NIOSH

Health and Safety Guide for SAWMILLS and PLANING MILLS

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

EMERGENCY INFORMATION

FIRE

Telephone Fire Department _____

Nearest Alarm Box at _____

CRIME

Telephone Police _____

INJURY/ILLNESSES

Avoid infection of minor injuries; always get medical attention or skilled first aid.

Doctor _____

Office _____ Tel. _____

Residence _____ Tel. _____

_____

_____

Hospital _____

Address _____ Tel. _____

Ambulance _____

Address _____ Tel. _____

(In emergencies, get medical attention and transportation elsewhere if necessary.)

In all cases of Fire, Crime, Accident, or Sickness, promptly notify:

1. Name _____ Office Tel. _____

   Address _____ Res. Tel. _____

or

2. Name _____ Office Tel. _____

   Address _____ Res. Tel. _____

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Guide intended to assist in provide a safe and healthful workplace for sawmills and planing mills, by describing safe practices and helping to correct some of the more frequently encountered violations of the safety and health standards. The main topics covered include: the hazards most commonly encountered in saw mills; health and safety guidelines and programs; tools and equipment; walking and working surfaces; standard guard rails; exits and exit markings; occupational health and environmental control; ventilation; noise exposure; hazardous materials, spray painting; personal protective equipment; respiratory protection; sanitation; medical and first-aid; fire protection; compressed air equipment; powered industrial trucks; hoisting equipment; machinery and machine guarding; electrical code.

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U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
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National Institute for Occupational Safety and Health
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CONTENTS

INTRODUCTION

The Williams-Steiger "Occupational Safety and Health Act of 1970" was passed into law "to assure safe and healthful working conditions for working men and women . . ." This Act established the National Institute for Occupational Safety and Health (NIOSH) in the Department of Health, Education, and Welfare (DHEW) and the Occupational Safety and Health Administration (OSHA) in the Department of Labor (DOL). The Act provides for research, informational programs, education, and training in the field of occupational safety and health and authorizes the enforcement of standards. As part of these activities, surveys have been made by NIOSH to determine the most common health and safety problems in small businesses. This Guide was developed for distribution throughout the industry and includes a "Guidelines" section and a section on "Frequently Violated Regulations."

While the aim of this Guide is to assist in providing a safe and healthful workplace by describing safe practices and helping to correct some of the more frequently encountered violations of the safety and health standards, it is not intended to provide total information in all areas of compliance. Additional information can be found in the General Industry Standards (Code of Federal Regulations, Title 29, Part 1910 — Occupational Safety and Health Standards).

Words such as "must," "shall," "required," and "necessary" appearing in the text, indicate requirements under the Federal Regulations. Procedures indicated by "should," "suggested" constitute generally accepted good practices.

In some states, the federal government has delegated enforcement authority for occupational safety and health to the state government. Although state standards sometimes

differ from federal standards, they must be at least as effective as the federal standards.

On the last few pages of the Guide are listed addresses of NIOSH and OSHA regional offices where additional information and materials can be obtained. Consultation resulting from requests for assistance will not precipitate a compliance visit by OSHA.

GENERAL PHILOSOPHY REGARDING HEALTH AND SAFETY

Through the use of a continuing health and safety program that is actively supported by management and provides employee training, existing unsafe acts or conditions should become apparent. For many of these there may not be specific standards. Nevertheless, it is important to find a solution for these recognized problems.

During the analysis of the workplace for health and safety problems, it may also become apparent that "the letter of the law" is not being met. This may be particularly noticeable where dimensions are given for ladders, stairs, railings, etc. If it is apparent to all concerned that the "intent" of the law is being met, instead of making changes, a variance may be requested. The application for a variance must show it is "as effective as" the OSHA standards. Considerable discretion must be exercised in this area and the decision not to make changes should be made with the concurrence of OSHA. When new buildings are being constructed, renovations are being made, or new equipment is obtained, the standards must be followed.

Even when a citation is issued, it is desirable that the employer has demonstrated a willingness to comply with the intent of the law by operating effective, on-going safety and health programs, by correcting hazards in the workplace, and by maintaining records of purchases, installations, and other compliance-promoting activities. Therefore, after an OSHA compliance visit and a citation, the manager can substantiate intent to provide a safe and healthful workplace for the employees by maintaining records which document this purpose, and may be given the benefit of "good faith" to reduce penalties.

