# THE WAY TO SAFETY AND HEALTH

# FOR TEXTILE FINISHING WORKERS

## GOOD PRACTICES FOR EMPLOYEES

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service
Center for Disease Control
National Institute for Occupational Safety and Health
Division of Technical Services
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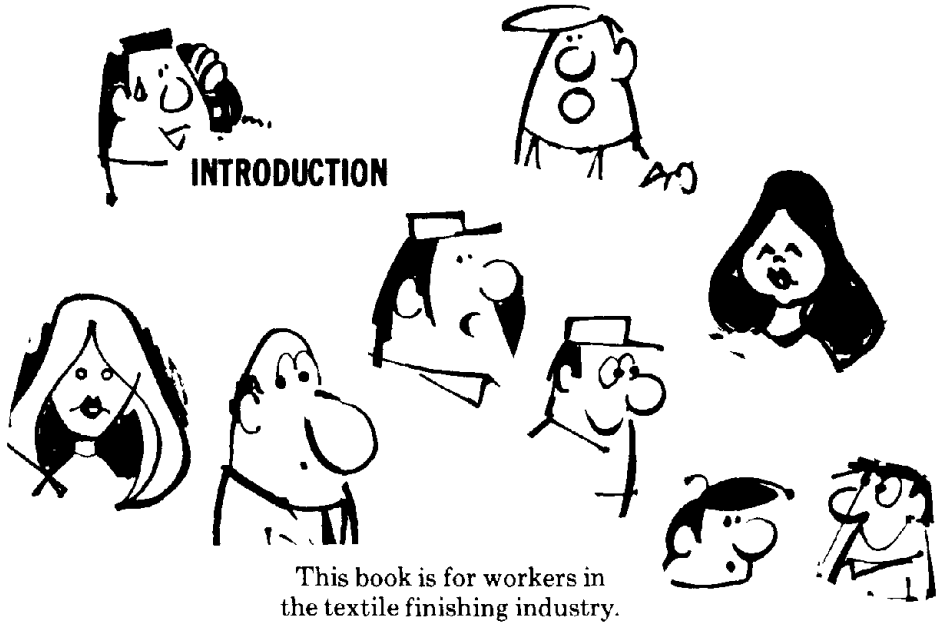
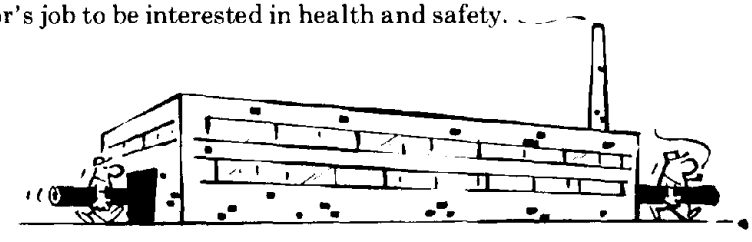


# INTRODUCTION

This book is for workers in the textile finishing industry.

It's for you men and women who work in the commission dyehouses, print works, and finishing plants, and in the dyeing and finishing departments of integrated mills. What you'll find are some good health and safety practices to follow. No matter how you say it, it comes down to one idea: HEALTH AND SAFETY PAY OFF.

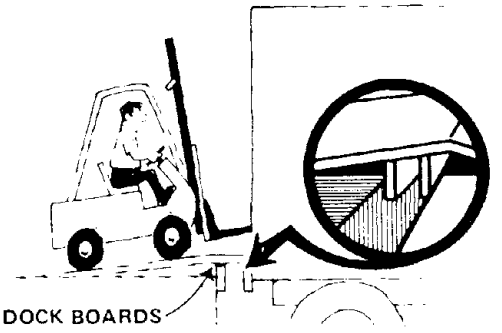
You'll find information in this book about hazards that may be found in your department and others. By reading this book and following its guidelines as you work, you can protect your health and prevent accidents. You will also be able to spot a hazard where you work in time to save others from injury or illness. If you do think there's a hazard of any kind in your department, tell your supervisor. It's part of your supervisor's job to be interested in health and safety.



# RECOGNIZING HAZARDS

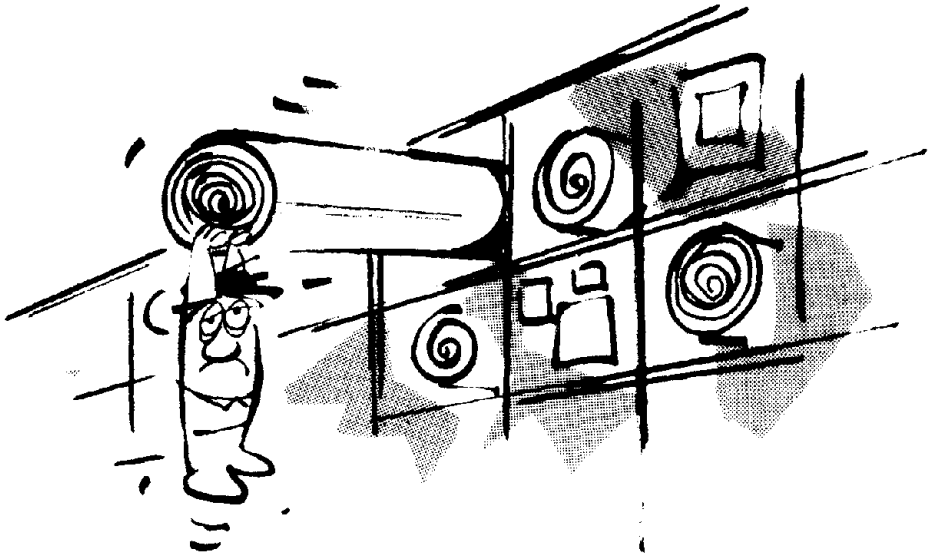
## Receiving and Greige Room

If you work for a commission finisher, your gray goods will probably arrive in large bales or rolls delivered by truck. When the truck is docked for unloading, make sure the truck driver sets the brakes and chocks the rear wheels. Then the rig can't roll away when your forklift is on the ramp between the trailer and the dock.

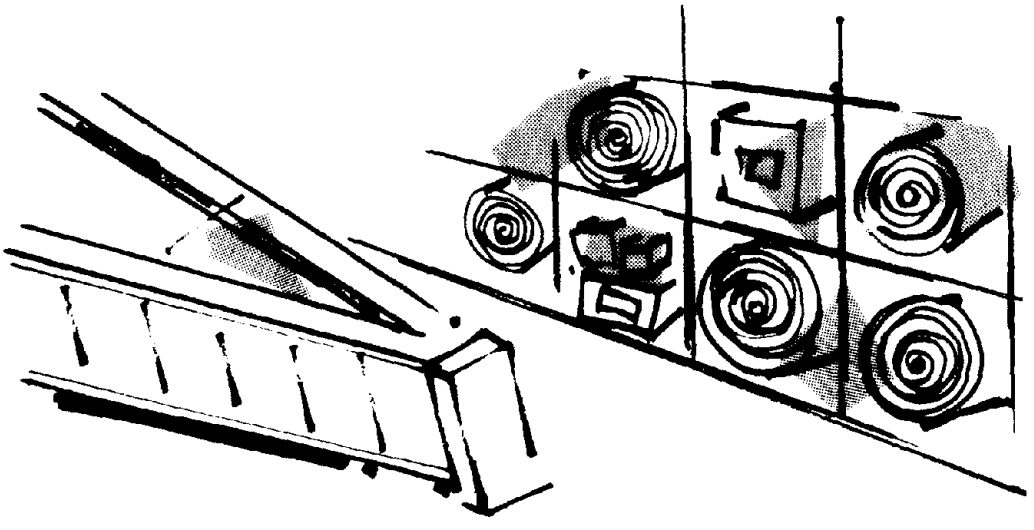



Also, make sure the dock (bridge) plates you use are set firmly in place. If you're loading or unloading railroad cars, make sure the same rules are followed: brakes set, wheels chocked, and dock plates in place.

