education.

# **Occupational Health & Safety:**

**a manual  
for floor covering  
apprentices,**



by Janet Bertinuson and Sidney Weinstein.

With Contributions from

Morris Davis,

Bob Fowler,

Andrea Hricko *and*

Donald Whorton *///*

A LABOR OCCUPATIONAL HEALTH PROGRAM PUBLICATION

*Berkeley 1976*

The Labor Occupational Health Program is part of the Center for Labor Research and Education, Institute of Industrial Relations, University of California, Berkeley. LOHP conducts research and education on safety and health for labor groups and workers in Northern California.

**LOHP Staff Associates** Janet Bertinuson  
Gene Darling  
Bob Fowler  
Andrea Hricko  
Lydia Vrsalovic  
Sidney Weinstein

Donald Whorton, M.D., *Director*  
Morris Davis, *Associate Director*

Graphic Design Dennis Gallagher

Illustrations Gordon Chun

**All materials were prepared under contract with  
THE OCCUPATIONAL SAFETY AND HEALTH  
ADMINISTRATION,  
UNITED STATES DEPARTMENT OF LABOR**

Copyright ©1976 The Labor Occupational Health Program

***T***his manual identifies potential hazards facing most floor coverers and discusses ways that workers can protect themselves. That this information be available to young workers just entering a trade is especially important. However, this manual's usefulness is not limited to apprentices. Older, more experienced workers can also benefit from the information covered.

**Acknowledgements** Special thanks to our reviewers—Marv Strand and Peter Gobbo from the Floor Covering Joint Apprenticeship Training Committee (California); the Health and Safety Committee of the Floor Covering Joint Apprenticeship Training Committee; Lydia Vrsalovic for long hours spent typing and proofing; and Marilyn Powers, Federal OSHA, who provided valuable assistance and support throughout the contract period.

# ***Table of Contents***

	<b><i>TITLE</i></b>	<b><i>PAGE</i></b>
CHAPTER 1	<b>INTRODUCTION TO OCCUPATIONAL HEALTH &amp; SAFETY</b>	<b>1</b>
CHAPTER 2	<b>INTRODUCTION TO HAZARDS IN THE FLOOR COVERING INDUSTRY</b>	<b>3</b>
CHAPTER 3	<b>CHEMICAL HAZARDS</b>	<b>5</b>
CHAPTER 4	<b>PHYSICAL HAZARDS</b>	<b>23</b>
CHAPTER 5	<b>SAFETY HAZARDS</b>	<b>27</b>
CHAPTER 6	<b>HAZARD IDENTIFICATION</b>	<b>33</b>
CHAPTER 7	<b>MEDICAL SCREENING</b>	<b>37</b>
CHAPTER 8	<b>FIRST AID</b>	<b>43</b>
CHAPTER 9	<b>OCCUPATIONAL SAFETY &amp; HEALTH LEGISLATION</b>	<b>47</b>
CHAPTER 10	<b>DOCUMENTATION</b>	<b>57</b>
APPENDIX A	<b>WORKPLACE STANDARDS</b>	<b>63</b>
APPENDIX B	<b>GLOSSARY OF MEDICAL TERMS</b>	<b>67</b>
APPENDIX C	<b>WORKER'S COMPENSATION</b>	<b>69</b>

# Introduction to Occupational Health & Safety

# 1

**M**ost of the 90 million working men and women in the United States spend one-half of their waking hours at work. Most are exposed at some time to health and safety hazards. Each year thousands are disabled or die from job-related injuries or diseases.

According to a Bureau of Labor Statistics report for 1974, work accidents in the private sector caused 5.6 million injuries, killing 5,200 workers (these figures *exclude* self-employed individuals and federal, state, and municipal employees). Though more difficult to count, occupation-related diseases clearly take a high toll. The same 1974 report estimated that 200,400 private sector workers became ill and 700 died from occupational exposures to dusts, fumes, gases, and other chemical and physical agents. According to the report, “*some illnesses of occupational origin may not be recognized and reflected in the statistics.*” The reasons cited are: occupational diseases often develop slowly, unknown to their victims; workers may change jobs, often making it difficult to monitor their health or associate their disease with a previous exposure.

Every year hazardous substances such as vinyl chloride, asbestos, and Kepone are identified and brought to the public’s attention. And every year, thousands of potentially hazardous materials such as adhesives used in floor covering are introduced into the workplace environment.

This country has a long history of death on the job. Until recently only dramatic disasters have successfully aroused the public’s interest and spurred much-needed protective and compensatory legislation. New York had no worker’s compensation until the 1911 Triangle Shirtwaist fire killed 146 women trapped in a clothing factory without fire escapes. The 1930-31 West Virginia Gauley Bridge disaster was even more shocking. By 1935, when the story finally broke, nearly 500 workers had died from tunneling through a mountain with a very high silica content. Though silica usually causes a slow-developing disease, high enough concentrations can cause immediate disability and even death. 169 of the Gauley Bridge victims literally died in their tracks. The Gauley Bridge disaster spurred amendment of West Virginia law to compensate workers suffering from silica-related lung disease, though not in time to compensate the Gauley Bridge dead or disabled.



In 1970, Congress finally passed the Occupational Safety and Health Act (OSH Act) to protect nearly all working persons. The OSH Act assures *“so far as possible every man and woman in the Nation safe and healthful working conditions.”* Under this law, the OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) sets and enforces mandatory health and safety standards; the NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH (NIOSH) conducts relevant research and suggests appropriate standards to OSHA. In addition the Act encourages states to administer and enforce their own occupational safety and health programs if they are *“at least as effective as the federal programs.”* As of June 1976, 22 states had programs (see Chapter 9 for more details about the OSHA Act).

Many unions, and public interest and scientific groups have been very active in the field of occupational health and safety. Three especially active international unions—UNITED AUTO WORKERS (UAW), OIL, CHEMICAL AND ATOMIC WORKERS (OCAW), and UNITED RUBBER WORKERS (URW)—have called strikes over health and safety conditions, negotiated health and safety contract language, testified at OSHA standards hearings, promoted research on hazardous substances, set up occupational safety and health offices, or established educational programs for their members. Scientific groups such as MT. SINAI ENVIRONMENTAL SCIENCES LABORATORY have identified hazards associated with asbestos, plastics, roofing materials, printing materials, and others. Public interest groups such as the ENVIRONMENTAL DEFENSE FUND and the HEALTH RESEARCH GROUP have testified at OSHA standards hearings and filed written comments on standard proposals. THE CHICAGO AREA COMMITTEE FOR OCCUPATIONAL SAFETY AND HEALTH (CACOSH) has promoted stricter enforcement of OSHA’s noise standard and passage of a stricter noise standard. Other COSH groups are active throughout the country.



# ***Introduction to Hazards in the Floor Covering Industry***

# **2**

**A**lthough floor covering is generally not considered a hazardous trade, floor covering mechanics are often exposed to potentially harmful substances. They also suffer from a large number of cuts, back, and knee problems. By developing a knowledge of the potential hazards and the means available to correct them, workers just entering the trade can help insure a long, healthful career.

The adhesives and solvents used to lay carpet, tile and sheet goods may contain hazardous substances. Among the adhesives used are epoxy resins and urethanes which contain isocyanates. Allergic reactions are common among workers exposed to urethane resins. Commonly used solvents include toluene, methyl ethyl ketone, and alcohols. Health problems from exposure to these materials range from headache and dizziness to serious lung disorders. Exposures depend upon the type of floor being layed, the type and amount of ventilation available, and personal protective measures used. Unfortunately, few of the solvents and adhesives used in the floor covering trade list either their contents or possible hazards associated with their use.

Health problems can also be caused by chemicals produced when carpet seaming tape is heated by the seaming iron. Asbestos fibers can be released by sanding old asbestos-backed floor tile or by cutting felt-backed vinyl sheet goods. Cases have been reported of floor covering mechanics with disabling asbestos-related diseases.

Floor coverers suffer a high incidence of back injuries from lifting heavy materials such as tile boxes, carpet, and sheet goods. Use of the knee kicker coupled with the large amount of time the mechanics spend on their knees makes knee problems very common in the trade. Hand tools causing cuts, and power tools causing hand and eye injuries as well as electrical shock are dangers. In addition, the use of torches and flammable adhesives and solvents adds a risk of fire and explosion.

**A** chemical's physical state—gas, vapor, fume, liquid, solid—and its particular properties determine how it enters and affects the body. Most hazardous substances used in the floor covering trade are either breathed in or cause direct damage when they come in contact with the skin. Some materials such as the solvent benzene can also be absorbed through the skin. The respiratory system (nose, air tubes, lungs) and the skin have well-developed defense systems protecting the body against invasion. However, these defense systems can be worn down or overcome. Even where defenses exist, they will not protect the body against all hazards, and health problems may result.

Effects on the body may be:

*Developing quickly, usually after exposure to high levels of a hazardous material, or* **Acute**

*Taking a long time to develop or requiring long exposures usually at low concentrations* **Chronic**

Acute effects are quickly seen. For example, contact with the solvent dimethylformamide can immediately cause severe skin irritation. Chronic effects usually do not show up for years, often making it difficult to link an exposure with the disease or effect. For example, *mesothelioma*, a rare cancer of the chest and abdomen lining, doesn't show up until 20-40 years after initial exposure to asbestos.

Health effects are also classified by *where* hazardous substances affect the body:

*Developing where the substance enters the body or comes into direct contact, or* **Local**

*Developing at some place other than the point of contact* **Systemic**

The solvent benzene can irritate the skin (point of contact) and cause contact dermatitis (local effect). This same solvent can enter the body through the skin or lungs (point of contact) to damage the bone marrow and possibly cause leukemia after chronic exposure (systemic effects).

Although most hazardous materials enter the body by being breathed in, the skin can also be badly affected. Occupational skin disease is

the most commonly recognized and reported job-related disease. Because of its location, the skin is subject to many hazards from which the rest of the body is protected.

The skin is also a major defense of the rest of the body against physical and chemical hazards.

Agents which damage the skin can be divided into three categories:

**Primary irritants** *Materials such as acids and alkalis that can burn the skin, or organic solvents that can remove skin oils and cause dryness, redness, or cracking*

**Sensitizers** *Substances such as poison ivy or industrial materials such as epoxy resins that can cause an allergic skin (or lung) reaction—once a reaction has occurred, any further exposure to the substance will produce an immediate allergic reaction.*

**Physical agents** *Agents such as ultraviolet radiation that can burn the skin; constant rubbing that can produce blisters and callouses; extreme cold that can cause frostbite; sharp instruments such as knives that can cause cuts and scrapes; and blows that can break the skin or cause bruises.*

Floor covering apprentices are exposed to asbestos dust, liquid solvents and adhesives, their vapors, and a few gases such as carbon monoxide, propane, and butane.

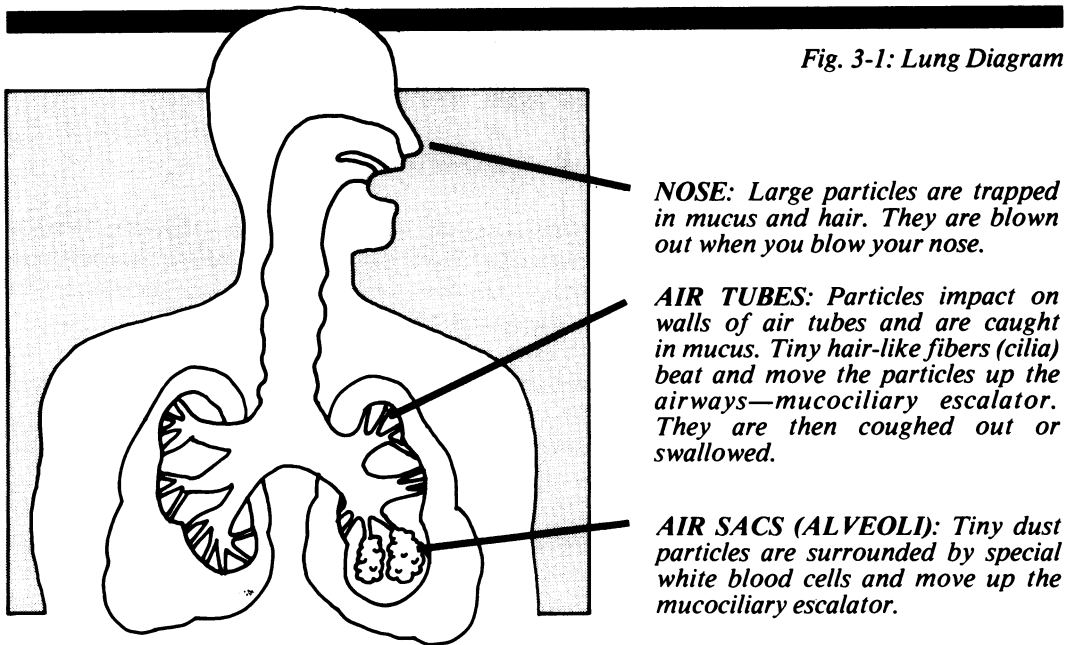
## ***Dusts***

Dusts are solid particles suspended in air. They are usually produced by crushing, sanding, grinding, or impact. The body's defenses against dusts are shown in the figure below. Only the finest or "respirable" dust particles can reach the lungs. Asbestosis is the major dust hazard facing floor coverers.

**ASBESTOS** Floor coverers are exposed to asbestos while sanding asphalt or vinyl asbestos floor tile. These tiles contain 15-20 percent asbestos fibers. Asbestos is a very dangerous substance. It can cause asbestosis, a crippling lung disease, and various cancers. Cigarette smoking definitely increases the risk of asbestos-related lung cancer.

*Asbestosis* is caused by scar tissue surrounding tiny asbestos fibers stuck in the lung's walls. This condition reduces the lungs' elasticity and breathing capacity, and can result in extreme tiredness, weight loss, and eventual inability to work. Other lung infections and heart disease may develop as by-products.

*Fig. 3-1: Lung Diagram*



Working with asbestos is very dangerous: 2 out of every 10 asbestos production workers die of lung cancer; 1 out of 10 dies of mesothelioma (a rare cancer of the stomach and chest linings); and asbestos production workers develop cancers of the stomach, large intestine, and rectum at three times the expected rate.

*Asbestos-related Diseases:*

*Usually appears 10-20 years after exposure      Asbestosis*

*Inhaled asbestos fibers cause lung scarring*

*Breathing is difficult*

*Cigarette smoking increases risk*

*Usually appears 20-40 years after exposure      Mesothelioma*

*Associated only with asbestos exposure*

*Fatal within 1 year after first symptoms appear*

*Even minimal exposure (2 months) can cause disease*

*Not affected by cigarette smoking*

**Other Cancers** *Usually appear 20-40 years after exposure*

*May affect lungs, stomach, large intestine, or rectum*

*Cigarette smoking increases risk of lung cancer*

**Controlling Asbestos Exposure** No exposure to asbestos is safe. Prevention is the only cure for most asbestos-related diseases so work practices eliminating asbestos dust are very important. As much as possible, employers should enclose and ventilate areas where asbestos is a possible hazard.