THE INDUSTRY AND ITS HAZARDS

The type of health and safety hazards commonly found in sawmills is influenced by the geographic location of the mill. Variations in the type and size of logs and timber processed have a direct effect on the equipment used, materials handling techniques, and mill operations.

A survey of work-injury rates in sawmills and planing mills by the US Department of Labor, Bureau of Labor Statistics, ranks the hazard potential of the departments as follows (greatest to least): sawmill deck, edging, resaw, headsaw, plant and equipment maintenance, log pond or storage, refuse disposal, trimming, yard handling and seasoning, sawing (planing mill), green chain, planing, shipping, kilns and sheds, saw filing, grading.

Eye injuries are common throughout all areas of a mill. Injuries to arms, hands, and fingers accounted for one-third of all disabling injuries. Amputations were common in the sawing departments where powered cutting equipment is used. Cuts and lacerations occurred most frequently in the bucking area, in saw filing, and during ripsawing in planing mills. Strains and sprains were common among green chain workers and in log storage areas. Fractures commonly occurred in bucking, decking, and log storage workers.

More workers were injured while **handling** materials, that is, when lifting, pulling, pushing, and carrying materials than in any other activity. The complex system of conveyors used for moving the stock is another source of frequent injuries. Slips, trips, and falls result from poor housekeeping practices and poor materials storage. Those employees using powered hand tools and those operating or tending powered equipment are subject to injury because of improper use of the tools and lack of machine guarding. The lack of guarding was observed in the following areas throughout the industry: point of operation of saws and other cutting machines, chip guards to prevent eye injury, anti-kickback devices, power transmission apparatus, and the infeed rolls of log conveyors.

Adequate illumination must be provided to all work areas. Shadows and extreme contrasts must be kept to a minimum and glare eliminated. All physical hazards must be marked to conform to the requirements outlined in Part 1910.144 of the OSHA regulations.

Noise is the most common health hazard in sawmills. Excessive noise exposure exists in many operations. Typical noise levels for routine operations are:

Operation	**Noise Level***
Debarking	85-95dBA
Head rig	100-105
Cutoff saw	95-100
Edger	95-105
Resaw	95-100
Trimmer	90-100
Green chain	80-95
Planers	105-115
Planer chain	90-105
Chippers	100-110

*Some mills may have noise levels which are higher or lower than those listed.

One method for controlling exposure to noise is the use of sound proof booths for operators of noisy equipment. The noise levels in the booths are usually 75-85 dBA. Enclosing some operations is another method of noise control. When booths or enclosures are used, it is important to keep all doors and openings closed.

Where noise exposure does exceed the limits, employees must be provided and directed to wear proper protective equipment, such as ear muffs or ear plugs.

Today it is engineeringly feasible to reduce the noise exposure of all sawmill employees except in a few mills The following are suggested methods of engineering control for noise in specific operations:

Operation	Control
Head saw operator	sound proof booth
Debarker operator	sound proof booth
Hog or chipper	sound insulation or noise barrier
Trim saw	enclosure
Resaw operator	sound proof booth
Edger saw operator	sound proof booth

In general, sound barriers (acoustical material) should be placed between saws and employee work stations. Usually there are several persons working in a noisy area. When booths are used as a control, only the operator of the equipment is protected from the noise. When equipment enclosures are used, the persons working nearby are also protected. This should be considered when deciding on a noise control program.

SPECIFIC OPERATIONS

Conveyors, Belts, and Rollers in a complex system are used to transport the lumber and scrap from one operation to the next. Where workers must cross conveying systems, bridges equipped with standard guardrails should be constructed. All gears, belts, chain and sprocket drives, and nip points must be guarded or enclosed when they are within reach of employees. Spiked live rolls must be guarded. Repairs or cleaning should not be attempted while the conveyor, belts, and rollers are in motion. Employees who work near and over conveying systems where guardrails cannot be used must use safety belts and lifelines to prevent falls.

Lockout/Tagout of Equipment is required whenever work is to be performed on any machinery. Each person who

works on the equipment should attach a separate tag or padlock to the disconnect switch. It is helpful to have the locks color-coded for individuals or for departments. If steam or compressed air is fed into the machinery, the valves should also be closed and locked out. The equipment may not be turned on until each tag or lock is removed.