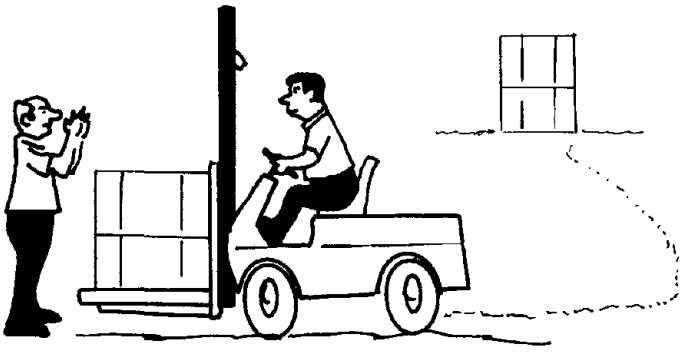
The cloth bales can weigh up to 500 pounds each. They may be lifted and moved as many as 50 times during processing in the plant. There are also boxes and cartons of different weights, shapes, and sizes that must be put into various storage areas.



It's very important for you to know the proper way to lift and when **not** to try the job by yourself. If you have the equipment you need to move a bale, use it. If you don't have the equipment, either ask for it or ask for help. Tell your supervisor what equipment or help you need. If you can get your job done in a better way, it will help your supervisor operate the department more efficiently.



There is an easy-to-use chart which you'll find in the back of this book — **"How to Lift Safely".** Post it in your work area and read it carefully. The lifting practices it recommends can help prevent injuries.

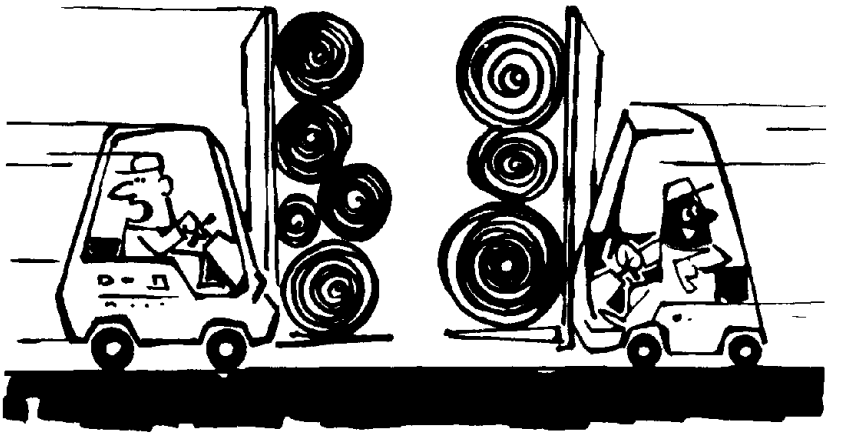


Whenever possible, use hand trucks, forklifts, hoists, and conveyors to lift and move stock. They can usually do the work more quickly and safely.

More than half of the hazards in the greige room involve the handling of bales and containers. Improper use of trucks and unsafe working surfaces are other major sources of hazards.

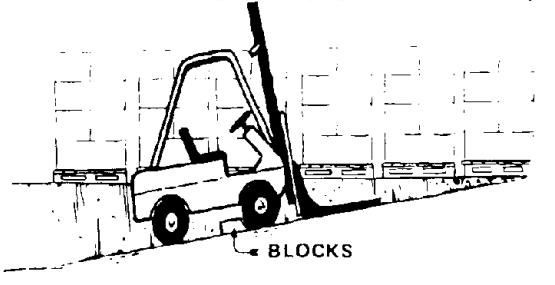
The machines you use for handling and lifting materials need some special attention. **If you use a two-wheeled hand truck,** it should have knuckle guards and you should wear gloves and safety shoes. Your truck should have brakes, and if the wheels stick out, make sure they're guarded.

Before you even take the controls of a forklift truck, you must have special training for the job. It's a lot like driving a car — you have to know and obey the rules of the road.



You know what an accident could do to you or a fellow worker. It's better to play it safe. There must be overhead guards to protect you from falling cartons or bales. Check your truck every day before you use it to be sure it is in good working order. If you find anything wrong, tell your supervisor.

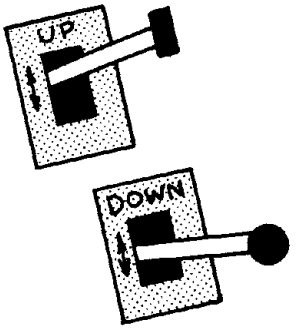
When you're driving, keep in the aisles. The permanent aisles should be marked with painted or taped lines. And when you stop driving, don't just "park it". Be sure you're not blocking an aisle or passageway. It's especially important not to block emergency equipment or the way to an exit. If you're leaving the truck unattended, lower the forks, set the brakes, put the controls in neutral, and cut the power off. If you've parked on an incline, chock the wheels, too.




Never drive with a load that blocks your front view. Lower the load enough so that you can see where you're going, or travel in reverse with the load trailing.

**If you drive a gasoline-powered forklift,** it produces carbon monoxide when it's running, just like an automobile. Carbon monoxide can cause headaches, confusion and dizziness, or shortness of breath even if you only breathe in a little. Larger amounts can make you unconscious or kill you. But you can't see, smell, or taste carbon monoxide gas. It can harm you or your fellow workers without warning. Don't leave your forklift running while it's parked or not in use. This is especially important in areas where there's little fresh air from ventilation. Although warehouse and storage areas should be properly ventilated, there may be "dead" areas where gases can accumulate.

**If you use an electric hoist to move stock,** its safe load capacity must be marked. Don't load the hoist beyond the limit. Use the proper attachments (i.e., hook, slings, or clamps) for the job. The controls for the hoist should be of very different shapes. The UP control should be positioned above the DOWN control and the DOWN control must be plainly marked.



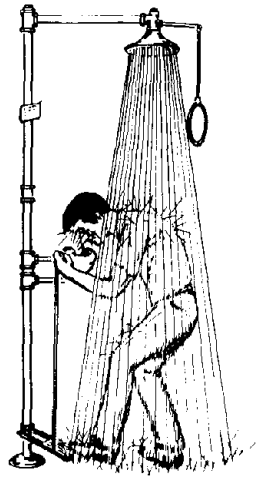

Your hoist must have limit stops to prevent the cable from breaking and flying back and hitting you. When you use the hoist, always leave at least two turns of cable on the drum. Inspect your hoist daily. Look for fraying on the control cable, broken safety latches on the hook, broken or stretched cables, and the condition of the slings.

**If you do layout,** the metal tiebands around a bale of cloth can be a hazard, too. Wear heavy-duty gloves anytime you handle these bands. The edges are sharp and could cut you. When you cut the bands to unroll a bale, wear protective goggles or a face shield. The loose end of the band could fly into your face or eyes after it's cut.

**If you're a sewing machine operator,** you have some special hazards to watch for: sewing needles, pins on the feeding mechanism, scissors, knives, and unguarded machinery. Many of the accidents to sewing machine operators are caused by unguarded or defective machines. If you notice any problems with your machine, report it to your supervisor.

## Preparation Department

**One of the most dangerous chemicals in the preparation department is lye** (also known as caustic soda or sodium hydroxide). It can cause serious burns to your skin, eyes, nose, and throat. Lye can cause burns even when it has been diluted.