To reduce asbestos exposure:

- 1 *Never sand asbestos tiles or asbestos felt backing on vinyl sheet goods. Use the wet methods described in Table 3-1.*

*In addition, power tools used around asbestos should be equipped with a bag collection system. The bag's pore size must be small enough to trap particles 1 micron in size (1 micron = 1/25,000 of an inch).*

- 2 *Do as much cutting as possible by hand instead of with power cutters.*
- 3 *Vacuum or wet sweep all asbestos-containing debris. Never dry sweep.*
- 4 *Wherever possible, substitute unbacked for felt-backed flooring materials.*

**Table 3-1 Wet Methods for Removing Asbestos Tile or Asbestos Felt**

*Apply strong solution of powdered floor cleaner or automatic dishwasher detergent in all areas where adhesive will be applied. Let solution stand until all material including wax, grease, etc., has been soaked loose. Mop up, rinse, and allow to dry. Wear gloves if your hands will be in the solution.*

*Wet scrub areas with steel wool and strong detergent, or use an automatic floor scrubber. Rinse with clear water and dry.*

*To remove asbestos felt: Soak felt with a 50-50 solution of denatured alcohol and water. Isopropyl or wood alcohol may be used in place of denatured. The alcohol solutions are flammable. Eliminate all flame sources and warn other workers or customers in the area of the hazard. Place felt in a closed plastic bag or covered metal container to reduce the fire danger.*

*Strong alcohol solutions are a health hazard. Work with adequate ventilation and respirators if necessary.*

*Adapted from an announcement sent to Congoleum retailers by Congoleum Industries, July, 1975.*

When controlling dust concentrations is impossible, use respirators as temporary or emergency protective measures. Only use surgical gauze-type face masks *if they are specifically approved for asbestos exposure.*

Three types of respirators are approved by NIOSH and the Bureau of Mines for asbestos exposure. Their use depends on the amount of asbestos in the air.

*To be used when dust concentrations are less than 10 times the OSHA standard (2 fibers per cubic centimeter of air)*

***Filter air-purifying respirator***

*To be used when the average dust concentrations are 10 to 100 times greater than the asbestos standard*

***Powered air-purifying respirator***

*To be used when dust concentrations are more than 100 times the OSHA standard*

***Type "C" supplied-air respirator***

Sources of asbestos exposure are sometimes surprising. Members of workers' families may develop asbestos-related diseases from exposure to dusty work clothes. One mesothelioma victim had played in an asbestos dump as a child, 50 years before developing the disease. To protect their families, exposed workers should wash thoroughly before leaving the worksite. *Don't take workclothes home.*

In June 1976 the OSHA asbestos standard was lowered from 5 fibers per cubic centimeter of air averaged over 8 hours to 2 fibers. Although most floor covering mechanics are exposed to less than 2 fibers, cases of asbestos-related disease have been reported for floor coverers.

**Federal Asbestos Standard**

In the Fall of 1975, the Department of Labor proposed a ½ fiber standard. If adopted, this standard would increase worker protections. Federal and State Standards also prescribe (make mandatory) employer-provided medical examinations, workplace monitoring, and record-keeping.

## **Gases**

Gases are formless at room temperature, expanding to fill their containers—bags, cylinders, rooms, etc. Increasing pressure and decreasing temperatures will convert gases into solids or liquids.

Toxic gases can directly affect the body by irritating the nose, eyes, lungs, etc., or they can cause systemic effects on the nervous system

or other organs when inhaled. High concentrations of some gases may cause suffocation (asphyxiation) by replacing oxygen in the air. The body's defenses against overexposure include smell, tearing eyes, throat irritation, or coughing. However, workers may be exposed to some gases without their knowledge. Carbon monoxide, for example, has no warning properties. Other gases may dull the sense of smell after awhile.

The most widespread gas to which floor coverers are exposed is carbon monoxide.

### ***CARBON MONOXIDE***

Released by incomplete burning of carbon-containing fuels such as oil or gasoline, carbon monoxide is one of the most widespread occupational hazards. The automobile is the chief source of this gas in the general environment. Floor covering mechanics may be exposed to carbon monoxide released by forklifts or gasoline-powered generators. Though diesel-powered vehicles produce less carbon monoxide than internal combustion engines, they still emit significant amounts unless well-tuned and properly maintained. Where possible, electric engines should replace gas or diesel-powered engines. Fuel burning engines should at least be kept tuned. Also keep gasoline generators outside a work area to eliminate carbon monoxide exposure.

### ***How Does Carbon Monoxide Affect the Body?***

After being breathed in, carbon monoxide combines with the blood's oxygen carrier, *hemoglobin*. Because hemoglobin combines much more readily with carbon monoxide than oxygen, exposure to substantial carbon monoxide levels can reduce the entire body's oxygen supply. Initial symptoms include headache, dizziness, nausea, and vomiting. Higher exposures can result in a worker's passing out, or death. This "*oxygen starvation*" most severely affects the heart and brain. Persons with existing heart conditions can suffer additional heart damage when exposed to high levels of carbon monoxide.

### ***OTHER GASES***

Other toxic gases to which floor coverers are exposed include propane and butane used as torch fuels. These gases are highly flammable, and can produce carbon monoxide while burning. Compressed, these gases can freeze tissues on contact (like grabbing a piece of dry ice).

## ***Vapors***

Vapors are gaseous forms of substances that normally exist as liquids or solids at room temperature. They usually form when liquids or solids are heated; however, most solvents can vaporize without being heated. Both the vapors and the materials from which they evaporate can be hazardous. Although they are usually breathed in, some vapors can also damage the skin or enter the body through the skin. The



irritating effects and distinctive odor of many vapors warn workers of exposure. Floor coverers are exposed to hazardous vapors from solvents and some adhesives as well as their liquid or solid forms.

Solvents are the most widespread group of industrial chemicals. Some, such as soap and water are water-based. Most are *organic*. This means they contain carbon, the basic element of all living (organic) things. All organic solvents are hazardous to some degree.

## **SOLVENTS**

No solvent is completely safe; even soap and water can irritate the skin, especially with repeated or long-term contact. Solvents can dissolve skin fats and oils, causing dermatitis (skin dryness, cracking, redness, blisters) and leaving the skin open to infection.

## **Hazards of Solvents**

Properties such as low evaporation temperature, attractive for industrial use, increase the hazard to workers. When breathed in, solvent vapors can enter the blood stream and travel to other parts of the body (particularly the nervous system). Headache and drunkenness are common effects of solvent exposure.

Solvents such as *toluene* may be contaminated by extremely dangerous substances such as *benzene*. Most solvents are highly flammable. Heating a solvent increases the risk of explosion and releases potentially toxic vapors and gases.

Following is a list of common floor covering solvents. The substances in each group share similar properties and affect the body similarly, though to different degrees. In many cases, dangerous solvents can be replaced by less hazardous members of the same group. For example, *toluene* can be used instead of the more irritating *xylene*. Practically all of the solvents listed below can at least cause some form of dermatitis and drowsiness. Some, especially chlorinated hydrocarbons such as *carbon tetrachloride* and *trichloroethylene* are suspected of causing cancer. *Carbon tetrachloride* should never be used. Some aromatic and chlorinated hydrocarbons have also been linked to changes in hereditary material of exposed workers, and to birth defects and damage in the offspring of exposed laboratory animals.

*All alcohols are highly flammable, with explosion temperatures at or below average room temperatures. They can irritate the eyes and upper respiratory tract (nose, throat, air passages) and cause sleepiness and mild skin irritation. Though low-level exposures to the most common alcohol solvent, methanol (methyl or wood alcohol) produce no obvious toxic effects, long-term exposure can damage the liver. Methanol can cause blindness and death when swallowed. (The alcohol in beer and whiskey is ethanol or grain alcohol).*

## **ALCOHOL**

## **AROMATIC HYDROCARBONS**

*Derived from benzene, these flammable solvents are used to dissolve rubber, plastics, paint, etc. All can cause sleepiness and severe skin irritation. Their odors are distinctive at or below the TLV (legal exposure limit—Threshold Value Limit).*

***Benzene** is particularly hazardous and should be completely avoided. There is no reason to use benzene at all. Use safer substitutes! However, benzene often contaminates other industrial solvents such as toluene, xylene, petroleum naphtha, and gasoline. Benzene can destroy the bone marrow's ability to produce red and white blood cells, causing anemia (too few red blood cells) and blood-clotting difficulties. Exposure to benzene has been linked to leukemia (blood cancer), and it is suspected of causing damage to exposed workers' genetic material.*

***Toluene** is often contaminated with benzene and can therefore be exceedingly dangerous. By itself, toluene does not seem to harm the blood or cause genetic damage. Exposure to its fumes affects judgement and reflexes, possibly contributing to accidents.*

***Xylene**, a stronger irritant than toluene, and less toxic than benzene, may also be contaminated with benzene. Xylene can also cause red and white blood cell changes.*

## **ALIPHATIC HYDROCARBONS**

*Aliphatic hydrocarbons are generally less toxic than other hydrocarbons. They can still cause dermatitis or drowsiness. Exposure to high levels of **n-hexane** can cause nerve damage, resulting in numbness and loss of muscle control of the limbs. **Petroleum naphtha** is a mixture of chemicals possibly containing benzene as a contaminant.*

## **CHLORINATED HYDROCARBONS**

*These nonflammable solvents are used as dry cleaning degreasers and as general solvents. Some can damage the liver. Several are known or suspected of causing cancer. All can cause dermatitis and drowsiness.*

***Completely avoid carbon tetrachloride.** Even small concentrations can be highly toxic to the liver and kidneys. High concentrations of **methyl chloroform** (1,1,1-trichloroethane), considered safer than others, can damage the liver, though less severely than carbon tetrachloride. **Trichloroethylene** can damage the liver and kidneys and may cause cancer. **Methylene chloride** can irritate the eyes and cause dizziness. When inhaled, it is converted to carbon monoxide by the body.*

## **KETONES**

*These solvents can irritate the skin, eyes, nose, and throat, and cause mild drowsiness. High concentrations can cause dizziness. Long-term exposure can cause chronic lung irritation.*

*Acetone, the substance you smell in nail polish and one of the most common industrial solvents, is one of the least harmful, causing only minor irritation. Methyl ethyl ketone can be absorbed through the skin. It mixes easily with toluene. Mixed with toluene, it causes drowsiness and nausea, and affects judgement to a greater extent than by itself.*

*These solvents can cause dermatitis, drowsiness, chest tightness, and eye irritation.* **ACETATES (Esters)**

*Cellosolve can harm the red blood cells and irritate the lungs. Long-term exposure may cause tremor, forgetfulness, tiredness, or headaches.* **GLYCOLS**

*Highly flammable themselves, these substances can also combine with oxygen in the air to form peroxides. Peroxides can explode without being lit.* **ETHERS**

*Furfural, used for plastic resins, and the slightly less toxic tetrahydrofuran, can cause headache and tiredness. The strong skin irritant dimethyl-formamide has been shown to damage exposed animals' livers and kidneys. Ammonia can burn the eyes and lungs and, in high concentrations, cause unconsciousness and death.* **OTHERS**

*Adhesives are used to glue down carpet, sheet goods, and tile. Many contain hazardous organic solvents or other chemical substances. Some are packaged in dangerous aerosol containers.* **ADHESIVES**

*Epoxy resins are particularly useful because they are resistant to other chemicals and weathering, don't conduct electricity, and "cure" at room temperature. Once hardened, these "thermosetting" plastics (the chemical reaction between the resin and the "curing" agent produces heat which hardens the resin) cannot be softened.* **Epoxy Resins**

*Epoxy resins can irritate and sensitize both the skin and the lungs. Between 40 and 50 percent of all exposed workers become sensitized (allergic reaction). Once the skin has been sensitized, any contact immediately causes an itching reacting (allergic dermatitis) at the point of contact. The effect on the lungs is similar to asthma. In a sensitized individual, exposure causes the air passages to tighten up, making breathing difficult.*

*Even "minor" amounts of these compounds can be hazardous. For example, toluene diisocyanate (TDI) and methylene diphenyl isocyanate (MDI) are toxic in both liquid and vapor forms. Both are widely used in seam sealers. A significant number of persons exposed to the legal exposure limit (0.02 ppm) become sensitized. For sensitized persons, even minute exposures can trigger an asthma-like allergic response—* **Isocyanates**

*dry cough, shortness of breath, breathing difficulties, and sometimes choking. Those who have reacted to TDI or MDI must completely avoid any additional contact with the substance. At levels well above the TLV, isocyanates can also burn delicate eye tissues, dry out mucous membranes, and irritate the throat. Never smoke or eat around any isocyanates. Always clean workclothes separately from other clothing.*

**AEROSOLS** *If possible, avoid aerosol containers completely. The substances used as propellants are often hazardous and the cans can explode. Vinyl chloride, used as an aerosol propellant until 1974, can cause a rare liver cancer. Freon, a common propellant, can cause heart problems, even death, when inhaled. It is also suspected of damaging the earth's protective ozone layer.*

**LABELLING** *Determining how to protect workers against hazards of adhesives*  
**(Adhesives)** *may be particularly difficult. Few adhesive labels or manufacturer's trade names indicate the product's specific contents or potential hazards. The following two examples are characteristic of many adhesive labels:*

*From a sheet-vinyl adhesive,*

**CAUTION: KEEP OUT OF REACH OF CHILDREN**

**DO NOT TAKE INTERNALLY**

*From a latex adhesive label,*

**USE ADEQUATE VENTILATION.**

**OPEN DOORS AND WINDOWS.**

**AVOID PROLONGED BREATHING AND SKIN CONTACT.**

*Neither lists hazardous ingredients or particular exposure effects.*

Ideally, labels should include the substance's use, its ingredients, potential hazards, and protective measures. An acceptable contact adhesive label would be:

**CONTACT ADHESIVE FOR BRUSH APPLICATION**

**WARNING: HARMFUL VAPOR, MAY CAUSE FLASH FIRE**

**HAZARDOUS INGREDIENTS: METHYL ETHYL KETONE,**

**TOLUENE, PETROLEUM DISTILLATES, ACETONE**

**AVOID BREATHING VAPORS.**

**AVOID PROLONGED CONTACT WITH SKIN OR EYES.**

If labels *at least* listed ingredients, workers could themselves determine potential hazards, appropriate protective measures, and critical

exposure levels. Although labels are often inadequate, you should still read them—they may give some idea of the potential hazards.

Hundreds of new substances are introduced into floor covering products each year. Though many have been fairly adequately tested for short-term effects by the manufacturer, few have been tested for long-term hazards such as cancer, damage to the blood and internal organs, chronic lung disease, or the ability to cause birth defects and affect heredity (mutations).