Materials Handling Equipment

All vehicles must be equipped with audible warning signals and, where practicable, have spark arrestors. If vehicles are operated in dark or poorly lighted areas they must be equipped with head and tail lights.

All vehicles must be equipped with brakes capable of holding and controlling both the vehicle and a capacity load upon any incline or grade over which they must be operated. Where the operator is exposed to hazards from backing the vehicle into objects, an approved platform guard must be provided and arranged so as not to impede exit from the vehicle. Carriers must be provided with an access ladder.

Where movement of the load on stopping would endanger the operator, lumber hauling trucks must be equipped with a substantial bulkhead extending to the top of the operator's compartment behind the seat.

Open hooks must not be used in rigging to lift any load where there is a hazard from relieving the tension on the hook if the load or hook can catch or foul.

Slings and their fittings and fastenings must be inspected daily for evidence of overloading, excessive wear, or damage. Defective slings must be removed from service.

Wire rope (cable) must be inspected when installed and at least once each week thereafter. It must be removed from hoisting or load-carrying service and plainly marked as being unfit for further use for this purpose when it is kinked, when marked corrosion appears, or:

3 broken wires are found in one lay of 6 by 6 rope

6 broken wires are found in one lay of 6 by 19 rope

9 broken wires are found in one lay of 6 by 37 rope

8 broken wires are found in one lay of 8 by 19 rope

or 4% of the total number of wires are found to be broken in one lay.

Wire rope clips attached with U-bolts must have the bolts on the dead or short end of the rope. They must be tightened frequently. When a wedge socket type fastening is used, the dead or short end of the rope must be clipped with a U-bolt or secured in an equivalent manner.

Running lines of hoisting equipment located within 6 feet 6 inches of the ground or working level must be barricaded, guarded, or the operating area must be restricted.

There must be at least two full wraps of hoisting cable left on the drums of cranes and hoists at all times of operation. Hoisting drums must be flanged.

Chains used in load-carrying service must be inspected before initial use and at least weekly thereafter. Whenever any 3 foot length of chain is found to have stretched one-third the length of a single link it must be discarded. Bolts or nails must not be placed between two links to shorten or join chains.

Fiber rope which is frozen or has been exposed to acid or excessive heat must not be used for load carrying purposes.

Log Unloading, Storage, and Sorting

All log unloading areas must be maintained with safe walkways and properly banked and graded roadways. Proper loading and unloading equipment must be utilized. Stakes and chocks which trip must be constructed so that the tripping mechanism is activated at the opposite side of the load being tripped. Binders may not be released until the logs

are secured with lines. Binders may only be released from the side on which the unloader operates, except when remote control devices are used, or the operator is protected by racks or stanchions.

Unloading equipment must be equipped with brakes capable of holding the maximum load in midair. A limit switch must be installed on log handling machines to prevent the lift arms from traveling too far. Movement of unloading equipment must be coordinated by audible or hand signals when the operator's vision is obstructed, or there are other employees in the unloading area.

Signs prohibiting unauthorized persons and traffic in the log unloading and storage areas must be posted. If the area is used at night, suitable illumination must be provided.

Where logs are unloaded with peavys or similar manual methods, there must be a provision made to prevent rolling or swinging logs. Unloading lines, crotch lines, or other means must be arranged to minimize the possibility of swingback.

All walkways and floats installed in pond areas must be securely anchored to provide adequate footing. Banks of the log pond in the vicinity of the log haul must be reinforced to prevent cave-ins.

Employees who must work directly over the water, from boats, floating logs, boom sticks, or walkways must be provided and required to wear a Coast Guard approved bouyant device. Decks of pond boats must be covered with nonskid material. Powered boats and rafts must be equipped with a fire extinguisher and a life ring with line attached.

Dry deck storage areas must be maintained in an orderly condition conducive to the safe operation of log handling equipment. Logs must be arranged to minimize the chance of accidental rolling from the deck.

The walkways on log hauls must be equipped with standard guardrails and have adequate footing. Log haul drive gears

must be properly guarded. Overhead protection must be provided for employees working below logs being moved to the deck.