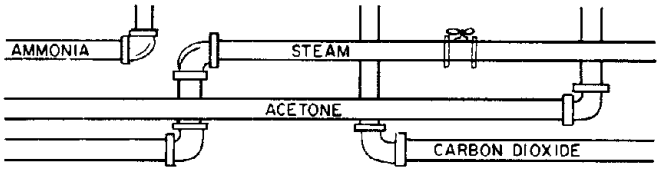
Always wear your protective goggles and gloves when you handle lye. **If your eyes are splashed with lye,** flush them out immediately at an eye wash fountain for 15 minutes, then get medical help as soon as possible. **If another part of your body is splashed with lye,** flood the area with water for at least fifteen minutes and then see a doctor. You should always know where the nearest eye wash fountain and emergency shower are located. Your employer must provide these facilities wherever harmful chemicals are used.

Shuttling chemical containers around the mill or pouring from storage containers can be risky jobs. To reduce this risk to you, the hand trucks or powered devices used to move acid carboys should be equipped with special holding clamps. Make sure glass carboys are boxed in safety bottle carriers which prevent the bottle from breaking if it is struck or dropped. Don't carry lye or other caustic chemicals in an open bucket. They'll spill too easily.

Wet floors in the preparation department create a slipping danger.


Keep the floor drains free of anything that might block them. Ladders, steps, and the tops of the kier boilers can also be hazardous when wet. Be careful when walking or working on these surfaces. Your employer must provide non-slip flooring. In wet areas, you should wear non-skid boots or shoes. These help prevent slips and falls.

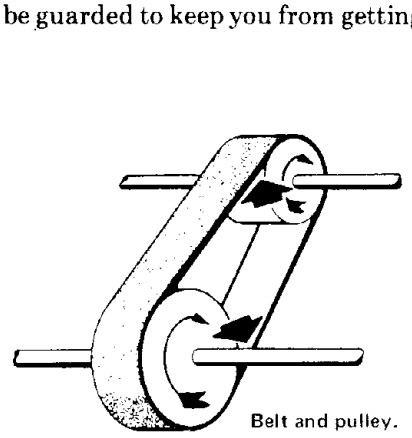
Other hazards in the preparation area include the steam and steam pipes. Both can give you painful burns. The pipes should be clearly



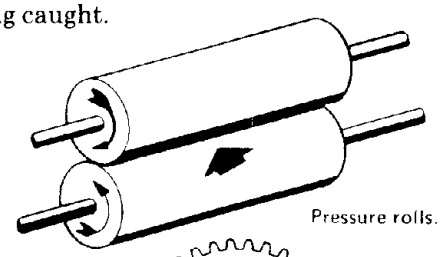

marked and insulated if they are within 7 feet of the floor. The kier boilers should have overflow pipes and splash guards.

**If you have to do any hand plaiting in the kier boiler,** you must wear either a self-contained breathing apparatus or a supplied-air respirator to protect you from the gases.

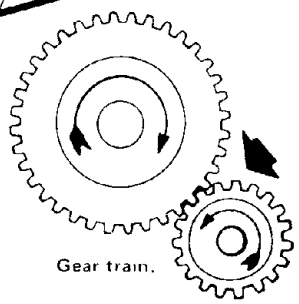
All pulleys, belts, gears, squeeze rollers, and similar equipment must be guarded to keep you from getting caught.



Belt and pulley.



Pressure rolls.



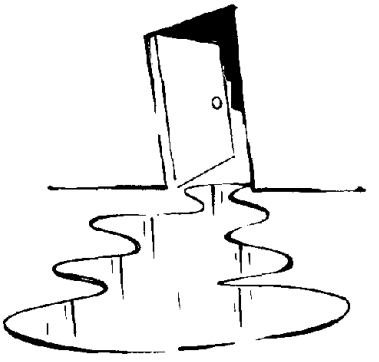
Gear train.

In some textile operations, the cloth is singed before it is bleached. **If you're a singer operator,** you have many hazards to watch out for. Singeing machine rollers must be guarded. If they aren't, ask your supervisor about getting guards put on. You must also look out for hot surfaces and open flames. Wet floors, steam lines, and unguarded belts and gears are hazards here, too.

## Dyeing Department

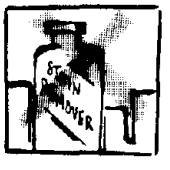

In the dyeing department, the hazards are unsafe working surfaces, chemicals, unguarded machinery, improper lifting practices, and heat.

Practice good housekeeping wherever chemicals are stored, handled, and used. Clean up spills quickly, and be sure to wear protective clothing and equipment while cleaning up. Put all chemical-soaked rags in closed containers. There are also things you can tell your supervisor



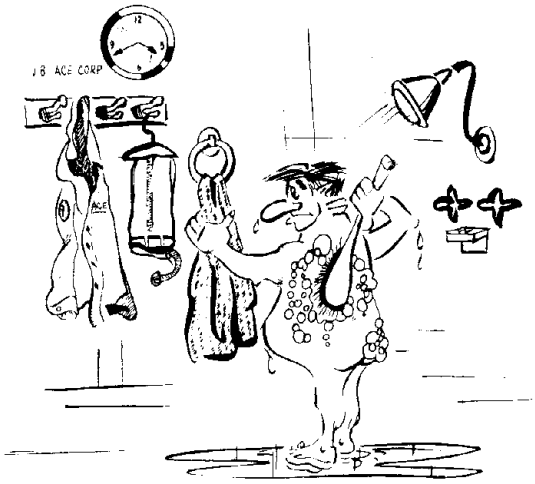
about so that they're corrected: leaking containers, leaking pipes, pumps, and valves, unemptied trash, and so on.

**Dermatitis** is a big problem in the dye room. Dermatitis is a skin irritation caused by direct contact with chemicals, including dyes. It may appear as sores, pimples, scales, or flakes on the skin. Your skin may be itchy, red, and blistered. Usually dermatitis will go away when your contact with the chemical ends. But it could come back again later after you contact only a little of the chemical. See a doctor if you think you have dermatitis. Wear goggles or face shields, gloves, sleeves, and aprons to protect you.

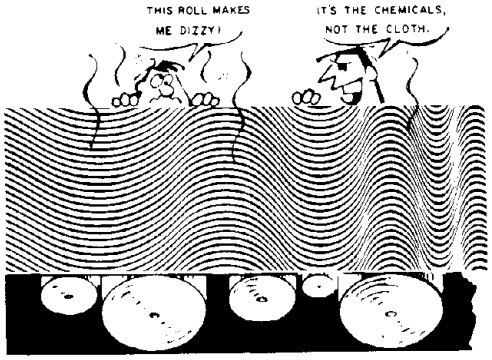


Don't use stain remover to clean the dye from your hands. The stain remover will take those upper layers of skin off and you'll be much more likely to get dermatitis. It's better to have stained hands for three or four days than to lose the protective layers of skin on your hand.

It's also important to have good ventilation and for you to wear protective clothing and equipment in the dye-coloring shop. **If you work with anilines or other hazardous dyes,** you should wear clean work clothes every day. You should also take a shower after each shift if



you've worked with aniline dyes or pastes. That way you won't carry any of these materials home and expose your family to them.




The vapors from aniline dyes and chemicals which are mixed and heated in dye shops can make you dizzy or sick to your stomach, or can

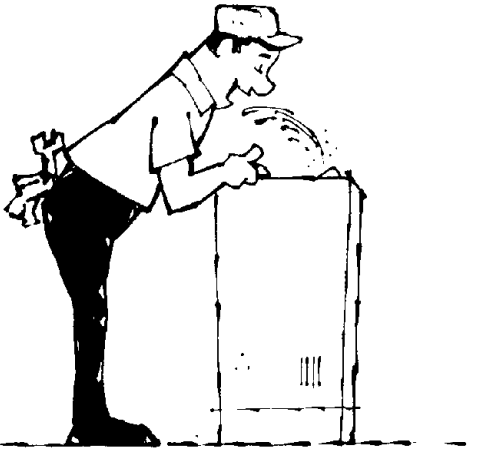
give you a painful headache. **If you spill aniline oil on your skin,** wash it off right away with soap and water, shower, and then see a doctor. You should wash off any dyes or coloring agents if they get on your skin and you should always get medical help quickly if you feel sick or if your lips or fingers turn blue. Read the section of this book called **"Safety With Chemicals"** for more information about chemical hazards and what you can do to protect yourself.