### **How to Protect Yourself Against Solvent and Adhesive Hazards**

Most health effects and occupational skin diseases can be prevented. To protect yourselves:

*Never use any chemical sloppily. All are potentially hazardous, and few have been adequately tested for long-term effects.* 1

*Find out the scientific names of the chemicals to which you are exposed. You may have to request this information from manufacturers marketing their products under brand names.* 2

*Ask your employer to substitute safer products such as toluene for benzene. Such substitutes reduce the hazard, but do not eliminate it. Beware of substituting untested substances.* 3

*Avoid completely: benzene; carbon tetrachloride; trichloroethylene; carbon disulfide; methyl butyl ketone; dioxane; and nitrobenzene. There are safer substitutes.* 4

*Be aware that benzene is a possible contaminant of toluene, xylene, petroleum naphtha and gasoline. When using these substances try to find out how pure they are.* 5

*Solvent levels in the air can be measured. If you feel that you are overexposed, request that sampling be done.* 6

*As much as practical, areas where solvents and adhesives are being used should be adequately ventilated.* 7

*You should have check-ups, including lab tests, by a doctor of your choice.* 8

*Avoid smoking and other ignition sources around adhesives. Turn off gas and pilot lights when using seam sealers and contact cement. Explosions have occurred when this procedure wasn't followed. When the job is finished, inform the customer that the gas is off if you haven't turned it back on or relit the pilot light.* 9

*Wash your hands frequently, but never with organic solvents or* 10

*abrasives.*

- 11 *When appropriate, wear adequate protective clothing such as aprons, gloves, shoes, etc. Do not wear rubber gloves; they can be penetrated by organic solvents.*
- 12 *Be aware that protective barrier creams don't protect your skin against all possible agents, nor is any cream 100 percent effective against any single substance.*
- 13 *Wear clean work clothes. Immediately change clothes soaked by chemical agents.*
- 14 *Keep track of any symptoms or health effects that may be linked to job-exposures, and accidents, no matter how minor.*
- 15 *Ask about the contents and associated health effects of any new products you are told to use.*

***Monitoring for Chemical Hazards***

Knowing a worker's exact exposure to chemical hazards is important to both employees and employers. Employees because they may be exposed to potentially dangerous substances or to physical hazards. Employers because they are responsible for controlling workers' exposures to hazardous substances or situations. As a first step to controlling worker exposures, employers should make provision to monitor (measure) air contaminants in the work environment. A variety of monitoring instruments, many expensive and elaborate, are available. Generally, these instruments should be used by trained persons such as industrial hygienists. Workers have the right to see the monitoring results.

**Sampling Principles**

The three basic sampling principles are: where should sampling be done? when? and how long?

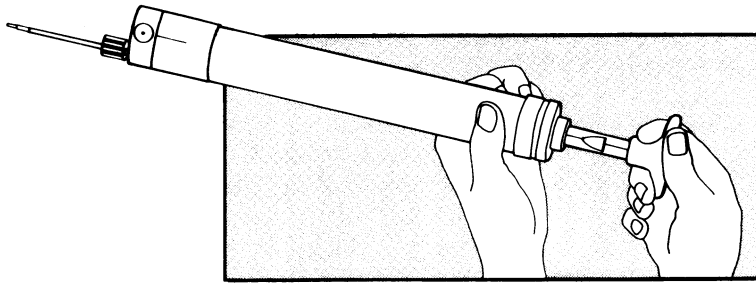
***Where*** *Sample at the point of exposure. The best air sample is at the worker's breathing zone. The best type of sampler can be worn all day and takes in air as close to the breathing zone as possible.*

***When*** *Sample as often as necessary to pick up peak (highest) exposures and to account for any changes due to seasonal or operational variations.*

***How long*** *Sample as close to 8 hours as possible. Most standards are 8-hour averages. If a continuous 8-hour sample is impossible, several shorter samples can be taken and averaged.*

Air sampling instruments or sampling set-ups can be direct-reading or require laboratory analysis. One of the simplest and least expensive direct-reading instruments available is the pump and detector tube

illustrated below.



In this set up, air is drawn through a tube containing a chemical that changes color in proportion to a particular substance's concentration. These tubes are available for more than 100 gases and vapors. Many have been certified by NIOSH.

Other direct-reading instruments pull air directly through a sampling opening and read out the contaminant's concentration on a meter. Examples are carbon monoxide indicators and explosive gas meters.

More elaborate sampling systems consist of a manually or electrically powered pump and sample collector. The collector may be a filter for dusts or fumes, or a special bottle (impinger), cylinder, or bag for vapors and gases. Samples taken with these systems require laboratory analysis to determine exposure levels.

Once sampling shows that workers are being exposed to "dangerous levels of hazardous materials," these exposures must be reduced and controlled. The three points to control airborne chemical hazards are: at their source, in their path, and at the receiver (worker).

### **Controlling Airborne Chemical Hazards**

Source controls are most effective because they actually remove the substance from the work environment. Types of source controls are:

*Such systems should: be designed for the specific operation; pull contaminants away from workers' breathing zone; have high enough air speed (velocity) to capture the contaminant; and have their filters or dust traps changed or cleaned regularly.*

### **Local Exhaust Ventilation Systems**

*Such as substituting wet methods for sanding asbestos-backed tile or felt backing on vinyl sheet goods.*

### **Process Modification**

*Such as pure toluene for benzene or the relatively harmless acetone for more dangerous solvents.*

### **Substitution of a Safer Substance**

Although path controls don't eliminate the substance itself, they can effectively reduce worker exposures. Types of path controls include



putting workers in control booths, and increasing the distance between workers and the exposure source. For example, keeping a gasoline-powered generator outside the work area limits floor coverers' exposure to carbon monoxide.

Controlling hazardous substances at the receiver is the least effective control method. Types of receiver controls include job rotation or frequent breaks during the day, and the use of personal protective equipment.

***Personal  
Protective Equipment***

Workers should be provided with respirators when ventilation systems or other controls either cannot be used, are being planned and installed, or do not adequately control exposures. Respirators can also provide back-up protection against unexpected hazards or in emergency situations.

Respirators may not provide workers with adequate protection. They may leak; they may not be properly cleaned and maintained. They may be equipped with the wrong canister (see description of air purifying respirators below). They may be improperly worn. Few respirators are adequately tested. In addition, workers may find it hard to wear respirators. They are difficult to breathe through. They may obstruct vision. They may interfere with work. Some are awkward and heavy. (See Table 3-3 for OSHA guidelines to establishing a respirator program).

Only use respirators approved by the National Institute of Occupational Safety and Health (NIOSH) or the Mining Enforcement and Safety Administration (MESA). Check the respirator box for their statement of approval.

There are 2 major types of respirators—air cleaning (air purifying) and air-supplied.

***Air Cleaning  
Respirators***

Air cleaning respirators draw the wearer's breathed-in air through a pad or chemical to filter out harmful dusts, gases, or vapors. These respirators are equipped with replaceable filters (for dusts) or canisters (for vapors and gases). Filters and canisters are approved for specific substances. To select the appropriate filter or canister, you must know:

- 1 What the material is to which you are being exposed***
- 2 How dangerous it is and how it affects the body***
- 3 The material's concentration in your work environment (from monitoring)***

*The appropriate OSHA or state standard(s)*

*The length of time you are exposed*

Filters, cartridges, and canisters have limited lifetimes. Once used up, they must be replaced. In addition, the chemical canisters are coded for the particular substances against which they will protect you (see Table 3-2 for codes). They will *not* protect you against substance for which they were not designed. Floor covering mechanics might expect to use respirators for asbestos, solvent vapors, and gases.

In these respirators, a clean air source supplies air to a face mask. Air-supplied respirators should be used when the oxygen supply is limited, when workers are exposed to extremely dangerous materials, or when concentrations of a substance are so high that an air purifying respirator does not sufficiently protect the worker. These respirators can supply air either continuously or as the worker breathes in. The 3 basic types are: (1) *self-contained breathing apparatus*, (2) *air line*, and (3) *air hose*.

***Air-Supplied  
Respirators***

**Color Assigned to Canister or Cartridge (ANSI K13.1-1973)** *Table 3-2*

<i>Atmospheric Contaminants to be Protected Against</i>	<i>Color Assigned (ISCC-NBS Centroid Color Number) ISCC-NBS Centroid Color Name</i>
<i>Acid gases</i>	<i>White (263) White</i>
<i>Organic vapors</i>	<i>Black (267) Black</i>
<i>Ammonia gas</i>	<i>Green (139) Vivid green</i>
<i>Carbon monoxide gas</i>	<i>Blue (178) Strong blue</i>
<i>Acid gases and organic vapors</i>	<i>Yellow (82) Vivid yellow</i>
<i>Acid gases, ammonia, and organic vapors</i>	<i>Brown (75) Deep yellow brown</i>
<i>Acid gases, ammonia, carbon monoxide, and organic vapors</i>	<i>Red (11) Vivid red</i>
<i>Other vapors and gases not listed above</i>	<i>Olive (106) Light olive</i>

*Radioactive materials (except tritium and noble gases)*

*Purple (218) Strong purple*

*Dusts, fumes, and mists (other than radioactive materials)*

*Orange (48) Vivid orange*

- NOTES:**
- (1) A purple (ISCC-NBS Centroid Number 218) stripe shall be used to identify radioactive materials in combination with any vapor or gas.
  - (2) An orange (ISCC-NBS Centroid Number 48) stripe shall be used to identify dusts, fumes, and mists in combination with any vapor or gas.
  - (3) Where labels only are colored to conform with this table, the canister or cartridge body shall be gray (ISCC-NBS Centroid Number 265), or a metal canister or cartridge body may be left in its natural metallic color.
  - (4) The user shall refer to the wording of the label to determine the type and degree of protection the canister or cartridge will afford.

This material is reproduced with permission from the American National Standard "Practices for Respiratory Protection" Z88.2 copyright 1969 by the American National Standards Institute, copies of which may be purchased from the American National Standards Institute at 1430 Broadway, New York, N.Y. 10018.

**Table 3-3 Requirements for a minimal acceptable (respirator) program**

- 1** *Written standard operating procedures governing the selection and use of respirators shall be established.*
- 2** *Respirators shall be selected on the basis of hazards to which the worker is exposed.*
- 3** *The user shall be instructed and trained in the proper use of respirators and their limitations.*
- 4** *Where practicable, the respirators should be assigned to individual workers for their individual use.*
- 5** *Respirators shall be regularly cleaned and disinfected. Those issued for the exclusive use of one worker should be cleaned after each day's use, or more often if necessary. Those used by more than one worker shall be thoroughly cleaned and disinfected after each use.*
- 6** *Respirators shall be stored in a convenient, clean, and sanitary location.*
- 7** *Respirators used routinely shall be inspected during cleaning. Worn or deteriorated parts shall be replaced. Respirators for emergency use such as self-contained devices shall be thoroughly inspected at least once a month and after each use.*
- 8** *Appropriate surveillance of work area conditions and degree of*

*employee exposure or stress shall be maintained.*

*There shall be a regular inspection and evaluation to determine the  
continued effectiveness of the program.* 9

*Persons should not be assigned to tasks requiring use of respirators  
unless it has been determined that they are physically able to perform  
the work and use the equipment. The local physician shall determine  
what health and physical conditions are pertinent. The respirator  
user's medical status should be reviewed periodically (for instance  
annually).* 10

*Approved or accepted respirators shall be used when they are available.  
The respirator furnished shall provide adequate respiratory protection  
against the particular hazard for which it is designed in accordance  
with standards established by competent authorities.* 11

from: *The Federal Register*. Vol. 39, No. 25, Part 1910.134(3)(b);  
Occupational Safety and Health Standards, June 27, 1974.

**N**oise is a hazard present not only in the work environment but in the general environment as well. Floor covering mechanics work with power tools such as sanders, edgers, and drills in addition to equipment such as air compressors. All of these may produce high noise levels.

Noise is basically unwanted sound. As sound it travels in waves and can be measured by *loudness* (or intensity) and *pitch* (or frequency). Pitch is measured in cycles per second or HERTZ (Hz) while loudness is measured in decibels (dB). The decibel unit may be confusing because it is a relative term. 0 decibels is the quietest sound a person with “good” hearing can hear in a quiet place. Decibels are based on powers of ten, so a 10 decibel increase means the sound or noise is 10 times louder. To illustrate:

## *What is Noise?*

- Traffic at 70 decibels is 10 times louder than normal speech at 60 decibels*
- 50 feet from a pneumatic drill, the noise level is 80 decibels or 100 times louder than speech*
- An edger at 90 decibels is 10 times 10, times 10, or 1,000 times louder than speech*
- A sander producing 100 decibels is 10 times 10, times 10, times 10, or 10,000 times louder than speech*

The current Federal standard (also used by states with their own OSHA programs) is 90 dB, averaged over an 8-hour day. Higher exposures have separate limits (see Table 4-1 below). Measurements of edgers and sanders have shown they produce noise levels above the standard.

**OSHA PERMISSIBLE NOISE EXPOSURE** *Table 4-1*

<i>Sound Level—Decibels on A Scale</i>	<i>Hours/Day</i>
90	8
92	6
95	4
97	3
100	2

### ***Sound Level—Decibels on A Scale***

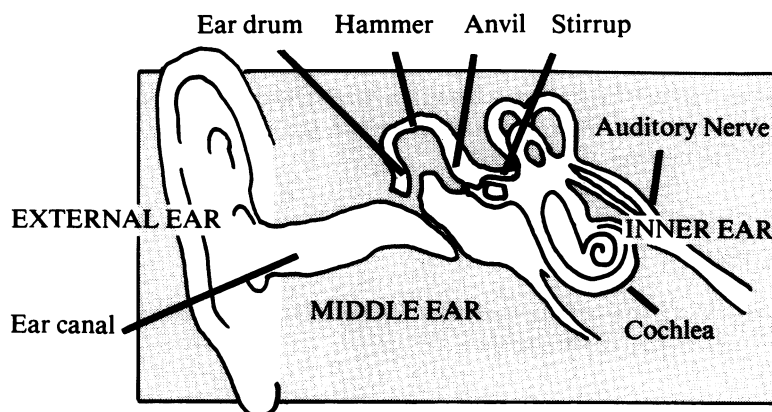
### ***Hours/Day***

102	1½
105	1
110	½
115	¼

### ***How Does Noise Affect Hearing?***

The ear is a remarkable part of the body. It funnels sound through the outer ear (ear drum and ear canal) to the middle and inner ears. In the inner ear sound waves become nerve impulses. They are sent to the brain by the large auditory nerve. In the brain, the nerve impulses are decoded and a certain sound is heard. This whole process takes a fraction of a second. Figure 4-1 shows sound's path through the ear.

***Fig. 4-1: Ear diagram***



Exposure to too much noise is dangerous. The ear drum can be split (ruptured) by a high impact noise, for example from a powder tool. Loud, continuous noise from sanders or drills exhausts the tiny nerve fibers in the inner ear, reducing your ability to hear.

Initial exposure to high noise levels can cause a *temporary* hearing loss. During a break from sanding a floor, you may notice that your hearing is not so good as usual. This is a temporary hearing loss. If you continue to work around the high noise, however, the loss may become permanent. *Permanent noise-induced hearing losses are irreversible*. They cannot be corrected with hearing aids or by surgery.

### ***What Are the Other Effects of Noise?***

Noise may cause certain body changes not related to hearing, such as: increasing blood pressure and heart beat rate; increasing the amount of adrenaline pumping through the body; or irritation, tiredness, or nervousness. Some research indicates that with continuous exposure to noise, these stress effects may add to heart, stomach, and intestine problems.