Log Decks

All decks must be equipped with adequate stops, chains, or other safeguards to prevent the logs from rolling down the deck into the carriage or the carriage runway. A barricade or other positive stopping means must be installed between the log deck and the sawyer's stand.

Debarking

The area around barkers and their conveyors must be fenced off and posted to prohibit access by unauthorized personnel. Adequate chip guarding must be installed. Holddown rolls must be installed at the infeed and takeout sections on mechanical debarkers to control the movement of the logs. Hydraulic barkers must be enclosed with strong baffles at the inlet and outlet.

The operator must be protected by a panel of safety glass or its equivalent. Elevating gates or ramps must be equipped with an adequate means of suspension such as a safety chain or hook while employees are underneath.

Buck Sawing and Drag Sawing

Logs are cut to desired length before entry to the head rig by bucking the sections of the logs with chain saws or drag saws. These saws must be guarded by a barrier guard, railings, or other suitable means.

Safe access to the head rig must be provided. Swing saws must be equipped with a barricade or other stopping means for the protection of workers on the opposite side of the chute. Drag saws may not project into walkways or aisles. Circular saws must be located and guarded to allow for safe entrance and exit from the building.

Log Carriages

Substantial bumpers must be installed at the ends of the carriage runway. A barrier must be provided to prevent employees from entering the space necessary for the travel of the carriage, with headblocks fully receded, for the full length and the extreme ends of carriage runways. All possible entry points to this area must be posted with warning signs.

Carriage track sweeping devices must be installed to keep the tracks clear of debris. Dogs must be adequate to secure cants, logs, or boards during sawing operations. Sheaves on rope-driven carriages must be guarded at the floorline. A positive stopping means must be provided to prevent unintended movement of the carriage; a control locking device, a carriage tie-down, or both may be utilized.

Rider-type carriages must be equipped with secure footing and a firm working platform for the operator. Overhead clear space above the carriage deck must extend for the full length of the carriage runway.

Head Rig

The head saws may be either band saws or circular saws. These saws are used to break the logs down into boards, cants, or flitches of lumber.

Band head saws must be thoroughly inspected for defects such as cracks, splits, and broken teeth. If there is a crack greater than one-tenth of the width of the blade, the saw may not be placed into service until the crack is removed, the width of the saw is reduced, or crack development is stopped. Provision must be made to warn employees before band head saws are started.

Band head saw wheels must be inspected monthly. Those with loose or damaged hubs, cracked rims, or loose spokes must be taken out of service. All bandsaw wheels must be completely enclosed or guarded, except for the portion of the upper wheel where the operator must observe movement of the equipment.

Circular head saws must be equipped with safety guides which can be readily adjusted without the use of hand tools. If live rolls are not used behind the head saw, there must be a spreader wheel or splitter to prevent kickback. The upper saw of a double circular mill must be equipped with a substantial hood or guard. A screen or other barrier must be used to protect the sawyer from flying debris.

Many mills have placed the sawyer in a sound proof booth to help control noise exposure. If an off bearer is used, the off bearer must be in full view of the sawyer at all times, either by direct sight or through television cameras. Only the sawyer and the off bearer should be permitted in the head saw area.

Laser beams and shadow lights are often used to assist the sawyer in determining the cut. The laser units and the beam area should be identified with the proper laser warning signs. The laser must be turned off when there is a need to make adjustments on equipment in the line of the beam.

Edgers

All edgers must be equipped with pressure feed rolls for the cants of lumber. The feed rolls must be guarded against accidental contact. Antikickback devices must be installed at the back of the blades. Safety fingers are the preferred method but, where their use is not feasible, a barricade in line with the edger, if properly fenced off, may be used.

The edger must be equipped with a controlling device located so that the operator can stop the feed mechanism without releasing the tension of the pressure rolls. The blades of the edger must be properly guarded to prevent contact by employees from their normal work positions. The top and the openings in the end and side frames must also be guarded. Persons should not be permitted to work directly behind the edger because of the amount of debris that can be kicked back.

Resaws

Resaws are used to cut the lumber removed at the first grading point into dimensions. Band saws, circular saws, and sash gang resaws are all used. The saws must be properly guarded to prevent contact with the blade. They must be equipped with pressure feed rolls, antikickback devices, and spreaders.