Machinery and equipment in the dyehouse can be dangerous. All belts, pulleys, rollers, etc., on dye house machines must be guarded. Jigs and pressure dye becks should have devices that shut them off or release pressure automatically if you get caught. Even on a guarded jig, use a stick — not your fingers — to straighten the cloth edge. If you find a problem that needs correcting, tell your supervisor.

The same rules from the **"How to Lift Safely"** chart apply in this area. Post the chart and read and follow its directions. Don't try to lift a roll of newly-dyed cloth by yourself. There are mechanical lifters around to do that job.

The dye house is usually a hot, humid place and that can be a hazard; too.

When you're boiling mixes in tubs, open the steam valves carefully. The hot liquid could scald you or another worker. Your supervisor should give you time to adjust to the heat and humidity if you're new on the job. Failing to replace the water and salt lost through sweating leads to heat problems such as heat exhaustion and muscle cramps. Fainting, heat fatigue, and even rashes can result from heat stress. Even veterans of the dye house should be on guard against heat exhaustion. Take your



breaks in cool areas. Drink plenty of water to replace lost body fluids.

While you can do much to reduce the heat hazard to yourself, employers, too, have a responsibility. Some things they can do are:

- locate cool drinking water as close to work areas as possible
- provide rest areas away from the heat for work breaks
- insulate hot equipment, often with a bonus of reduced process heat cost

## Drying Department

The drying department has many of the hazards we've talked about before and a few new ones.

Heat is a big problem here. You should treat the scutchers and dry cans with special care — they get VERY hot. **If you have to go into a heated chamber or into one that's filled with gases,** wear a supplied-air or self-contained respirator, a safety harness or lifeline, and protective clothing. Use the buddy system on this job. Someone must be standing by with his own protective equipment in case you get into trouble inside.

Never try to clean or fix a machine while it's running. Use a lockout on the power switch and keep the lock on until you finish. "Inching" buttons move the machine in small steps. They should be put in to make cleaning easier for you.

When lifting the rolls of cloth, get help if you need it. Post the **"How to Lift Safely"** chart from the back of this book and follow the safe lifting practices shown there.

## Finishing Department

In the finishing department, different chemicals are used to produce the desired finish on the fabric. Some of these chemicals, such as acids, caustics, formaldehyde, synthetic resins, and detergents, can irritate or

burn your eyes, nose, and skin. Other chemicals, such as amyl acetate, methylene chloride, and other solvents, could damage your liver, kidneys, lungs, or the blood-forming organs of your body if you breathe them over a period of time. If you use mercury compounds, they may cause damage to the brain and nervous system.

**Careless handling of any chemical can be dangerous.** If you have a headache or are short of breath, dizzy, jittery, or have an upset stomach when you're working with finishing chemicals, tell your supervisor. Then see the company doctor or nurse. For more information, read the section of this book called **"Safety With Chemicals".**

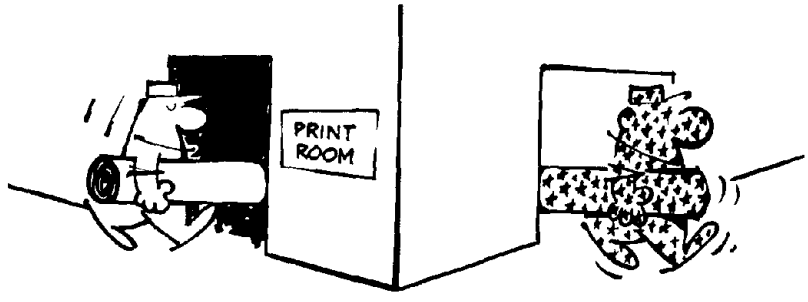
Tenter frames have an endless chain of clips which grab the cloth edges as the cloth enters. Those moving clips can grab you, too. These and other machines in the finishing department must have safety devices. You'll find more detail in the section of this book called **"Machine Safety".** Tell your supervisor if you think you've found a problem around the machines.

Steam pipes running into the machines and wet, slippery floors are two more trouble spots to watch out for. The steam can burn or scald you. Know where the steam cut-offs are.

You may work around noisy machines. Noise can be tiring, sometimes painful, and it's a threat to your hearing. If the noise can't be controlled another way, you may have to wear earplugs or earmuffs. You can find more information about noise and ear protection in this book, in the section on **"Personal Protective Equipment".**

When trucking or lifting the rolls of cloth, follow the safe lifting practices shown on the **"How to Lift Safely"** chart in the back of this book. The chart should be posted in the work area.

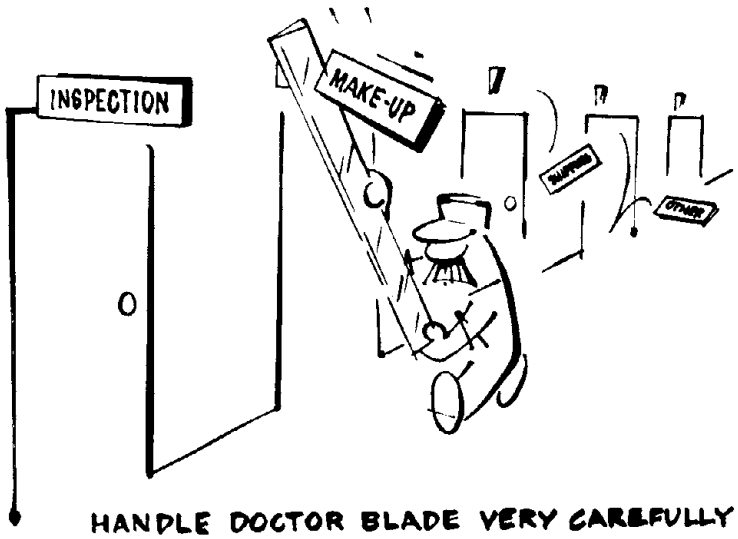
## Printing Department



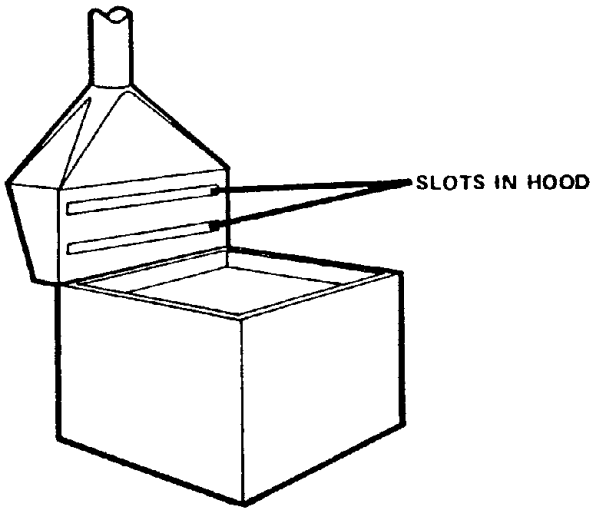

**Textile printing involves some of the most hazardous chemicals used in dyeing and finishing.** It's not possible to list in this booklet all of the chemicals you may use on your job. Some of the chemicals can irritate and burn your eyes, nose, and skin, and some can also hurt you internally if you don't protect yourself.