Noise also interferes with communication and may block out warning

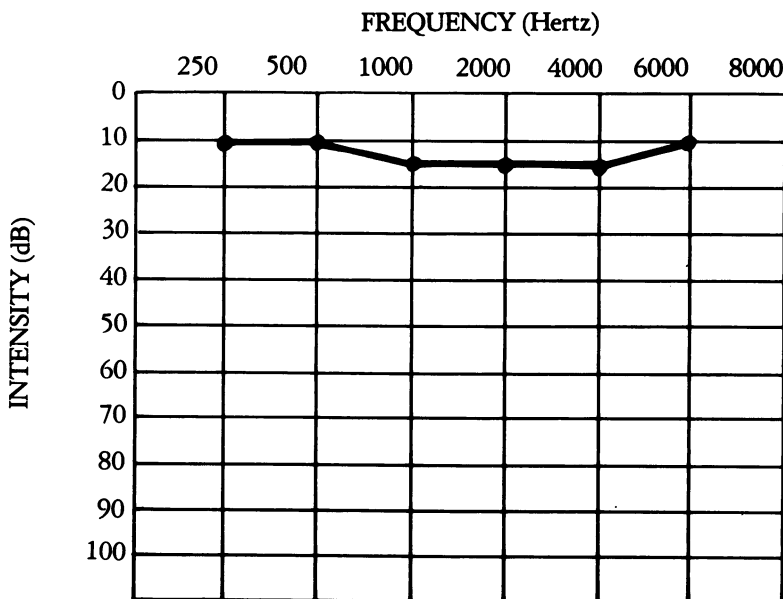
signals from machinery or co-workers. This is especially dangerous if several other trades are involved in one job.

A good rule of thumb to follow is—if you can't hear a co-worker talking an arm's length away from you, the noise level is too high. That is, it exceeds the federal 8-hour average exposure limit of 90 decibels.

***How Do You Know  
If You're Being  
Overexposed?***

To measure the exact continuous noise level, an instrument called a *sound level meter* is used (see Figure 4-2). It measures noise in decibels. If you think you are being exposed to too much noise, request that sound level readings be taken.

If you work around loud noise quite a bit, you should have a yearly hearing examination called an *audiometric test*. The test is performed with a machine called an audiometer. Audiometric tests measure your ability to hear sounds of varying loudness and pitch. They should be performed *at least 24 to 48 hours after noise exposure has stopped*. The recorded results resemble the audiogram (hearing test chart) pictured in Figure 4-3.



***Fig. 4-3: Audiogram***

The first indication of a noise-induced hearing loss is a dip at 4,000 HERTZ. If the dip begins to extend further to the left into other frequencies, you are beginning to lose more of your hearing. When the loss is in the 500 Hz to 3,000 Hz range you will have trouble hearing normal speech.



***How Do You  
Control Noise?***

Noise can be controlled at 3 points—at the source by engineering controls, in the path, or at the receiver. Floor covering mechanics are often on a job for only 1 or 2 days, so most engineering controls are usually impossible. However, compressors can be fitted with an acoustical shield (an engineering source control). One common type of in-the-path noise control is to increase the distance between the noise source and the receiver. For example, leaving a compressor outside a home or building while floor covering mechanics are working inside lowers their noise exposure.

In the construction trades, possible at-the-receiver controls include: allowing mechanics to take breaks while working with noisy equipment such as sanders; and wearing ear muffs or plugs. Ear muffs and plugs must fit correctly and reduce the noise level to a safe point. Cotton does *not* provide adequate protection.

**F**loor covering mechanics often lift heavy materials such as rolls of sheet goods and carpet, tile boxes, and heavy tools or tool boxes. Back injuries are common. Lifting correctly and only carrying as much as is comfortable are your first protections against injury. When an object is too heavy or awkward for you to lift alone, either get help or use mechanical aids.

## LIFTING

To lift correctly:

- Firmly plant your feet close to the load* 1
- Bend your knees, keeping your back straight* 2
- Hold the center of the weight being lifted between your waist and shoulders (keeping your back straight)* 3
- Lift with your leg and shoulder muscles (keeping your back straight)—keep the weight as close to your body as possible* 4

Even proper lifting techniques may not prevent back injury. While one person may be able to safely and comfortably lift single tile boxes or smaller rolls of sheet goods or carpet, two persons should probably lift and carry heavy rolls of carpet and linoleum. Both persons should use correct lifting techniques. Mechanical lifting and carrying aids such as straps and dollies are even better protections.

Straps help center bulky loads; dollies may actually do the lifting and carrying. Even using straps, two persons (one at each end) should lift and carry furniture or heavy roll of materials. Materials must still be hand lifted and positioned on the dolly. Always use correct lifting techniques. Get help if more than one person is required to do the job comfortably and safely.

Useful dollies are:

- Flatbed dollies positioned under a carpet roll in the truck for unloading and moving materials* ●
- Linoleum dollies for unrolling and moving sheet goods* ●
- Upright dollies (hand trucks) for moving tile boxes, tools, or single rolls of sheet goods* ●

- *Large flat-bed dollies with railings for moving several rolls of carpet or sheet goods at one time.*

When available, fork lifts with standard attachments can eliminate manual lifting and carrying. They can transfer tile pallets to trucks. With a carpet pole attachment, a fork lift can move rolls of carpet onto dollies or directly onto trucks. However, fork lifts are usually only available in warehouses, so heavy carpet and sheet goods must still be manually lifted from trucks at the job site.

Special equipment is also available to lift and move heavy furniture and appliances. Use whenever possible.

Before beginning a job, it's best to cut carpet and sheet goods to the needed size, either on a cutting floor at the shop, or in an empty parking lot. This eliminates unnecessary carrying and lifting. If the materials can't be cut before leaving the shop, they should be unrolled and cut outside the job site. Otherwise, steps and tight corners must be navigated with awkward heavy rolls.

Thus, to protect yourselves from back injury due to lifting:

- 1 *Never lift more than you can comfortably and safely lift and carry.*
- 2 *Always use correct lifting techniques.*
- 3 *Get help if you need it.*
- 4 *Use mechanical aids such as straps, dollies and fork lifts whenever possible.*
- 5 *Cut large rolls of material into needed sizes either before leaving the shop or outside the job site.*

**HAND TOOLS** Follow these general guidelines when using hand tools:

- 1 *Only use tools designed specifically for the type of job you are doing. (For example, never use a wrench to hammer or a file to pry).*
- 2 *Keep tools in good repair.*
- 3 *Replace tools as soon as they wear out or become damaged.*
- 4 *Never leave tools, particularly sharp-edged tools, lying around.*
- 5 *Store each tool in its own place.*
- 6 *Never throw tools—always hand them to others.*

*Use spark-resistant tools (brass, aluminum, wood) around flammable materials.* **8**

*Use knee pads when kneeling for long periods of time or when working around sharp objects.* **9**

Knives cause more disabling injuries than any other hand tool. To reduce the possibility of injury, always keep knives sharp and in good repair. Dull knives require more pressure and are more likely to slip than sharp knives. Watch out for chipped blades. They can catch in the material being cut and fly back at workers. *Always cut away from the body.* If this is not possible, keep hands and body clear of the knife's path. *Always cut with smooth, not jerky motions.* Never store knives in pockets. While working, keep knives in pouches with the edge or point down. At the day's end, store knives in tool boxes. **Knives**

Wear safety goggles to protect your eyes against flying chips, scale, or nail heads. Immediately repair loose handles or chipped heads and mallets. Make sure hammer handles are securely wedged and suitable for the type of head used. **Hammers**

The same basic rules apply to chisels and stair tools: keep in good repair; never leave lying around; store correctly. Immediately replace curled chisel heads or grind off the overhang. Hitting a curled chisel head can send metal fragments into workers' eyes. **Chisels**

Continuously using the knee kicker can damage your knees. Use one only when absolutely necessary, such as when work areas are too small for a power stretcher (a 30 inch hallway for example). Learning to use the power stretcher is important; it limits the use of the knee kicker. **Kickers and Stretchers**

Before using either kickers or stretchers, check all connections. Always position yourself beside, not on top of, the stretcher. Break down stretchers when moving them. Otherwise you could twist and hurt your back or injure other workers in your path. The teeth on both the kicker and stretcher are very sharp. Keep teeth turned towards the floor when the tools are in use. Store correctly at the end of the job or workday.

When using torches, be aware of your surroundings and other workers in the area. Never leave a lighted torch in a hallway or pointed towards flammable materials. Fill torches outside, taking care to avoid spilling or being frozen by the propane or other gas. While filling a torch, make sure there is no nearby ignition source. *Do not smoke while filling a torch.* Light torches and handle already-lit torches carefully. **Torches**

**POWER TOOLS** Power tools are usually divided into four groups, according to their power source:


- *Electric*
- *Pneumatic (air-powered)*
- *Explosive (powder-actuated)*
- *Gasoline*

***Electric Tools*** Electric shock is the primary hazard from electrically-powered tools. Although it may not cause death, electric shock can cause burns or lead to injury from falls. To protect yourself, only use approved electrical tools. These are usually listed by Underwriter's Laboratory.

Most electric tools (single-insulated) are "grounded" with a third wire. This ground wire protects users by draining the current from any short-circuit or other tool defect. Otherwise the resulting current would pass from the tool through the operator's body. **NEVER** cut the third prong off the plug of the grounded tool. It's your protection.

Single-insulated tools are usually grounded by:

- 1 *Enclosing conductors in a cable or cord ending in an approved grounding-type attachment plug with a fixed grounding contact (third prong), or*
- 2 *Enclosing conductors in metal casings having approved grounding-type attachment plugs (third prong).*

Double-insulated tools do not need to be grounded. Such tools will always be identified by writing on the tool or with the symbol of a square within a square (  ).

To prevent electric shock, observe the following work practices:

- 1 *Keep hands dry.*
- 2 *Wear nonconducting rubber-soled shoes and rubber gloves when working on wet or damp surfaces.*
- 3 *Use heavy-duty extension cords.*
- 4 *Keep electric lines away from nails and sharp edges, hot surfaces, or corrosive chemicals.*
- 5 *Never leave electric lines where they may be run over by vehicles.*

<i>Regularly inspect all electric cords and tools.</i>	<b>6</b>
<i>Repair or replace frayed cords immediately.</i>	<b>7</b>
<i>Immediately tag all defective tools and remove them from service.</i>	<b>8</b>
<i>Disconnect power lines before changing tool accessories or before adjusting or repairing tools.</i>	<b>9</b>
<i>Never directly touch persons in contact with live electric current.</i>	<b>10</b>
<i>To remove persons in contact with live or “hot” tools, first shut off the power. If this is impossible, push the person away with non-conductive materials such as a wooden tool handle.</i>	<b>11</b>
<p>Certain electric tools used by floor covering mechanics require additional precautions. These tools can be dangerous. Be sure they are unplugged when not in use.</p>	
<i>Manually guided drills may be equipped with protective sleeves that fit over the drill bit. Never grind down oversized bits to fit smaller drills. Wear safety glasses and ear protection.</i>	<b>Drills</b>
<i>Completely guarding sanders is difficult. Always keep the sander’s motion going away from your body. Keep all clothing clear of moving parts. Keep Class A fire extinguishers readily available. Clean sanders everyday. At the workday’s end empty bags into a covered metal container to protect against fire. Make sure the bag is empty before starting a new job. Always unplug sanders before replacing sandpaper, when making repairs, or when leaving the sander.</i>	<b>Sanders</b>
<i>In addition, sanders should be equipped with dust collectors or vacuum bags to lessen exposure risk. Sanders should also be serviced regularly.</i>	
<i>Check saw guards frequently. Guards should completely cover the saw’s teeth when not in use. Stop and start the saw outside the material being cut. Keep your body out of the cutting line whenever the saw’s teeth are exposed. Unplug the saw before changing a blade or leaving the worksite.</i>	<b>Saws</b>
<i>Carpet cutters should be equipped with guards. Apply the same principles for safe operation as those used for saws.</i>	<b>Carpet Cutters</b>
<i>Keep the cord away from the iron. When not seaming, keep the iron on the holder. Use in well ventilated areas.</i>	<b>Hot Melt Iron</b>

**Pneumatic Tools (Air-Powered)** *Disconnected air hoses can whip around and cause injury. Install a check valve at the manifold to automatically shut off the air supply in case of a line break. Never use a compressor with more power than a particular tool can handle.*

*Air-powered staplers and nailers can send fasteners considerable distances with considerable force, possibly causing serious injury. Workers using these tools should be trained. Never squeeze trigger-operated staplers or nailers until the tool is in place.*

**Powder-actuated Tools (Explosive)** *These tools are powered by blank cartridges activated by a percussion primer, similar to firearms. Their hazards are also similar—ricocheting, flying particles, discharging by accident. Only trained persons with operator's cards should use these tools. Many states require a use permit. When using these tools, always wear eye protection. Warn workers in the area of potential dangers. Never use in flammable or explosive environments (for example, in an area where you have been using petroleum naphthas). Use only enough force to do the job—tools should be capable of handling a variety of charges. Never point even empty tools at others. Never drive fasteners into brittle or easily shattered materials. Make sure easily penetrated materials have backings to prevent fasteners from going through completely.*

**Gasoline Tools** *To prevent possible explosion and fire, handle and store fuels safely. Before servicing either the generator or tools, or before leaving the worksite, always shut off engines. Keep generators outside the work area to prevent exposure to carbon monoxide.*

**HOUSEKEEPING** *Though some of the points covered in this section are also discussed elsewhere in the manual, their repetition won't hurt. Following these general rules may eliminate some on-the-job accidents.*

- 1** *Keep all walkways, work areas, stairways, and doorways free of obstructions or trash. This precaution protects not only yourself but other workers and customers.*
- 2** *Keep tools put away when not using them.*
- 3** *Store unused materials—tile, carpet, etc.—out of the way.*
- 4** *Put away knee kickers and stretchers as soon as you have finished with them. The teeth could seriously injure the feet or other body parts of someone tripping over them.*
- 5** *Before disposing of scrap materials, separate sharp materials such as wood and metal from soft materials such as carpet, padding, felt, etc.*
- 6** *Keep all sidewalks, driveways, streets, etc., clear of materials.*



# Hazard Identification

# 6

**Y**ou don't have to be an expert to inspect your workplace. If given basic instruction, anyone can learn to spot work hazards. The people best qualified to identify potentially dangerous situations in the work environment are those dealing with them daily—workers.

A hazard may be obvious, questionable, or hidden. Questionable and hidden hazards are perhaps the most dangerous since they are the least easily recognized. Examples of these hazards are:

*Unguarded saws, unsheathed knives, frayed electric cords* **Obvious**

*Uncertified fire extinguishers, fork lifts without lift capacities marked or without overhead protection, no certified first aid kits, poor housekeeping* **Questionable**

*Faulty equipment, odorless gases such as carbon monoxide, invisible dusts such as asbestos* **Hidden**

Chapters 3, 4, and 5 in this manual discussed *potential* hazards of floor covering. To identify *actual* hazards in your own workplace, ask yourself the following seven questions and list the answers. Be sure to consider all obvious, questionable, and hidden possibilities.