Trimmer Saws

Trimmer saws are circular saws used to cut the lumber to the desired length. Trimmer saws must be guarded in the front by adequate baffles to prevent flying debris. The guards must be securely attached to the frame. Guards for a series of saws must be set as close to the top of the trimmer table as possible. The end saws on trimmers must be guarded. The rear of trimmer saws must be guarded for the full width of the saws, and as much wider as is practical. Automatic trimmer saws must be provided with safety stops or hangers to prevent the saws from dropping onto the table.

Planers

The pressure feed rolls and "pineapples" on all planers must be guarded. Levers or controls must be located or guarded to prevent the possibility of accidental operation. All cutting heads must be guarded.

Planing is an extremely noisy operation. Enclosing the planer will reduce the noise exposure to nearby employees. However, even with the enclosure the persons working on the dry chain near the planer may be exposed to noise levels in excess of the allowable limits and must be provided hearing protection.

Green Chain

Most green chains use manual labor to remove the boards from the chain, to grade and sort, and to place the lumber on dollies. Slivers of wood and pinched fingers are probably the most common injury. Employees must wear pro-

tective gloves that are of suitable strength to prevent puncture by slivers.

Employees must be taught proper lifting techniques and this will help to prevent many of the back injuries that occur from handling heavier lumber. Where computerized grading and stacking systems are used, employees must be prevented from going under the chain where the boards are dropped by automatic controls.

Walkways over and under green chain areas must be guarded.

Planer Chain

This operation also uses manual labor to grade and remove the lumber. Slivers and pinched fingers are the most common injuries. Gloves and aprons worn as protective equipment must be maintained in good condition.

Preservatives may be sprayed on the lumber as it exits the planer. The preservatives contain pentachlorophenol which is a strong skin and upper respiratory tract irritant. Spraying operations must be located so that overspray is not directed into the breathing zone of planer chain workers. Local exhaust ventilation may be required to control the amount of the preservative that becomes airborne. When boards wet with the preservative are handled, rubber gloves and aprons must be worn. Shoes that become soaked with this material must be discarded.

Chippers and Hogs

The feed system to the chipper must be arranged so that the operator does not stand in direct line with the hopper. The chipper spout must be enclosed to a height of at least 36 inches. A safety belt and lifeline must be worn by operators working at or near the spout unless the spout is guarded.

Hogs must be arranged or guarded so that the distance from the rim of the chute to the knives is no less than 40 inches. Feed chutes must be equipped with baffles to minimize the

amount of material being thrown from the mill. Employees feeding hogs must be provided with safety belts and lifelines unless the mills are guarded.

Noise levels produced by both of these machines are high. Enclosing or isolating them will help to reduce noise exposure.

Kilns

Steam mains must be guarded or covered with insulation. There must be escape doors provided if operating procedures require employee access to the kilns. The doors must be located at or near the ends of the kiln passageway, they must open easily from the inside, and swing out.

Passageways must be maintained to give adequate clearance on at least one side or in the center of end-piled kilns, and on two sides of cross-piled kilns. Doors must be provided with a means of securing them open. A means for blocking or chocking kiln cars must be provided.

Saw Sharpening

Wire mesh gloves should be worn while employees handle saw blades. Spare saw blades should be stored to protect against accidental contact. The unused portion of the grinding wheel on saw sharpening units must be guarded. Local exhaust ventilation should be provided for each sharpening unit.

Local exhaust ventilation must be used for all silver soldering. The babbitt pots used to melt the babbitt for spacers on planer knives should also be provided with local exhaust ventilation. Babbitt is usually composed of tin, antimony, and copper, however some babbitts contain lead. The melting point of babbitts is usually around 230°F, but varies with the composition. The temperature of the babbitt should be