The thinners used to dry the colors quickly are flammable and explosive. The solvents used to make thinners produce dangerous vapors. You should not breathe these vapors. If your employer cannot prevent your exposure to the vapors with ventilation or other mechanical controls, you may have to wear a respirator. Read the section on **"Respirators"** in this book for more information. You'll also find more advice about working with chemicals in the **"Safety with Chemicals"** section.

The printing process requires the lifting of rolls of cloth, color tubs, copper rollers, sacks of raw ingredients, and so on. Post the **"How to Lift Safely"** chart from the back of this book and follow the safe practices it shows. The copper rollers are especially heavy. You should work in a team with others in the print room when you put a roller in place.




When handling the doctor blades, wear heavy leather gloves. The larger blades should be moved by two men or with a truck. Cleaning the blades is also hazardous. Be especially careful if you use flammable solvents for the cleaning. Wear metal mesh antistatic gloves and antistatic safety shoes when cleaning by hand. If you use a cleaning




bath instead, make sure a ventilation hood covers the bath so that solvent vapors are drawn out of your work area. Check the doctor blade rack. If the blades stick out beyond the frame, tell your supervisor.

The floors in the printing department are often covered with a thin film of water, or water-mixed dyes. It's colorful, but it's also very slippery and dangerous. Clean up dye and other chemical spills right away.

Inspect all the shells frequently. If you find worn or rough shells, tell your supervisor. And keep in mind the other hazards of the print shop, such as the steam and steam pipes, unguarded cooking kettles, and unguarded machinery.

## Inspection Department

Cloth inspectors must handle the rolls of cloth, use sharp tools, and work under bright lights. The glare from this amount of light can cause eyestrain. If you have headaches or feel any other signs of eyestrain, tell your supervisor. It may be possible to improve the lighting system so that you can do a better job.

In some inspection departments, ultraviolet (UV) radiation can be a hazard. Since UV radiation is not visible and its effects are often delayed, you can be exposed and not realize it. Your eyes and skin can be harmed. Wear special glasses, goggles, or a face shield to protect your eyes. Protect your skin by wearing gloves and long-sleeved clothing. You may also protect your skin by wearing "barrier creams" that help block out the UV radiation.

## Put-Up Room

Be sure that the tenter, hooker, yarder, and similar equipment in the put-up room have:

- all side arms enclosed in mesh guards
- all moving parts guarded to prevent accidental contact
- positively controlled brakes
- guarded blades, rollers, etc.

## Shipping Department

As a wrapper or packer in the shipping department, you face some of the same hazards found in receiving and the greige room. That means you should follow the same advice we gave earlier for those areas:

- Be careful driving and parking your forklift truck. Don't leave it running while it's parked or not in use.
- Always use the right equipment for materials handling — and always use it the right way.
- Post and use the **"How to Lift Safely"** chart from the back of this book.

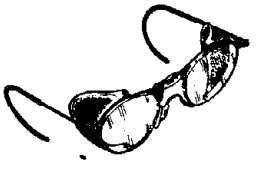
Conveyors are one hazard in shipping you'll need to be very careful about: cross the conveyor tracks only at the crossing.

## Repair and Maintenance Department

There are more sources of accidents and illnesses in repair and maintenance than anywhere else in a textile plant. Severe injuries occur more frequently here, too.

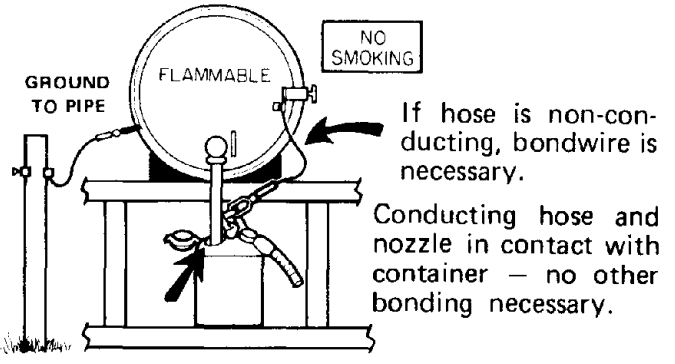
Here are just a few good ideas to put into practice if you want to reduce your chances of injury.

- Wear safety goggles when you're using any tool that throws chips or other flying particles (e.g., while grinding, welding, drilling, chipping, cleaning with steam or compressed air).

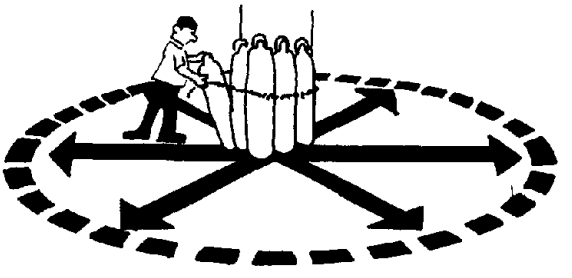


- Wear goggles and a face shield when handling caustic or corrosive chemicals or when working on equipment where dirt or chemicals can get into your eyes.

- Wash out your eyes with running water continuously if they are splashed by chemicals. Be sure to pull your eyelids away from the eyeball so all trapped chemicals are flushed away. See a doctor as soon as you can after the accident. DON'T WAIT!
- Use sparkproof safety tools around flammable liquids.
- Obey all "No Smoking" rules.
- When transferring flammable liquids, ground the drum and bond the container being filled to the drum.




- Store compressed gas cylinders away from heat, upright,



and secured. They shouldn't block aisles in the storage area. Move cylinders upright on a handcart, chained, with valve caps securely in place.
- Lock out all switches supplying power to any machinery before you work on it. If you use a key, put it in your pocket. If you find a locked-out power switch, don't try to turn the machine on. Check with the shift foreman before working on a machine.
- Know and follow the safety rules for the department you'll be working in. If you haven't already done it, you should read and be familiar with all the suggestions in this book.

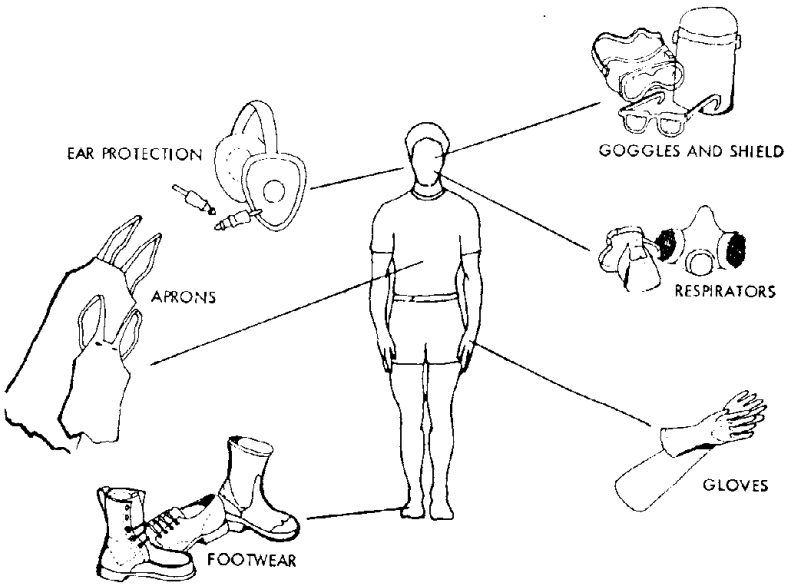
## Laboratory

You can reduce the health and safety risks in the laboratory by following this list of safety ideas.

- Don't work alone in the lab — at least one other person should always be in the same area.
- Use protective equipment when needed (glasses, goggles, shields, etc.).
- Smoke only in approved areas.
- All equipment operated under pressure must have a vented safety diaphragm or safety valve.
- When working above floor level, use only well-built stepstools or ladders with safety feet and place them on the floor so that they will not slip.
- Make sure that all moving parts on test machinery and other apparatus are guarded.
- Keep broken glass separate from other waste.
- Help keep the lab clean — clean up spills quickly, keep storage areas safely and neatly arranged, keep walkways clear, etc.
- When conducting accelerated tests, remember that you may need additional protection because you are using toxic chemicals in higher concentrations than are used in the plant.
- Know and follow the rules for disposing of chemicals.