*Does my job ever frighten me?* **1**

*Do my co-workers perform tasks that appear dangerous to me?* **2**

*Have I ever had any injuries or near misses?* **3**

*Do I take risks that are part of the job and are considered unavoidable?* **4**

*Have I ever asked for help when I felt a job was unsafe to perform alone?* **5**

*Have I ever refused to perform a task that I felt could harm me?* **6**

*Have I changed any processes on my own, or asked management to change any to reduce the risk of being injured?* **7**

Getting feedback from co-workers or comparing your list with others' will provide you with even more information. Keep your lists for future reference and documentation (see chapter 9—Documentation).

Even with these seven questions, you may have overlooked some important job-related hazards. The following list suggests the kinds of work conditions you should evaluate. It does not include all possibilities.

**Lighting** *Do work areas have enough light for safe operations? In large commercial jobs are all emergency exits marked and lighted?*

**Noise** *Is your work area noisy? Is there a quiet place to eat and rest? Do your ears ring or is your hearing dulled after work?*

**Machines and Guards** *Do power tools have guards? Are guards always in place when equipment is operated? Could your clothes, fingers, hands, etc., be caught by exposed gears, teeth, or blades? Is starting a power or compressed air tool by accident possible? Would doing so be dangerous? Can equipment be oiled without removing the guards? Could a hazard be reduced by installing or changing an equipment guard? Could you suggest a more protective guard?*

**Wiring** *Are any wires exposed? Do wires cross work areas or aisles? Are electrical outlets overloaded? Is all electrical equipment properly grounded? Are floors wet in areas where power tools are used? Are you expected to hot-wire a house before starting a job?*

**Training** *Does your job include safety training? Do you receive regular followup training on safe work practices?*

**Floors** *Are work areas or aisles cluttered? Do floors have holes? If so are they guarded or covered? Are floors ever slippery or wet? Are floors regularly swept or cleaned during a long-term job?*

**Materials Handling** *Can improper handling, or the lack of mechanical handling equipment such as fork lifts, dollies, and straps cause strain? Do fork lifts have their capacities clearly marked? Is equipment properly maintained and repaired?*

**Personal Protective Equipment** *Are workers provided with protective clothing and equipment when needed? Is protective equipment properly maintained? Are workers trained to properly use and care for protective equipment (particularly respirators)? Is the use of protective equipment where necessary enforced?*

**Airborne Hazards** *Is dust visible in the air or on the floor during and after sanding? Are materials-handling vehicles such as fork lifts used? Are they serviced regularly? Are gasoline generators kept inside the work area? Are solvents used for washing? Are the solvents stored in open containers? Is ventilation adequate on the job?*

Warnings for many health hazards are not as obvious as those for

safety hazards, but they do exist. Health hazards are also often more serious than accident hazards. Substances causing mild symptoms now could have serious long-term effects. Headaches, recurring coughs and colds, sore throat, dizziness, stomach problems, and constant fatigue are symptoms that should not be ignored. They may be caused by work-conditions.

Pay attention to how your body reacts to your work environment. Find out if your co-workers have similar experiences. This information could be a valuable clue in pinpointing a hazard, and might later help you prove a condition is work-related. Following is a list of symptoms and known causes. Keeping a notebook of symptoms and possible causes is useful for tracking down work-related health hazards.

<b>SYMPTOMS</b>	<b>COMMON CAUSES</b>	<b>ORGAN OR SYSTEM AFFECTED</b>
<i>Skin redness, dryness and itching</i>	<i>Solvents and Degreasers, Plastics, Epoxy Resins, Cutting Oils, Fiberglass</i>	<i>Skin</i>
<i>Ringling, temporary deafness</i>	<i>Excessive Noise</i>	<i>Ears</i>
<i>Redness, pain, irritation, tearing</i>	<i>Smoke, Irritating Gases, Metal Dusts, Acids, Caustics</i>	<i>Eyes</i>
<i>Sneezing, coughing, sore throat, running nose</i>	<i>Irritating Gases (e.g. ozone, ammonia), Dusts, Metal Fumes, Vapors</i>	<i>Nose, Throat</i>
<i>Wheezing, shortness of breath</i>	<i>Metal Fumes, Asbestos</i>	<i>Lungs</i>
<i>Dizziness, headaches, sleepiness</i>	<i>Solvents, Degreasers, Carbon Monoxide, Asphyxiant Gases (CO<sub>2</sub> &amp; Acetylene etc.)</i>	<i>Nervous System</i>

**T**he hazards listed in chapter 3 can all cause medical problems. To determine any health effects, workers exposed to these substances should have regular medical examinations. Detecting health problems early can increase the chances of treatment and recovery.

Medical examinations consist of a medical history, a physical examination, and laboratory or x-ray tests. Job-related medical exams should also include an occupational history and discussion of substances used in the workplace. Few doctors, including company doctors, are trained in occupational medicine. It is often up to workers to tell their doctors the substances to which they are being exposed.

Physical examinations can be either “complete” or “specific.” Complete physicals look at all parts of the body. Specific physicals examine only affected parts. Specific exams can be more valuable for discovering job-related health problems *if* the examining doctor knows what to look for and which laboratory tests to use. Always tell your doctor as much as you know about your job and possible exposures to dangerous substances. Also tell your doctor about any symptoms. Even seemingly minor symptoms such as frequent headaches after work or at work though not at home, eye irritation or strain, red or itchy skin, shortness of breath, weight loss, tiredness, or any difference between work and home symptoms could indicate a health problem.


Health problems are usually discovered by a combination of physical examination, laboratory tests, or x-rays. For example:

- Physical examinations alone can determine problems due to nose, throat, mouth, and eye irritation from materials such as toluene and dimethylformamide* ●
- Physical examinations plus lung function and patch tests may be required for materials such as epoxy resins which cause allergic skin or asthma-like reactions.* ●
- Chest x-rays and lung function tests can detect lung damage due to asbestos* ●
- Specific blood and urine tests can detect liver and kidney damage due to solvents* ●

- *A specific blood test can detect blood damage due to carbon monoxide*

Federal standards for some substances such as asbestos require the employer to establish a medical/laboratory screening program for potentially exposed workers. Workers themselves may also want to keep track of their own health problems, or unions may want to establish screening programs for particular substances.

Following is a sample letter floor covering mechanics might give their doctors to indicate their potential health hazards. This form can be used during the occupational history as a check-off list.



LABOR OCCUPATIONAL HEALTH PROGRAM

INSTITUTE OF INDUSTRIAL RELATIONS    2521 CHANNING WAY    BERKELEY, CALIFORNIA 94720    (415) 842-5507


Dear Doctor:

During the past year, the University of California has been involved in a study of occupational health and safety hazards in the floor covering industry. Part of our program has been to develop an educational program for apprentices in the industry.

We were asked to prepare a summary of the hazards and associated health risks that each worker could give to his physician. The apprentices felt that this would be more beneficial than attempting to explain the hazards to their physicians themselves.

The enclosed listing of hazards, target organs, and effects are for your information. I hope that this may be beneficial for you in the care of your patient.

Thank you.

Sincerely yours,  
  
Donald Whorton, M.D.  
Director

HAZARD(S)	TARGET ORGAN(S)	EFFECTS
<i>Adhesive Primer</i> — <i>Petroleum naphtha</i>	<i>Skin</i> <i>Lungs</i>	<i>Irritant</i> <i>Associated with</i> <i>bronchiogenic</i> <i>carcinoma</i>
<i>Asbestos-backed Tile</i> — <i>Asbestos (from</i> <i>sanding tiles or sheet-</i> <i>goods backing)</i>	<i>G.I. tract</i> <i>Lungs</i>	<i>Asbestosis</i> <i>Lung cancer</i> <i>Pleural and Peritoneal</i> <i>Mesothelioma</i>
<i>Asphalt Cement</i> — <i>Petroleum naphthas</i> <i>(may contain benzene)</i>	<i>Skin</i> <i>Mucous membranes</i> <i>Central Nervous</i> <i>System</i>	<i>Irritant</i> <i>Narcosis</i>
<i>Brush-on Contact</i> <i>Adhesive</i> <i>(wallboard</i> <i>and panel adhesives</i> <i>and tackless strip</i> <i>cement)</i> — <i>Ketones</i>	<i>Skin</i> <i>Mucous membranes</i> <i>CNS</i>	<i>Irritant</i> <i>Narcosis</i> <i>Peripheral neuritis for</i> <i>certain compounds</i>
— <i>Aromatics</i>	<i>Skin, CNS</i>	<i>Irritant</i> <i>Narcosis</i>
— <i>Petroleum distillates</i>	<i>Skin</i> <i>Central Nervous</i> <i>System</i>	<i>Irritant</i> <i>Narcosis</i>
— <i>Petroleum naphthas</i>	<i>See above</i>	
— <i>Toluene</i>	<i>Skin, CNS</i> <i>Mucous membranes</i>	<i>Irritant</i> <i>Narcosis</i>
— <i>Acetone</i>	<i>Skin</i> <i>Mucous membranes</i>	<i>Irritant</i>
<i>Carpet and Vinyl</i> <i>Seam Sealers</i> — <i>Toluene</i>	<i>See above</i>	

<b>HAZARD(S)</b>	<b>TARGET ORGAN(S)</b>	<b>EFFECTS</b>
—Tetrahydrofuran	Skin Mucous membranes Central Nervous System	Irritant Narcosis
—Chlorinated hydrocarbons	Skin Liver Kidneys	Chloracne Hepato-renal toxins
—Epoxy resins	Skin Sometimes lungs	Sensitizer
—Diisocyanates (MDI and TDI)	Skin Lungs	Sensitizer
—Xylene	Skin Mucous membranes CNS Bone Marrow	Irritant Narcosis Bone marrow depressant
General Solvents —Toluene —Xylene —Ketones —Aromatics —Petroleum distillates	See above	See above
—Acetate	Skin Mucous membranes G.I. tract	Irritant Nausea and vomiting
—Aliphatics	Skin Central Nervous System	Irritant Narcosis Peripheral neuropathy for certain compounds
—1,1,1-trichloroethane	Central Nervous System Liver Kidneys	Narcosis Mild hepato-renal toxin
Hot Melt Tape	Contents not listed (however, when heated by hot irons to secure carpet seams, these tapes produce irritating fumes and odors)	

HAZARD(S)	TARGET ORGAN(S)	EFFECTS
<i>Hot Melt Tape Solvent</i> —Ammonia	<i>Skin</i> <i>Mucous membranes</i> <i>Lungs</i>	<i>Irritant</i>
<i>Outdoor Carpet,</i> <i>Artificial Turf Cement</i> —Xylene —Toluene —Petroleum distillates	<i>See above</i>	<i>See above</i>
<i>Seam Coating</i> —Xylene —Cellosolve acetate —Diisocyanates (organic)	<i>See above</i>	<i>See above</i>
<i>Strip Cement and</i> <i>Sealing Adhesive</i> <i>Solvents</i> —Methyl ethyl ketone —Toluene	<i>See above</i> <i>See above</i>	<i>See above</i> <i>See above</i>
—Hexane	<i>Membranes, CNS</i>	<i>Irritant</i> <i>Narcosis</i>
<i>Vinyl/Urethane</i> <i>Back Adhesive</i> —Methyl ethyl ketone —Toluene	<i>See above</i> <i>See above</i>	<i>See above</i> <i>See above</i>
—Dimethylformamide	<i>Skin</i> <i>Mucous membranes</i> <i>Liver (absorbed</i> <i>through skin)</i>	<i>Irritant</i> <i>Liver toxin</i>
<i>Waterproof Cement</i> —Methanol base	<i>Skin, CNS</i>	<i>Irritant</i> <i>Blindness</i>

---

*Note: Toluene and xylene are often contaminated with benzene, a bone marrow toxin associated with aplastic anemia and leukemia.*



**F**irst aid is the immediate and temporary care given the victim of an accident or sudden illness until adequate medical care can be obtained. Having some knowledge about first aid can be life saving. Often, no one with medical training is present at an accident or onset of sudden illness. *The following general first aid principles are by no means a detailed course.* (Complete first aid courses are offered by the Red Cross and by local YMCAs and YWCAs. Certified first aid instructors can be hired by union health and safety committees to offer courses to members. The American National Red Cross text, *First Aid*, is available in most book stores and can be bulk ordered from the Red Cross).

Many injuries are minor, requiring nothing more than cleansing and a band-aide. More serious injuries may involve severe bleeding, heart (cardiac) failure, breathing difficulties, choking, poisoning, head injuries, or broken bones. First, stop bleeding and determine whether artificial respiration is necessary. Then determine additional problems. Move injured persons as little as possible and only after you know what parts of the body have been injured. Always support injured parts when moving persons. Don't make the injury worse.

To offset shock as much as possible, keep the victim's body temperature from falling, preferably with blankets. Never heat the victim. Call a physician or ambulance or obtain medical advice on the phone as soon as possible.

Additional pointers include:

*Identify all injuries not just the most obvious; give first aid to minor as well as major injuries.* 1

*If victim is unconscious or partly conscious, do not attempt to rouse, give fluids, or lift by the belt.* 2

*To allow good breathing if victim is unconscious and there is no apparent fracture, loosen clothing about the neck. Unless the victim has suffered a head or neck injury, turn patient on his side and maintain this position by flexing a leg (or both legs). Place a pillow under the head so secretions can drool from the corner of the mouth. Clear dentures, vomit, or other materials out of the mouth to allow air to move.* 3

*With indoor accidents, beware of opening windows if weather is cold unless noxious gases are present and may have caused the patient's* 4

*condition.*

- 5 *Leave diagnosing the patient's condition to medically trained persons.*
- 6 *Reassure victim.*
- 7 *Obtain victim's name and address if possible.*

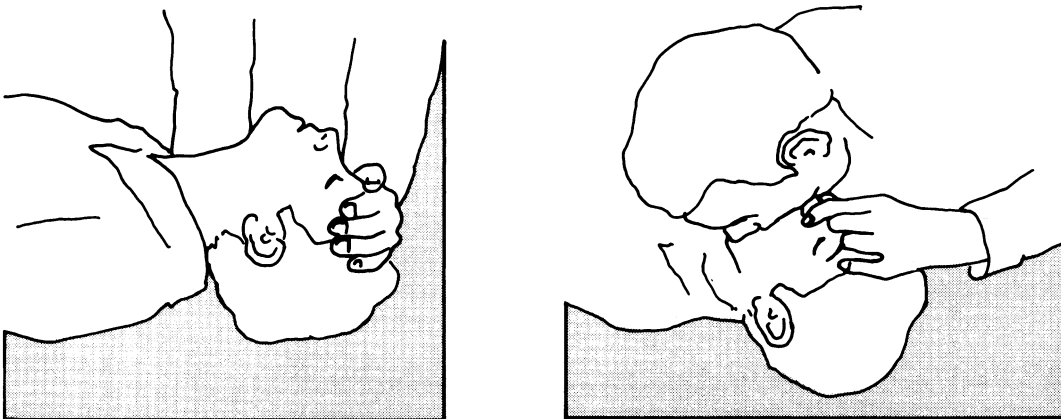
**Wounds and Bleeding** Several problems can arise from scrapes, cuts, and puncture wounds. Scrapes (abrasions) tend to be more painful than dangerous. Clean with soap and water. Cuts (lacerations) may have sharp, smooth edges caused by a knife or sharp instrument, or a ragged, rough appearance caused by crushing. Clean with soap and water, then join raw edges of the wound together with a band-aid for small cuts. Stitches or suturing may be required for more serious cuts.

Avoid using antiseptics such as iodine. These substances tend to do more harm than good by destroying living body cells.

To stop profusely bleeding wounds, directly apply pressure with some sort of clean cloth or bandage. Do not use tourniquets. The only exceptions are severe injuries, such as major amputations.

**Artificial Respiration** Mouth to mouth resuscitation is the preferred method. Remove foreign objects from victim's mouth. Lay victim on his back, extending the head backwards to arch the back and clear the air passage. Place your mouth over the victim's mouth. Hold the victim's nose closed to prevent leakage. Breathe hard and fast into the victim's mouth, allowing air to be exhaled between your breaths. Continue until victim can breathe on his own, or an ambulance has arrived and victim has been hooked up to a mechanical breathing device.

*Fig. 8-1: Mouth-to-mouth resuscitation*



If the victim lacks a heart beat, a second person should give cardiac resuscitation while the first is giving artificial respiration. With sharp, brisk motions push down on the chest over the breast bone (sternum), pushing from your shoulders and keeping your arms straight. Be careful not to push too hard; you could break bones or cause internal injuries. The ratio of chest pumps to breaths should be 3:1.

### ***Cardiac Resuscitation***

Shock can be very serious. When in shock, the body is unable to maintain a proper metabolic balance. The condition is characterized by shallow breathing, weak pulse, pale skin, cold clammy skin, dilated pupils, nausea, even vomiting. Persons suffering from shock may be conscious or unconscious. If not brought out of shock, the victim will likely die. Unless he has suffered a head injury, place victim on his back with legs elevated; cover with a blanket to keep warm. If the shock victim has also suffered a head injury, elevate the head and shoulders to prevent too much blood and pressure in the head.

### ***Shock***

If moved inexpertly, a person with a broken neck or back can become permanently paralyzed. Never move such a person unless you *know* what to do.

### ***Head, Neck, and Back Injuries***

Immobilize the broken bone, being careful not to injure the victim more by moving the broken area. Boards and belts can be used to immobilize legs. The body can be used as a splinting aid, for example by tying a broken wrist or forearm to the chest to prevent movement or by strapping a broken leg to the uninjured leg.

### ***Fractured Bones***

Promptly wash out chemicals splashed into the eyes with large amounts of water. Have medical personnel examine all eye injuries and remove foreign bodies.

### ***Eye Injuries***

Unless poisoned by gasoline or similar petroleum products or by caustic products, force the victim to vomit. Vomiting (as well as ingesting) petroleum products may cause victims to develop a particular type of pneumonia from inhaling the vapors. If you cannot induce vomiting, give the victim milk to reduce the poison's absorption from the stomach. Milk of Magnesia, tea, and burned toast are no longer considered "universal antidotes." Do not force vomiting in an unconscious or groggy person.

### ***Poisoning***

Burns may be first, second, or third degree. In first degree burns such as sunburn, the skin reddens. In second degree burns, the skin blisters. In third degree burns, all layers of the skin are destroyed. First and second degree burns are painful. Third degree burns are the most dangerous, leaving the body without a protective covering; bacteria and infections can enter and vital fluids escape. Treat first and second degree burns with ice, then clean and keep clean. Keep third degree burns clean and covered until adequate medical care can be

### ***Burns***

obtained.

**Chemical Burns** Many chemicals, both acids and alkalis, can burn the skin. Dilute the chemical's potency by flushing the burn with large amounts of water. Obtain medical treatment immediately.

**Electrocution** Electrical shock sends the heart into a nonbeating pattern of electrical activity called ventricular fibrillation. This can be fatal. To treat an electrical shock victim, first make sure he is removed from the electrical tool or apparatus by unplugging the tool, cutting off the electricity, or similar methods. If these aren't possible, attempt to knock the victim from the current. Use only *nonconducting* instruments, such as a piece of wood. Otherwise, you may become part of the current and be electrocuted yourself. If victim's heart is not beating, use a quick thump or pound on the chest to properly resuscitate.

**First Aid Kits** First aid kits should be available in all workplaces. The main thing to remember is that first aid kits should meet your potential needs. Commercially manufactured "uniform" first aid kits are available in 16, 24, or 32 units. Each unit contains one or more complete individual dressing(s) sealed in sterile wrappers. Contents can be selected to meet the purchaser's particular needs. 24-unit kits contain:

*2 units—1" Adhesive Compress*  
*2 units—2" Bandage Compress*  
*2 units—3" Bandage Compress*  
*2 units—4" Bandage Compress*  
*1 unit—3" x 3" Plain Gauze Pads*  
*2 units—Burn Ointment*  
*1 unit—Eye Dressing Packet*  
*4 units—½ sq. yard Plain Absorbent Gauze*  
*3 units—24" x 72" Plain Absorbent Gauze*  
*4 units—Triangular Bandage*  
*1 unit—Tourniquet - scissors - tweezers*

*(The Red Cross first aid courses and text instruct you in how to use these items)*

Kits found in drugstores are satisfactory *only* if their contents: (1) are sufficient, (2) are arranged so users can quickly find items without unpacking the entire kit, and (3) are wrapped so unused portions don't become dirty through handling or exposure to air.

# Occupational Safety & Health Legislation

# 9

**O**n December 29, 1970 Congress enacted the OCCUPATIONAL SAFETY AND HEALTH ACT (OSH Act) into law (P.L. 91-596) to “assure so far as possible every working man and woman in the Nation safe and healthful working conditions and to preserve our human resources. . . .” The OSH Act encourages employers and employees to *reduce hazards* in the workplace and initiate *new or improve* existing safety and health programs. The law also:

*Authorizes the Occupational Safety and Health Administration (OSHA) to set mandatory safety and health standards* **1**

*Provides for an effective enforcement program* **2**

*Encourages states to administer and enforce their own occupational safety and health programs if at least as effective as the federal program. (As of June 1976, 22 states had such plans—most states with state plans have an Industrial Relations Department that can provide information on state procedures).* **3**

The OSH Act covers every employer in a business affecting interstate commerce which has one or more employees—an estimated 57 million workers in 4.1 million workplaces in the United States and its territories.

## ***Who is Covered***

The OSH ACT does *not* affect workplaces protected by other federal laws, for example the Coal Mine Health and Safety Act and the Federal Metal and Nonmetallic Mine Safety Act.

Federal employees are not covered by the Act’s general enforcement procedures. However, the Act does require each federal agency to maintain a comprehensive safety and a health program.

The OSH Act does not cover state or local public employees. These groups are covered *only* by state plans where they exist.

The OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA), under the U.S. Department of Labor, sets and enforces standards, prescribes regulations requiring employers to maintain and report accurate safety and health records, and provides grants to help states identify safety and health needs and develop state enforcement

## ***Administration and Enforcement***

programs.

The NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH (NIOSH), under the U.S. Department of Health, Education, and Welfare, conducts research, develops criteria for handling toxic substances, suggests appropriate standards to OSHA, evaluates hazards of toxic materials on employer or employee request, publishes an annual list of toxic substances, and conducts training programs for federal enforcement personnel.

The independent President-appointed OCCUPATIONAL SAFETY AND HEALTH REVIEW COMMISSION hears and rules on cases where employees or employers appeal citations.

***Employer Rights  
and Responsibilities***

Generally, employers must provide a place of employment free from recognized hazards by:

- 1 *Insuring the workplace conforms to applicable safety and health standards adopted under the OSH Act*
- 2 *Insuring employees have and use safe, properly maintained tools and equipment, including required protective clothing and equipment.*
- 3 *Warning employees of potential hazards by color codes, posters, labels, or signs*
- 4 *Providing and paying for medical examinations required by OSHA standards*
- 5 *Recording work-related injuries and illness (for 8 or more employees) and posting a summary annually during the entire month of February*
- 6 *Reporting each injury or health hazard which causes one fatality or the hospitalization of 5 or more employees to the nearest OSHA area office*
- 7 *Not discriminating against employees for properly exercising their rights under the OSH Act*
- 8 *Posting OSHA citations for standards violations at the involved worksite*
- 9 *Posting the OSHA poster in the workplace to inform employees of their rights and responsibilities*

Employers have the right to:

- 1 *Request and receive "proper" identification of OSHA personnel*

*before a worksite inspection*

*Participate in OSHA walkaround inspections, and the opening and closing conferences* 2

*Disagree with OSHA citations by filing a Notice of Contest with the OSHA regional office (within 15 working days of receiving the citation and notice of penalty)* 3

*Apply to OSHA for a temporary variance if compliance with a standard is impossible* 4

*Apply to OSHA for a permanent variance if able to prove that an alternative protective method is at least as effective as that required by the standard* 5

*Under the OSH Act, employees are responsible for:* **Employee Rights and Responsibilities**

*Reading the OSHA poster at their worksites* 1

*Being familiar with any applicable OSHA standards* 2

*Reporting hazardous conditions to their supervisors* 3

*Reporting any job-related injuries or illnesses to their employers, and promptly seeking treatment* 4

*Cooperating with OSHA compliance officers conducting inspections and answering any questions about worksite conditions* 5

Employees have the rights to:

*Obtain information from employers on health and safety hazards in the work area, on necessary precautions, and on what to do if involved in an accident or exposed to a toxic substance* 1

*File written complaints with the OSHA area director requesting an inspection of workplace conditions believed hazardous* 2

*After filing a complaint or if designated as an employee representative, accompany OSHA compliance officers during walkaround inspections* 3

*Be advised of OSHA actions on complaints, and have an informal review of any OSHA decision not to inspect the workplace* 4

*Observe monitoring or measuring of hazardous materials, and have access to the records of these measurements* 5

- 6 *Request information on potentially toxic substances in the workplace from NIOSH, and have names withheld from their employers if desired*
- 7 *Be provided with protective equipment and clothing when prescribed by OSHA standards*
- 8 *File a complaint with OSHA within 30 days of being discriminated against for exercising their rights under the OSH Act*
- 9 *Challenge the reasonableness of the OSHA-set abatement period by appealing to the Occupational Safety and Health Review commission*
- 10 *Be notified by employers of any application for variance*
- 11 *Testify at variance hearings*
- 12 *Challenge any temporary or permanent variance granted by appealing to the Occupational Safety and Health Review Commission*

***Requesting an OSHA  
Inspection  
(Filing a Complaint)***

Any employee may file a complaint about a job safety or health problem. Simply write a letter to the nearest OSHA area officer (see chapter's end for samples of federal OSHA complaint forms). If there's a state program, send a complaint letter or form to the state enforcement agency. If the situation is so serious that someone may be injured or killed (*imminent danger*) before you can write a letter or fill out the form, immediately telephone the nearest OSHA officer (or state enforcement agency). Then, follow up with a brief complaint letter or form. You are not expected to be an expert, so state the problem in your own words, without exaggerating. Where possible, it's also a good idea to specify whether the condition is a health or safety hazard.

It is always important to *document* your complaints in writing. Besides insuring that OSHA has a written record and will inform you of whether it decides to inspect and of the inspection results, the written complaint protects you *against employer discrimination*.

After receiving an employee's complaint, OSHA *must* either send an inspector to the workplace without warning the employer in advance, or write the employee why there will be no inspection. OSHA most commonly refuses to inspect on the grounds that either the complaint doesn't indicate sufficient reason for an inspection, or the complaint was filed for harassment purposes only. Be sure your letter or complaint form is detailed enough to justify an inspection (see chapter 8, Documentation).

After the walkaround inspection, the inspector must have a closing



conference with the employer. The employee representative can either participate in the employer's closing conference, if the employer agrees, or request a separate one. The employee representative should:

*Ask the inspector to verbally review all the specific hazards and violations found* 1

*Make sure all employee complaints are noted* 2

*Take written notes to later inform affected employees and insure all hazards are corrected* 3

Inspectors discovering situations that could *immediately result in serious* physical harm or death (imminent danger) *must* inform both employers and employees of the danger during the closing conferences.

Following an inspection, OSHA *must* issue a citation if the employer has violated a safety or health standard (see chapter's end for a sample OSHA citation form). OSHA may also fine employers for violating standards or for failing to correct violations within the OSHA-fixed *abatement* period. In cases of imminent danger, the OSHA office may seek a court order *immediately* closing the plant or shutting down the work process. In cases of willful violations, OSHA may seek criminal penalties against the employer.

## OSHA COMPLAINT PROCEDURE

OSHA compliance officers inspect workplaces on a routine basis or in response to employee complaints. Inspectors must be admitted to any workplace after showing their credentials. A management representative and an employee representative (or the employee who filed the complaint) can accompany the inspector. If there is no employee representative the inspector must interview a reasonable number of employees during the inspection. Any employee concerned about an unsafe job condition should either inform the employee representative or the inspector.

### *Inspections*

When the employer is cited or penalized, citation forms are sent to both the employer and the employee making the complaint. Citations should specify the violations and the *abatement period* (time employer has to correct the violations). An additional form listing the penalties goes to the employer. The fine's dollar amount and the abatement period's length depend upon the violation's seriousness, the difficulty of correcting it, and previous citations and penalties.

*Employers must post the citation for 3 days or until the violation is corrected*, whichever period is longer. If the violation is *not* corrected within the set abatement period, employees should notify OSHA

(or the state program) in writing.

***Discrimination Complaints*** The OSH Act protects employees filing complaints or otherwise exercising their rights under the Act. It states:

***“No person shall discharge or in any manner discriminate against any employee because such employee has filed any complaint or instituted or caused to be instituted any proceeding under or relating to his rights or has testified or is about to testify in any such proceeding.”***

Some state programs also protect workers discriminated against for refusing to work in *imminent danger* situations.

Employees are entitled to job reinstatement with lost wages and work benefits *if*, because of formally complaining to the proper OSHA agency about unsafe working conditions or practices, they have been:

- 1** *Discharged (fired)*
- 2** *Threatened with discharge*
- 3** *Demoted*
- 4** *Suspended*
- 5** *Discriminated against in any other manner affecting their employment*

Employees claiming they have been discriminated against for exercising their rights under the Act may write a letter of complaint to the nearest OSHA area office (or appropriate state agency if there's a state plan). Complaints must be filed within 30 days of the event. A discrimination complaint should include enough information and documentation to justify the case.

Within 90 days of receiving your discrimination complaint, OSHA must:

- 1** *Review the facts and decide whether the complaint is justified and warrants a hearing*
- 2** *Where necessary set an administrative hearing date*
- 3** *Inform the employee and employer of its decision*

If OSHA decides your complaint warrants administrative hearing, be prepared to:

*Submit a complete statement of the facts, including all relevant names and dates* 1

*Supplement your statement with all relevant documents, state reports, correspondence, records of phone conversations, etc. (see Chapter 8, Documentation)* 2

*Select your most supportive witnesses and review their testimony before the hearing* 3

*If possible, have a union representative or attorney present your case* 4

*Submit a letter from your local union president authorizing any health and safety committee persons to participate in the hearing, including yourself (it's always a good idea to have a health and safety committee person attend such hearings)* 5

*Have someone take notes at the hearing (such notes will be useful documentation, especially in case you request a rehearing for an unreasonable decision against you)* 6

It is particularly helpful to document your case well, and have legal counsel, witnesses, and health and safety committee persons at the hearings.