# CONTROLLING HAZARDS

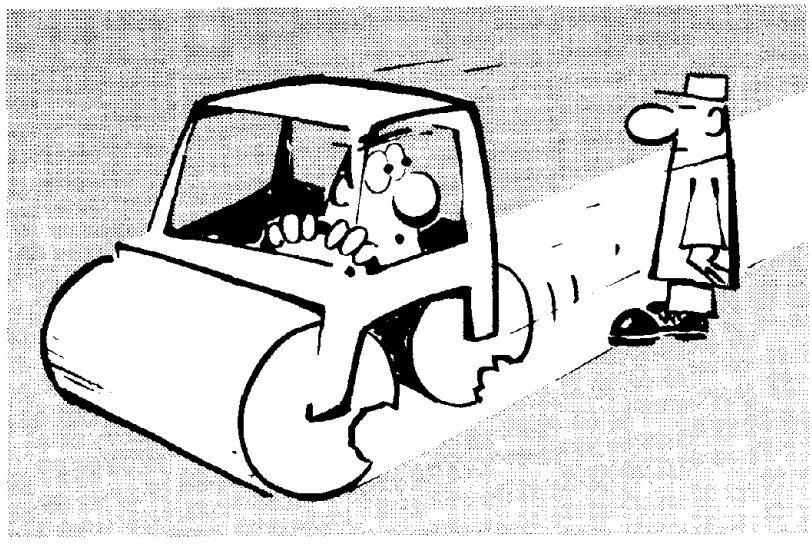
## Personal Protective Equipment




### Shoes

Nearly 250,000 foot injuries occur every year in industry. That's why you should have good foot protection to guard against everything from simple dermatitis to crushing injuries from heavy objects.

Whether you're moving 500-pound bales of cloth or 5-pound cartons, it pays to wear steel-capped shoes or foot guards. Safety shoes can help



protect your toes from the steel wheels of a heavy cloth cart going down your aisle. Check with your safety officer about how you can get safety shoes.

If you handle acids or caustics in large volume, work on pipelines filled with acids, or work near open chemical tanks, acid-proof plastic, rubber, or neoprene boots or overshoes are a must.

Wear waterproofed, slip-resistant shoes in areas where the floor is wet.

Wear conductive shoes or shoe coverings in areas where sparks might ignite explosive gases, liquids, or dusts.

## Gloves

It's no accident that hands are the most injured part of the body. They're always where the action is and often get hurt. Make sure you wear gloves when the situation calls for them — if you handle hot, wet, or sharp objects, or certain chemicals. Be careful when wearing gloves around machinery. They may be caught by moving parts and pull your hand into the machine. When handling sharp tools or hazardous materials, however, gloves are safe and very useful. It's a matter of picking the right kind for the job, and having the proper fit. In addition to general duty work gloves, there are a variety of special kinds made to guard against chemical hazards, flame and heat, cuts, electricity, and so on. Be sure you use the right gloves for the job.

## Goggles and Face Shields

Safety glasses or goggles and/or face shields are required if you handle chemicals, work around machinery that produces splashes or chips, cut bands in the layout department, or work around UV radiation. Goggles should fit comfortably and snugly and not get in your way. They should be long lasting, able to be disinfected, cleaned regularly, and kept in good repair. If you wear eyeglasses or contact lenses, you should be given goggles that fit without distorting your vision.

## Aprons

Aprons should be made of rubber or similar material that cannot be penetrated by caustics or acids. Your apron should cover the tops of your boots to prevent any liquid from spilling into the boots.

## Respirators

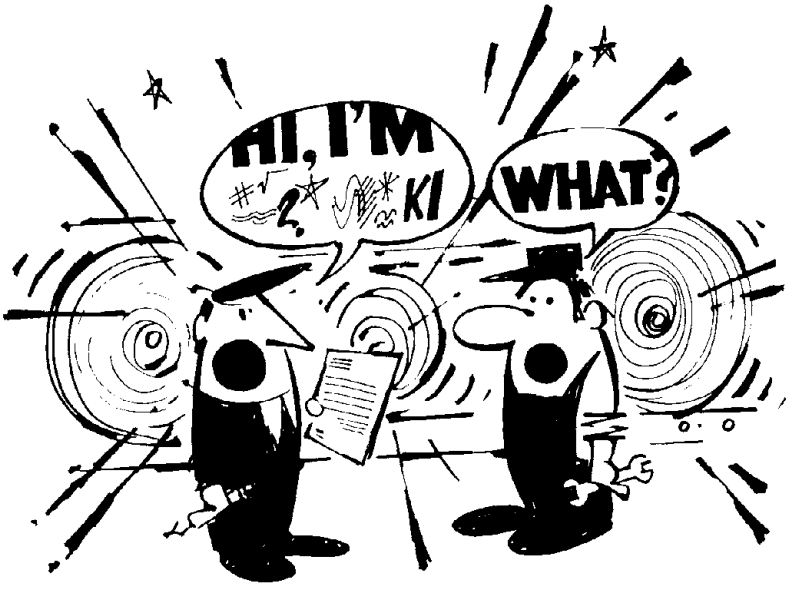
Before you start to wear a respirator, you should have a physical examination to determine if you have a physical problem which the respirator would aggravate. Your employer should be aware of any such problem.

The respirator shown above is a NIOSH/MESA approved type of respirator. **No single respirator is designed to protect you from all chemicals.** Be sure you have the kind for the job you're doing and the materials you work with. You must be trained in how to use and care for your respirator. Each time before you put it on, check your respirator to be sure it's working right. Check for proper fit — this is very important. Beards, mustaches, and eyeglasses may interfere with the seal.

Your respirator should be cleaned after each use, disinfected, and stored in a clean, convenient location. Filters must be replaced when you can smell vapor in the mask, when breathing becomes difficult, or when the respirator has been used for the specified lifetime of the filter cartridge.

**Ear Protection**

Tell your supervisor when a machine is making too much noise and is bothering you. One sign there might be too much noise is that you won't




be able to hear normal conversation around the machine, or if you must shout to be heard. Sometimes the noisy machine can be made quiet by enclosing it or redesigning it — this is a method of engineering control. If the noise can't be cut down to a safe level, you must be given and should use some type of ear protection.

Plain cotton does **not** provide protection from noise. There are two common kinds of protection — earplugs and earmuffs. The plugs are inserted in each ear. The muffs, like headphones, cover the ears. Some of these devices have to be fit to you by experts; others you can put in yourself. **If hearing protection is required, use it!** It's your first defense against permanent hearing damage.

## Machine Safety

You need well-designed machine guards and safety devices in a good safety program. Even the most skilled operator isn't always 100 percent "on guard".

Look for guards on these parts of the machines you work with: pulleys, belts, shafts, flywheels, cranks, gears, connecting rods, governors, rollers and other turning parts, and areas of the machine which could produce sparks or chips. The stop and start controls should be located so that your hands or fingers don't hit gears or other turning points or the machine guards and so that the machine can't be accidentally started. Every machine must have a mechanical or electrical stopping device. Machines driven by belts and shafting must have a locking type shifter or a similar positive control device.

## Safety with Chemicals

There are two hazards from chemicals — the danger to your health and the danger of explosion and fire.

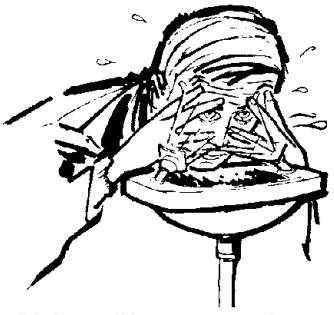
You should learn about the chemicals you work with. Your employer must tell you which of the chemicals you use are toxic (poisonous), explosive, or flammable. Booklets, warning signs, labeling, and safety meetings are all a part of this training. It's a good idea to pay attention to them.

Chemicals can harm you if you breathe them or if your skin is in contact with them. They may slow you down or make you sleepy. Or, they may hurt you in some way you can't feel. The best way to stay healthy around chemicals is to keep them in their proper place so they can't hurt you.

- Read the manufacturer's instructions for the chemicals you use. Follow the special precautions given there.

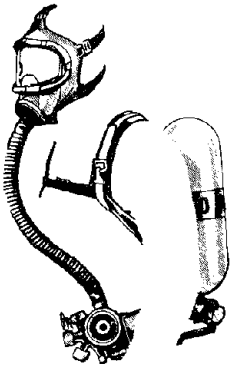
- Wear personal protective equipment — goggles, gloves, boots, etc. — when you work with chemicals. If ventilation or other mechanical controls cannot reduce your exposure, you will have to wear a respirator. Read the section of this book called **"Personal Protective Equipment"** for more information about respirators.
- Keep the places where chemicals are handled (for example, the mixing room) clean.
- Don't carry or store chemicals in open containers. Acid carboys should be handled in safety bottle carriers to prevent shattering.
- Transfer chemicals by pumping systems, rather than by gravity flow. When pumping acid or other chemicals, never use air pressure for the job.
- Open chemical containers slowly and with care. Pressure can build up inside a closed container.
- Avoid long or repeated contact with chemicals. If you are splashed with a chemical, wash it off immediately. In the case of caustic chemicals and acids, flush the affected area with running water for at least 15 minutes to wash off all of the chemical. See a doctor as soon as possible for treatment.

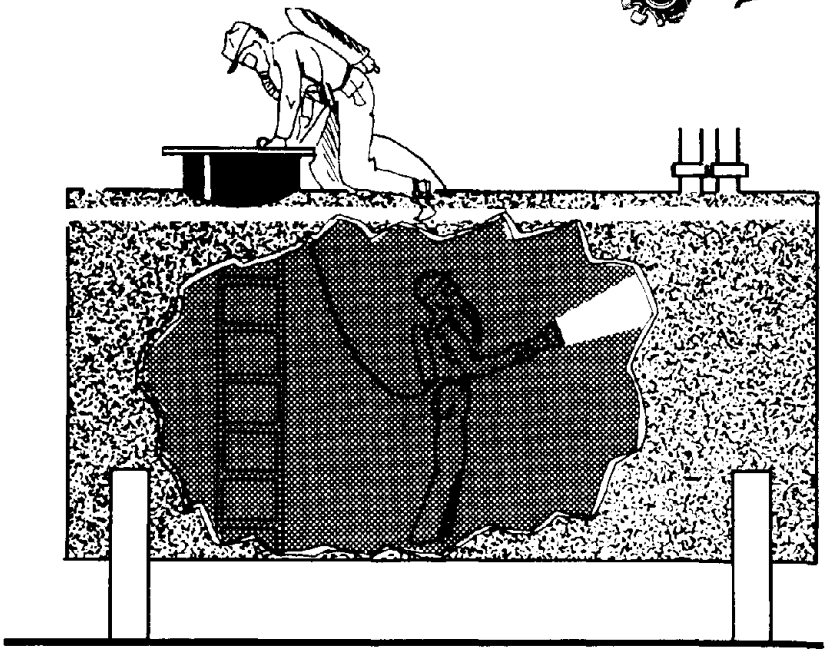
- If your eyes are splashed with a chemical, flush them out immediately with clear, clean water for about 15 minutes. Hold your eyelids open and move your eyeballs around so that none of the chemical is trapped under the lid. After this flushing, see a doctor immediately.



- Clean up all spills immediately. If the spill was caused by a leaking container or pipe, tell your supervisor.
- Dispose of chemical-soaked rags in closed containers. Learn the safe ways for getting rid of chemical waste.
- Keep chlorinated solvents away from open flames and high temperatures. They could be changed into a poisonous gas by the heat. This is particularly a hazard during arc welding. Check with your supervisor to find out what chlorinated solvents you use.

- Wash your hands and face thoroughly before eating, smoking, or using the toilet.
- When you have to enter a tank for inspection, cleaning, or repair, wear an approved supplied-air respirator (shown here at right) or self-contained breathing equipment. A chemical cartridge or canister type of respirator does not protect you against high doses of solvent vapors or from lack of oxygen.





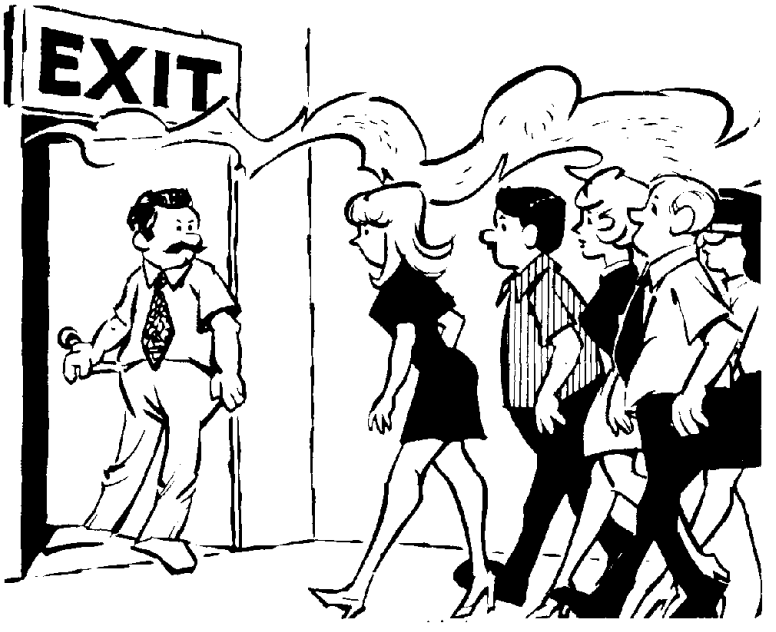
Another worker must remain outside the tank and keep you in sight in case something happens. He should be wearing a duplicate set of this equipment, so he can go in and get you out fast.

- Clean any chemical drums carefully before reusing them. Never weld or cut on a used drum.
- Learn your plant's emergency plan for large leaks or spills, equipment failures, or fires.

## Fire Safety

The best way to fight fires is never to let them get started in the first place. Here are some ways you can do that:

- Put scrap materials into the proper waste containers.
- Keep anything explosive or flammable away from heat or open flame.
- Smoke only in the smoking areas. If you see anyone else smoking in a NO SMOKING area, tell them how dangerous that is.
- Report any problems with electrical equipment quickly. Most fires are caused by electrical malfunctions and could be prevented by good maintenance.




- Always be sure you know how to get to the nearest exit no matter where you're working. Every building must have clearly marked exits and clear paths to those exits. Do your part in keeping those paths clear. Don't store anything within three feet of a fire exit.

# FIRST AID AND MEDICAL TREATMENT

Find out what first aid and medical treatment is available at your plant. If no doctor or nurse is employed at your plant, there must be at least one worker on each shift who is trained in first aid. **Know who the trained first aider is while you're at work!** First aid supplies which have been approved by a physician must be readily available in the work area. You should know where the kit is and how to get to it fast in an emergency.