If there is an *unreasonable decision* against you, write the OSHA hearing office requesting a rehearing. Refer to your original documented complaint and any relevant hearing notes as justification. If the response is inadequate, write a letter of complaint to the nearest OSHA office, again requesting a rehearing. If the response is still inadequate, and there's a state program, file a CASPA with the nearest federal OSHA office.

If OSHA decides in your favor and the employer refuses to comply with OSHA's recommendations, OSHA can take the case to district court. The court can reinstate the affected employees to their former positions with back pay, and restrain the employer from further discrimination.

If a state plan is in effect where you work, you should request inspections and file discrimination complaints with the appropriate state enforcement agency. For information on the state's enforcement procedures, contact the appropriate agency (usually the Division of Industrial Safety). As of June, 1976, the 22 states with OSHA-approved programs were:

#### ***State Plans***

*Alaska*  
*Arizona*

*California*  
*Colorado*

*Connecticut*  
*Hawaii*

*Indiana*  
*Kentucky*  
*Maryland*  
*Michigan*  
*Minnesota*

*Nevada*  
*New Mexico*  
*North Carolina*  
*Oregon*  
*South Carolina*  
*Tennessee*

*Utah*  
*Vermont*  
*Virgin Islands*  
*Washington*  
*Wyoming*

***Filing a Complaint  
Against the State*** When, in your opinion, a state-OSHA has inadequately performed its responsibilities, you should *promptly* notify the nearest federal OSHA office. File a written *Complaint Against State Program Administration (CASPA)* if the state agency has *not*:

- 1 Adequately responded to your complaint***
- 2 Conducted a timely or adequate workplace inspection***
- 3 Issued citations for known violations***
- 4 Followed state-OSHA rules and regulations***
- 5 Protected your rights against discrimination***
- 6 Followed proper procedures for granting variances***

After receiving your CASPA, the Federal OSHA office will review your complaint, then notify you in writing of its decision and of any resulting corrective action.

If dissatisfied with OSHA's response, you may request an informal conference and re-evaluation with Federal OSHA officials. Afterwards, you will be notified in writing of the final decision.

U.S. DEPARTMENT OF LABOR  
OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

Form Approved  
OMB No. 04411449

OSHA-7

**COMPLAINT**

For Official Use Only		
Area	Date Received	Time
Region	Received By	

This form is provided for the assistance of any complainant and is not intended to constitute the exclusive means by which a complaint may be registered with the U.S. Department of Labor.

The undersigned (*check one*)

☐ Employee    ☐ Representative of employees    ☐ Other (*specify*) \_\_\_\_\_

believes that a violation at the following place of employment of an occupational safety or health standard exists which is a job safety or health hazard.

Does this hazard(s) immediately threaten death or serious physical harm?    ☐ Yes    ☐ No

Employer's Name \_\_\_\_\_

Address    (Street \_\_\_\_\_ Telephone \_\_\_\_\_  
(City \_\_\_\_\_ State \_\_\_\_\_ Zip Code \_\_\_\_\_

1. Kind of business \_\_\_\_\_
2. Specify the particular building or worksite where the alleged violation is located, including address. \_\_\_\_\_
3. Specify the name and phone number of employer's agent(s) in charge. \_\_\_\_\_
4. Describe briefly the hazard which exists there including the approximate number of employees exposed to or threatened by such hazard. \_\_\_\_\_

*(Continue on reverse side if necessary)*

Sec. 8(f)(1) of the Williams-Steiger Occupational Safety and Health Act, 29 U.S.C. 651, provides as follows: Any employees or representative of employees who believe that a violation of a safety or health standard exists that threatens physical harm, or that an imminent danger exists, may request an inspection by giving notice to the Secretary or his authorized representative of such violation or danger. Any such notice shall be reduced to writing, shall set forth with reasonable particularity the grounds for the notice, and shall be signed by the employees or representative of employees, and a copy shall be provided the employer or his agent no later than at the time of inspection, except that, upon request of the person giving such notice, his name and the names of individual employees referred to therein shall not appear in such copy or on any record published, released, or made available pursuant to subsection (g) of this section. If upon receipt of such notification the Secretary determines there are reasonable grounds to believe that such violation or danger exists, he shall make a special inspection in accordance with the provisions of this section as soon as practicable, to determine if such violation or danger exists. If the Secretary determines there are no reasonable grounds to believe that a violation or danger exists he shall notify the employees or representative of the employees in writing of such determination.

# Documentation 10

**K**eeping well-documented health and safety-related personal records is important. The information is invaluable if you later file letters of complaint to OSHA, discrimination complaints, worker's compensation claims, grievance proceedings, etc. In addition, the resulting individual exposure histories can help union and scientific personnel identify workplace accident and illness trends.

The information included in workers' personal health and safety records alerts them to their personal physical conditions and possible job-related health problems. Personal records should include information about pre-employment and periodic medical examinations, safety and health training, work-related injuries and illnesses, and workplace monitoring. In addition, employees should keep records of communications with union, management, and government personnel.

## **PERSONAL HEALTH AND SAFETY RECORDS**

Request your examination results be sent to your private physicians. Or, if that's impossible, be sure you are given an explanation of the results. Your records should include:

### ***Pre-Employment Physicals***

- Date of pre-employment physical* ●
- Job, including job description or conditions* ●
- Names, addresses, and specialties of persons and agencies conducting the physical examination* ●
- X-ray and laboratory tests—blood, urine, blood pressure, etc.—and results* ●

Some OSHA standards such as asbestos require the employer to provide exposed workers with periodic medical examinations. As with pre-employment physicals, workers should have the results sent to their personal physicians or receive an explanation of the results. In addition to the items listed above for pre-employment physicals, records of periodic exams should include:

### ***Periodic Medical Examinations***

- Comparisons to previous tests to determine whether any significant changes have occurred* ●
- Any attempts by management to inform the worker about medical problems and provide necessary follow-up exams and treatment* ●

***Safety and Health Training***

Employees should document any training they receive. Records should include:

- *Type of training provided at hiring*
- *Specific protective equipment and clothing provided, training in how to use them, work assignment, and associated hazards*
- *Any health and safety training provided when new work assignments were made, a description of the new work assignments, and any safety equipment or clothing provided*
- *Types of continuous training provided—books, pamphlets, films, posters, instruction, on-the-job, and whether both health and safety are included*
- *Duration of training*

***Work-Related Illnesses and Injuries***

Workers should report in writing to the employer every personal work-related accident or illness, no matter how minor. They should also notify their union representatives in writing of the injury or illness, where it occurred, and whether other workers have reported similar accidents or illnesses for the same work process or location. At that point, workers should also discuss with their union representatives whether to file a worker's compensation claim.

Records should include:

- *Type of injury or illness*
- *Duration*
- *Lost worktime or workdays*
- *Diagnosis and treatment prescribed*
- *Names, addresses, and specialties of persons responsible for diagnosis and treatment (also relationship to employer)*
- *Similar job-related injuries or illnesses sustained by fellow workers at same work process or location*
- *Copies of all communications sent to management and union related to the injury or illness*

***Workplace Monitoring***

Workers have the right to observe and be informed of all monitoring results involving their specific work areas or related to areas with which they have direct contact. Records should include:

*Hazard* ●

*Frequency and type of monitoring* ●

*Names of individuals conducting monitoring tests* ●

*Dates monitoring results were recorded, and where monitoring was conducted* ●

*Any efforts by management to lower exposure levels exceeding legal limits* ●

Individual workers usually find it impossible to correct the numerous and recurring health and safety hazards encountered on the job, or to consistently follow up on any improvements made. Unions can do that. To help their unions document problems, each individual should keep a notebook or log specifically devoted to health and safety communications, with separate sections for union, management, and government personnel.

***Communications with Union, Management, and Government Personnel***

In each section:

*Record in chronological order and keep copies of all written requests, inquiries, and responses sent and received* ●

*Record and briefly describe all relevant telephone and personal conversations with management and first-line supervisors on health and safety issues* ●

*Keep all relevant materials and information received as a result of such communications* ●

Complaints should adequately identify the hazard, its location, the standards violated (if known), and sufficient background and supporting information to justify the complaint. In addition, during an inspection be prepared to inform the inspector of any efforts you or your representative have made to resolve the problem—communications with management, union, or government personnel. (Your personal Health and Safety Records should include such information).

***Filing Complaints (Inspection Requests)***

Complaints should indicate:

*The problem and, if there's a state program, whether it is a health or safety hazard* ●

*Whether you or other workers are in immediate danger (imminent danger)* ●



- *The hazard's location—building, area, specific machine, work process, shift, etc.*
- *Names, addresses, and telephone numbers of management representatives previously contacted about the problem*
- *Date and content of any oral or written communications with management, government, or union personnel (with copies attached)*
- *The specific jobs or work processes performed by you and other potentially affected workers, and how these relate to the hazard*
- *Whether you or others have been made ill or injured as a result of exposure, and whether worker's compensation claims were filed*
- *Whether the problem has occurred in the past, and whether a citation or penalty was ever issued*
- *Whether you have raised this issue with union representatives for possible grievance action*

Always keep a copy of the complaint in your personal records. In addition, send a copy to union representatives if not yet notified of your complaint. Keep a record of names, dates, and content of any conversations with union and management personnel prior to inspection.

### ***Filing Discrimination Complaints***

The OSH Act protects workers against employer discrimination for exercising their rights under the Act. Keep records of all management actions possibly related to any complaint about workplace hazards. Your records should include:

- *Copies of job evaluations (to later demonstrate your work performance has never been criticized)*
- *Absences and illnesses (to later demonstrate you have not abused sick leave provisions)*
- *Management responses to your complaints about health and safety hazards (especially if management representatives seem hostile or threatening)*
- *Whether your relationship with management deteriorated following complaints about health and safety hazards (document how—letters of reprimand from your personnel file, denied promotion or merit increases, general harassment, termination, layoff, etc.)*
- *Names of workers and union representatives told about your health and safety complaints and about management's responses (they may*

*later serve as witnesses at a discrimination complaint hearing)*

*Copies of all conversations and communications with management  
subsequent to filing a discrimination complaint (also send copies to  
union representatives)* ●

Most states have labor laws requiring employers to protect employees sustaining job-related injuries or illnesses by carrying worker's compensation insurance or by self-insurance certification.

### ***Filing Worker's Compensation Claims***

Workers should promptly report job-related injuries or illnesses to management and union representatives. Employers should refer them for necessary medical care and immediately report the claim to the insurance carrier.

In some states, the employer's insurance pays the injured worker's necessary medical care, temporary disability benefits at  $\frac{2}{3}$  of lost wages, and long-term benefits for permanent disability. The employer or employer's insurance carrier may also pay for the vocational rehabilitation of qualifying disabled workers.

Workers believing they have not received sufficient benefits to compensate them for injury or illness should file a claim with the state worker's compensation program. Although many claims are not disputed by employers, workers should be prepared to provide background and supporting information justifying their claims.

If you file a worker's compensation claim, be prepared to:

*Explain your specific occupation, the duties involved, and the skills  
required (this information will help determine your compensation  
rate)* ●

*Present your records of your annual earnings (W-2 forms) for at least  
the previous 3 years and any additional work-related, employer-paid  
expenses such as meals, travel, per diem, overtime, etc. (additional  
earnings might increase the hourly pay rate computed for your  
claim)* ●

*If you are a new or recent employee, produce evidence that you  
would have continued working, and that there were no indications  
of possible termination or layoff (your union business agent may  
attest to the work's projected availability)* ●

*Explain the date and nature of the injury or illness, and how it occurred* ●

*Present evidence from your personal health and safety records of all  
previous job-related injuries and illnesses, and previous worker's* ●

*compensation claims (previous injuries or illnesses contributing to your present disability may increase your claim)*

- *Present copies of information in your personnel file, especially reports about good work habits or previous injuries or illnesses*
- *Indicate whether another party's negligence caused or contributed to your injury or illness (if so, a third-party or malpractice suit may be possible in addition to a worker's compensation claim)*
- *Present a record of all employer-made payments related to your illness or injury—employers may be additionally penalized for unreasonable delay in furnishing such benefits as*
  - 1) prescription and medical bills*
  - 2) mileage to and from physicians' offices, drug stores, etc.*
  - 3) temporary and permanent disability payments based on the correct rate*
- *Present evidence of any injuries and illnesses sustained since you have returned to work, including*
  - 1) how long you were off the job*
  - 2) how many days you were unpaid*
  - 3) the date you returned to work*
  - 4) whether you were penalized when you returned to work*
- *Explain your claim's main objective(s) to help your advisors determine the most effective method to pursue your case*
  - 1) medical treatment*
  - 2) financial compensation*
  - 3) vocational rehabilitation*

You may want union or legal representatives to present your case. If so, go over the above information with them before the hearing.

# Workplace Standards

# Appendix A

**O**SHA and state health and safety standards were adopted from 3 existing sources:

- *Existing federal or state standards*
- *National Consensus Standards from the American National Standards Institute (ANSI) and others*
- *Proprietary Standards from such sources as Underwriters Laboratories or the American Conference of Governmental Industrial Hygienists.*

Standards-setting procedures were established by the 1970 OSH Act and subsequent state acts so new standards can be promulgated at state and federal levels as the need arises or as more information becomes available (particularly for air contaminants).

Knowing which Federal standards are most frequently violated in the floor covering industry may help you anticipate common hazards in your workplaces. Some of the Federal OSHA standards most frequently violated are briefly summarized by general area in the following table.

Violated Federal Regulations	General Area
<i>Unless otherwise provided, all electrical work, installation, and wire capacities must meet National Electrical Code specifications.</i>	<b>Electrical</b>
<i>Non-current-carrying metal parts of portable and plug-connected equipment must be grounded.</i>	
<i>Smoking is prohibited at or in vicinity of fire hazard operations. A sign, "No Smoking or Open Flame," must be conspicuously posted at such worksites.</i>	<b>Fire Protection and Prevention</b>
<i>At most, only 25 gallons of flammable or combustible liquids may be stored in a room outside an "approved" storage cabinet.</i>	
<i>Use flammable liquids only if flames or other ignition sources are nonexistent.</i>	
<i>Firefighting equipment must be provided for every 3000 sq. feet of protected building area.</i>	

*The distance from any point to the nearest extinguisher must not exceed 100 ft. Allowable extinguishers are:*

- 1. Fire extinguisher rated not less than 2A*
- 2. ½''-diameter hoseline less than 100' long and capable of discharging at least 5 gallons per minute.*
- 3. 55-gallon open drum of water and 2 fire pails.*

*Each floor must have at least one extinguisher.*

*Extinguishers rated not less than 10B must be provided within 50 feet of operations using more than 5 gallons of flammable or combustible liquids.*

**First Aid** *When required, first aid supplies must be easily accessible.*

**Guarding** *All sprocket wheels or chains must be enclosed unless more than 7 feet above the floor or platform.*

*If exposed to employee contact or otherwise creating a hazard, reciprocating, rotating, or moving equipment parts must be guarded. The guards must meet ANSI Standard—"Safety Code for Mechanical Power Transmission Apparatus."*

**Housekeeping** *During construction, alteration, or repair: form and scrap material with protruding nails and all other debris must be kept cleared from work areas, passageways, and stairs; combustible scrap and debris must be removed at regular intervals and safe removal means provided.*

**Personal Protection** *Employees working in areas where head injuries are possible must wear protective helmets meeting ANSI Standard—"Safety Requirements for Industrial Head Protection."*

*The employer must require that employees exposed to hazardous conditions (or where the need is otherwise indicated) wear personal protective equipment.*

*Employers must provide employees using hand and power tools, exposed to falling, flying, abrasive, or splashing objects or harmful dusts, fumes, mists, vapors, or gasses, with necessary protective equipment.*

---

*\*From "Construction Safety and Health Regulations," OSHA, and "Occupational Safety and Health Standards" (for General Industry), OSHA.*

Safety standards are for the most part straightforward and easily understood. For example:

*“Belt sanders shall have both pulleys and the unused run of the sanding belt enclosed.”*

*“Portable circular saws having a blade diameter over two inches shall be equipped with guards or hoods which will automatically adjust themselves to the work when the saw is in use, so that none of the teeth are exposed to contact above the work.”*

Health standards require some explanation. Most are for air contaminants since most substances enter the body through the respiratory system. Those, such as benzene, which can also enter the body through the skin, have a lower exposure limit than they would if only inhaled. Standards for skin-absorbing substances are marked with an (s).

Air contaminant standards are mostly in numbers—the concentration (amount of a substance per amount of air) of a particular substance to which a worker can be exposed (exposure limit). Exposure limits are usually given in units of ppm or mg/m<sup>3</sup> or both.

Dust exposures may also be in mppcf (millions of particles per cubic foot).

*Parts of the substance per million parts of air. 1 ppm is equivalent to* **ppm**  
*1/15 inch per mile.*

*Number of milligrams of a substance in a cubic meter of air (a cubic* **mg/m<sup>3</sup>**  
*meter is approximately a cubic yard).*

*Fibers per cubic centimeter of air. Used for the asbestos standard,* **fibers/cc**  
*which also states that fibers must be greater than 5 microns in size.*

Generally, exposure limits are for 8-hour time-weighted averages. An 8-hour average exposure can be determined either by taking a full 8-hour sample or by measuring the amount of substance to which a person is exposed at various times during an 8-hour day and averaging these exposures. A “C” alongside the exposure limit number indicates the exposure limit listed is a ceiling value. *No* exposure above a substance’s *ceiling value* is allowed even if the 8-hour exposure averages to less than the listed standard.

Little is known about most chemicals used in the workplace. Standards exist for only slightly more than 500 substances. Based on the *best currently available evidence*, many of these standards may not adequately protect exposed workers if sufficient research has not been done or if all relevant information on the substance isn’t available.

### **Problems with Air Contaminant Standards**

Standards do not account for the interaction between several substances, either in the air or when metabolized by the body. Yet such synergistic effects may be more hazardous than the effects of the individual substances alone or added together. The effects of combined substances are considered only if they are known to be similar, as with the solvents toluene and xylene.

Standards are not fine distinctions between safe and dangerous concentrations. They are only guides to controlling health hazards. Exposures that produce serious problems in one person may affect another less radically.

# Glossary of Medical Terms

## Appendix B

<i>(Short-term), taking a short time to produce an effect or disease.</i>	<b>ACUTE</b>
<i>Any condition in which the number of red blood cells, the amount of hemoglobin, or the volume of packed red blood cells per 100 milliliters of blood is less than normal.</i>	<b>ANEMIA</b>
<i>An allergic reaction of the lungs—the air passages close down, making breathing difficult.</i>	<b>ASTHMA</b>
<i>Infection of the air tubes (bronchi) causing increased mucous (phlegm) production and reducing breathing capacity.</i>	<b>BRONCHITIS</b>
<i>Abnormal and rapid growth of cells, which may start in one part of the body and spread.</i>	<b>CANCER</b>
<i>(Long-term), taking a long time to cause a disease.</i>	<b>CHRONIC</b>
<i>Redness, cracking, itching, swelling of the skin.</i>	<b>DERMATITIS</b>
<i>Oxygen-carrying part of the blood.</i>	<b>HEMOGLOBIN</b>
<i>Having an effect on outer layer of skin, mouth, lungs, throat, etc., which may cause burning, chapping, drying, or swelling.</i>	<b>IRRITANT</b>
<i>A chemical's effect which takes place at the point of contact.</i>	<b>LOCAL</b>
<i>An acute disease with flu-like symptoms, caused by exposure to fumes from metals such as zinc and magnesium—symptoms can last 24 to 72 hours without apparent long-term effect (usually, only workers new to a process or who have been away from it for awhile develop symptoms).</i>	<b>METAL FUME FEVER</b>
<i>Having an effect on the central nervous system, especially the brain, with such symptoms as giddiness, dizziness, headache, confusion, and in some cases, possible coma or death.</i>	<b>NARCOTIC</b>
<i>The lungs become so irritated they fill with fluid (similar to a burn blister).</i>	<b>PULMONARY EDEMA</b>
<i>Particles of dust, fumes, etc., small enough to get into the lungs.</i>	<b>RESPIRABLE</b>
<i>An allergic condition (sensitivity reaction) that usually affects either</i>	<b>SENSITIZATION</b>



*the skin (dermatitis) or the lungs (asthma). Once exposure to a substance has caused a reaction, the individual is sensitized, and any further exposure will cause a reaction.*

**SYNERGISM**    *The combined action of two or more chemical substances.*

**SYSTEMIC**    *A chemical's effect on the body which is someplace other than the point of contact.*

**TOXIC**    *Hazardous to a particular organ or system—silica for example is toxic to the lungs.*

# Worker's Compensation\*

## Appendix C

**A**ll states have workers compensation laws in one form or another. The California law was passed early in the 20th Century to benefit workers with job-related injuries or illnesses. The California law:

*Insures that employees with industrial injuries have adequate support for themselves and their dependents while unable to work* ●

*Provides a means to settle disputed claims as quickly as possible* ●

Before the California Worker's Compensation law was passed, workers injured on the job could only recover lost wages and medical expenses by suing their employers in court. The process was costly, time consuming, and unfair. Workers rarely received any compensation. The current law replaces court jurisdiction with an automatic, no-fault insurance program. Though it insures that *any* worker can be compensated, it also limits the employer's financial responsibility.

Under the California Worker's Compensation system, a compensable *industrial injury* may be defined as:

<i>Caused by specific incidences or exposures</i>	<b>Specific Injuries or Diseases</b>
<i>Resulting from the combined effect of recurring physical or mental trauma</i>	<b>Cumulative Injuries</b>
<i>Occurring from exposures over a period of time to hazardous substances or physical agents in the work environment</i>	<b>Occupational Diseases</b>
<i>Conditions such as heart disease and arthritis if worsened and made disabling by work-related incidences or conditions</i>	<b>Work-Aggravated, Pre-Existing Conditions</b>
<i>To dentures, artificial limbs, hearing aids, eye glasses, medical braces, etc. if caused by work-related incidences or conditions</i>	<b>Damage</b>

In addition to the more easily recognizable injuries and illnesses such as dermatitis, back injuries, broken bones, and so on, other *industrial injuries* that may be compensable include: heart disease; metal fume fever (with flu-like symptoms); emphysema; cancer; tuberculosis;

---

*\*This material was not prepared under OSHA contract #J-9-F-6-0017.*

silicosis; arthritis; nervousness; high blood pressure; mental breakdown; suicide; berylliosis; neuritis; pneumonia; asthma; kidney and liver damage; etc.

**WHEN IS AN  
INJURY  
WORK RELATED?**

To be compensable, work-related injuries must *arise out of* or *in the course of* employment. To *arise out of employment*, the injury must occur while the employee is performing a work-related service or function. However, the employment doesn't have to be the sole cause of injury. Workers may be eligible if the employment is only a contributing factor. In such case, the injury is *proximately* caused. To be *in the course of employment*, the injury must occur while the employee is:

- 1 *Going to or from work*
- 2 *Travelling for the employer*
- 3 *Going to the restroom, engaging in recreational activities during breaks, or doing other acts of personal comfort or convenience during work hours*
- 4 *In the workplace parking lot*
- 5 *Leaving the work premises or going to work*
- 6 *Any reasonable doubt that the injury is work related must be decided in the employee's favor.*

**REMEMBER**—the key issue is whether the injury or illness is caused by your job.

**WHO IS COVERED?**

Worker's compensation protects most California workers, including minors, apprentices, and public employees. The law does *not* cover:

- 1 *Casual employees earning less than \$100 in 10 days or less*
- 2 *Household domestic employees working less than 52 hours per week*
- 3 *Prison laborers*
- 4 *Newspaper minors purchasing the papers they sell*
- 5 *Volunteer workers*
- 6 *Welfare workers working for charitable organizations in exchange for room and board*
- 7 *Part-time gardeners working less than 44 hours per month per*

<i>Subscription watchmen paid by several nonindustrial establishments</i>	8
<i>Athletic sponsors</i>	9
<i>Nonsalaried partners in a business, worker-partners, or employee-partners</i>	10
<i>Independent contractors</i>	11
<i>Employees with their own worker's compensation laws, such as federal employees and employees involved in interstate commerce—longshore and harbor workers, seamen, railway employees</i>	12

California law guarantees workers 3 kinds of benefits—medical care, rehabilitation, and lost wages.

## **WHAT ARE THE BENEFITS?**

The employer's insurance company pays all medical costs directly to service providers. Benefits include:

### **Medical Care to Cure the Injury or Illness**

<i>Doctor bills</i>	1
<i>Drug prescriptions</i>	2
<i>Hospital costs</i>	3
<i>Laboratory and x-ray test fees</i>	4
<i>Costs of crutches, wheelchairs, etc.</i>	5
<i>Costs of travelling to and from injury-related services—doctor, pharmacy, physical therapist, etc.</i>	6

The employer or his insurance company pays all rehabilitation service costs directly to service providers. Sometimes rehabilitation is an extension of medical treatment, for example physical therapy to strengthen muscles. Disabled workers may also qualify for vocational rehabilitation and retraining if prevented from returning to their usual jobs by the injury.

### **Rehabilitation Services Necessary for Worker's Recovery and Return to Work**

The most usual type of payment is TEMPORARY DISABILITY, made as long as you haven't reached maximum eligibility and your doctor says you are unable to work. Additional cash payments will be made after you are able to return to work for any PERMANENT DISABILITY such as amputated fingers or loss of sight or hearing. If the injury or illness causes death, payments will be made to surviving dependents.

### **Cash Payments for Lost Wages**

TEMPORARY DISABILITY PAYMENTS help injured workers meet daily expenses while recovering from an injury or until further improvement is not expected. At this point, temporary disability payments stop. Employees who are still unable to return to work or permanently disabled may be entitled to PERMANENT DISABILITY PAYMENTS. If injured workers are hospitalized, temporary disability payments start immediately. If they are not hospitalized, payments are delayed for 3 days. Nonhospitalized workers will be paid for the 3-day wait if their disability lasts more than 21 days. Under no circumstances can temporary disability payments be made for more than 240 weeks during the 5 years following the date of injury.

PERMANENT DISABILITY PAYMENTS are begun when the injury's effects became *stationary*. That is, a decision is made that the injury is not going to get any better or worse. At this point, the disability is rated to determine the amount of money to be received for permanent loss of working ability. The *percent of permanent disability* determines the number of payment weeks. Unless you are *totally disabled*, payments can last no more than 621¼ weeks (approximately 9 years).

**HOW ARE  
DISABILITY CASH  
PAYMENTS MADE?**

For injuries occurring on or after April 1, 1974, the minimum temporary disability rate is \$35 per week, the maximum \$119 per week. The award is ⅔ the injured worker's *average* weekly wage at the time of injury, as long as the average is no more than \$178.50 per week. Those earning more are still entitled to only \$119 per week.

**Temporary Benefits**

Temporary disability payments are made at least twice a month. They are exempt from:

- 1 *State and federal taxes*
- 2 *Social security taxes*
- 3 *Union or retirement fund contributions*
- 4 *Attachment (garnishment) by creditors*

**Permanent Benefits**

Permanent disability benefits are determined from: the worker's earning capacity, age, and occupation at the time of injury; the kind of injury; and the percent of disability. The minimum award is \$20 per week. The maximum is \$70 per week unless the injury or illness is totally disabling (at least 70 percent) and occurred on or after April 1, 1974. In that case, permanent disability payments are based on the temporary disability rate, and payable for life.

Dependents of workers killed by job-related injuries or illnesses are

entitled to \$40,000 maximum if the death occurred on or after January 1, 1975. The only exception is for a surviving widow with one or more dependent minor children. Then, the maximum benefit is \$45,000. There is also a \$1,000 maximum burial expense.

File for Worker's Compensation *as soon* as you sustain any industrial injury or disease or think you have injury or disease. There are *time limits* for filing your claim:

*One year from date of injury (for specific injuries and illnesses),*

*or*

*One year from date the insurance company last furnished benefits,*

*or*

*One year from date worker knew or should have known the disability was work-related (for cumulative injuries or occupational diseases),*

*or*

*One year from date of becoming disabled (for cumulative injuries or occupational diseases)*

If your workplace has a first-aid facility, get immediate treatment, and report where, when, and how the accident occurred. In an emergency, immediately get the best treatment available. Report the injury to your employer as soon as your can.

If additional treatment is necessary, your employer or supervisor must make arrangements for medical care. You may be sent to a "company doctor." You can also go to your own doctor, but only at your expense unless the company agrees. If you don't like the company doctor, you may request a change of doctors *once*. However, you must choose from a list of 5 doctors provided by the employer's insurance carrier.

You can choose your own doctor *30 days* after reporting the injury. Choose wisely, and get advice on specialists from union representatives or individuals whose opinion you respect. Report your choice to your employer as soon as you decide so your bill will be paid promptly.

If you think you have not received all benefits due, contact your union representative, employer, and employer's insurance carrier. If still dissatisfied, get advice from the nearest State Division of Industrial Safety (DIS) office. It may be necessary to file an APPLICATION FOR ADJUDICATION OF CLAIM with the WORKER'S COMPENSATION APPEALS BOARD.

## **WHEN SHOULD YOU FILE FOR BENEFITS?**

## **WHAT SHOULD YOU DO WHEN AN INJURY OCCURS?**

### **What Happens If You Are Dissatisfied with All Company Doctors?**

### **What Happens If You Are Dissatisfied with Benefits Received?**

The Appeals Board is an administrative court of law. You can represent yourself, but you may prefer to have a union representative or attorney handle the case. The attorney's fee will range between 10 and 15 percent of the final award, and be deducted from it. If going to the Appeals Board is necessary, be sure to do it *within one year* of either the date of injury or your last medical treatment. Waiting any longer could mean losing your right to additional benefits.

Sometimes the parties to a disputed claim may want to settle on a sum out of court. Any such *Compromise and Release* must be approved by the Appeals Board. *Approval ends the employee's claim and releases the employer from further legal responsibility. Additional proceedings will be allowed only in rare instances.*