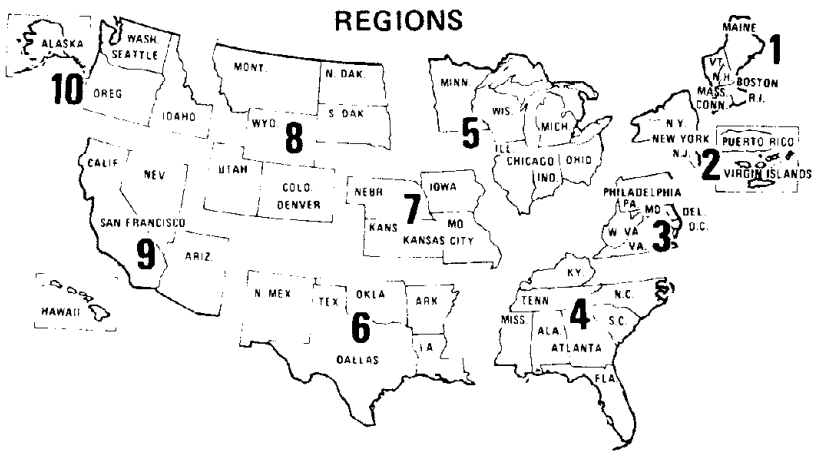
If you or anyone else is hurt or sick, there are two things the doctor, nurse, or first aid worker will need to know:

—— What caused the accident or illness?
—— How long was the victim exposed to the hazard?

If you're able to tell the doctor these two things, it will save valuable time in treatment and may save you or a friend.

# NIOSH AND OSHA REGIONAL OFFICES

The following pages list NIOSH and OSHA regional offices which can provide information on the OCCUPATIONAL SAFETY AND HEALTH ACT including questions on standards interpretations, voluntary compliance information, copies of the *OSHA Standards, OSHA Act, Employee Rights Posting Notice,* and publications.




## NIOSH REGIONAL OFFICES

DHEW, Region I
Government Center (JFK Fed. Bldg.)
Boston, Massachusetts 02203
Tel.: 617/223-6668/9

DHEW, Region II — Federal Building
26 Federal Plaza
New York, New York 10007
Tel.: 212/264-2485/8

DHEW, Region III
3525 Market Street, P.O. Box 13716
Philadelphia, Pennsylvania 19101
Tel.: 215/596-6716

DHEW, Region IV
50 Seventh Street, N.E.
Atlanta, Georgia 30323
Tel.: 404/526-5474

DHEW, Region V
300 South Wacker Drive
Chicago, Illinois 60607
Tel.: 312/886-3651

DHEW, Region VI
1200 Main Tower Building, Room 1700-A
Dallas, Texas 75245
Tel.: 214/655-3081

DHEW, Region VII
601 East 12th Street
Kansas City, Missouri 64106
Tel.: 816/374-5332

DHEW, Region VIII
19th & Stout Streets
9017 Federal Building
Denver, Colorado 80202
Tel.: 303/837-3979

DHEW, Region IX
50 Fulton Street (223 FOB)
San Francisco, California 94102
Tel.: 415/556-3781

DHEW, Region X
1321 Second Avenue (Arcade Bldg.)
Seattle, Washington 98101
Tel.: 206/442-0530

## OSHA REGIONAL OFFICES

**Region I**
U.S. Department of Labor
Occupational Safety and Health Administration
JFK Building, Room 1804
Boston, Massachusetts 02203..... Telephone: 617/223-6712/3

**Region II**
U.S. Department of Labor
Occupational Safety and Health Administration
1515 Broadway (1 Astor Plaza), Room 3445
New York, New York 10036..... Telephone: 212/971-5941/2

**Region III**
U.S. Department of Labor
Occupational Safety and Health Administration
15220 Gateway Center, 3535 Market Street
Philadelphia, Pennsylvania 19104..... Telephone: 215/596-1201

**Region IV**
U.S. Department of Labor
Occupational Safety and Health Administration
1375 Peachtree Street, N.E., Suite 587
Atlanta, Georgia 30309..... Telephone: 404/526-3573/4 or 2281/2

**Region V**
U.S. Department of Labor
Occupational Safety and Health Administration
230 S. Dearborn, 32nd Floor
Chicago, Illinois 60604..... Telephone: 312/353-4716/7

**Region VI**
U.S. Department of Labor
Occupational Safety and Health Administration
555 Griffin Square Building, Room 602
Dallas, Texas 75202..... Telephone: 214/749-2477/8/9 or 2567

**Region VII**
U.S. Department of Labor
Occupational Safety and Health Administration
Federal Building, Room 3000, 911 Walnut Street
Kansas City, Missouri 64106..... Telephone: 816/374-5861

**Region VIII**
U.S. Department of Labor
Occupational Safety and Health Administration
Federal Building, Room 15010, 1961 Stout Street
Denver, Colorado 80202..... Telephone: 303/837-3883

**Region IX**
U.S. Department of Labor
Occupational Safety and Health Administration
9470 Federal Building, 450 Golden Gate Avenue
Post Office Box 36017
San Francisco, California 94102..... Telephone: 415/556-0584

**Region X**
U.S. Department of Labor
Occupational Safety and Health Administration
6048 Federal Office Building, 909 First Avenue
Seattle, Washington 98174..... Telephone: 206/442-5930

Keep these emergency numbers posted by the telephone:

**Doctor:**_____

**First aid:**_____

**Fire department:**_____

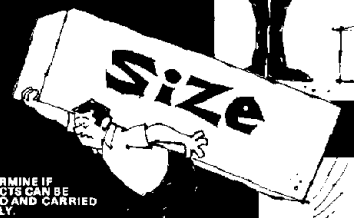
**Ambulance or hospital emergency:**_____

These can save lives!

# HOW TO LIFT SAFELY

***The following safe practices should be observed in order to avoid injury.***

**The factors that contribute to safe lifting are...**

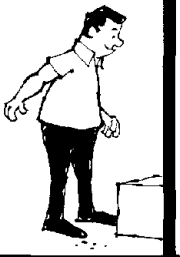





**DETERMINE IF OBJECTS CAN BE LIFTED AND CARRIED SAFELY.**

1. Approach the load and size it up (weight, size and shape.)
Consider your physical ability to handle the load.

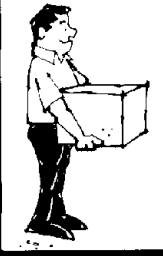
2. Place the feet close to the object to be lifted 8 to 12 inches apart for good balance.



3. Bend the knees to the degree that's comfortable and get a good handhold. Then using both leg and back muscles. . .

4. Lift the load straight up—smoothly and evenly. Pushing with your legs, keep load close to your body.

5. Lift the object into carrying position, making no turning or twisting movements until the lift is completed.



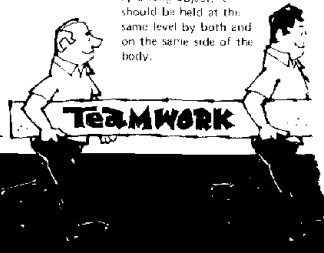
6. Turn your body with changes of foot position after looking over your path of travel making sure it is clear.

7. Setting the load down, is just as important as picking it up. Using leg and back muscles, comfortably lower load by bending your knees. When load is securely positioned, release your grip.

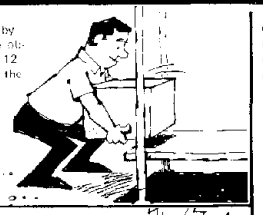
Stack material in such a manner as to permit full view while carrying.

When lifting and carrying with another person, teamwork is important.
The load should be equally distributed. Movements must be coordinated so you both start and finish the lift action at the same time and perform turning movements together.

When two persons carry a long object, it should be held at the same level by both and on the same side of the body.




Avoid strain by storing heavy objects at least 12 inches above the floor.



Avoid awkward positions or twisting movements while lifting.

Over-reaching and stretching to reach overhead objects may result in strains or falls.
Use a ladder instead of chairs, boxes, etc.