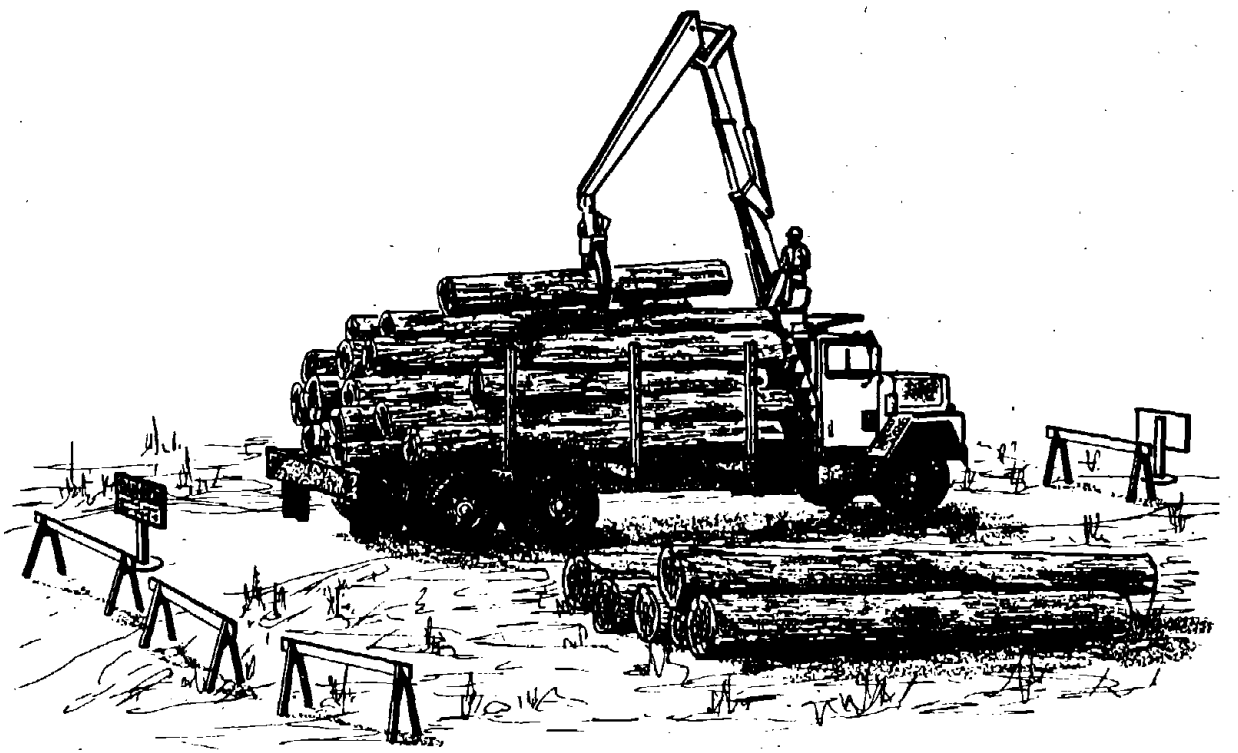
kept to just above the melting point to reduce the amount of metal fumes in the air.

Lumber Piling and Storage

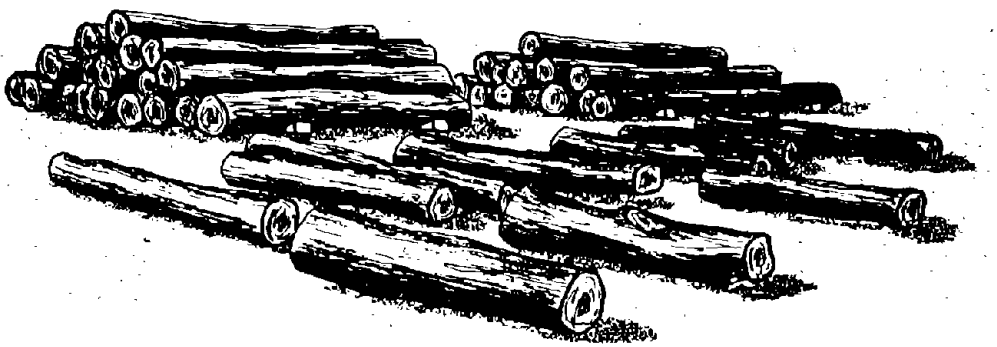
Stacked lumber foundations must be designed and arranged to support maximum loads without sinking, sagging, or instability in the piles. Long units of lumber must not be stacked upon shorter packages unless separators are used to make the piles stable.

Unit packages of lumber must be provided with stickers which extend the full width of the package, are uniformly spaced, and are aligned one above the other. Stickers may be overlapped a minimum of 12 inches. They must not protrude more than 2 inches beyond the sides of the package. Bolsters or unit separators must be placed directly over the stickers.

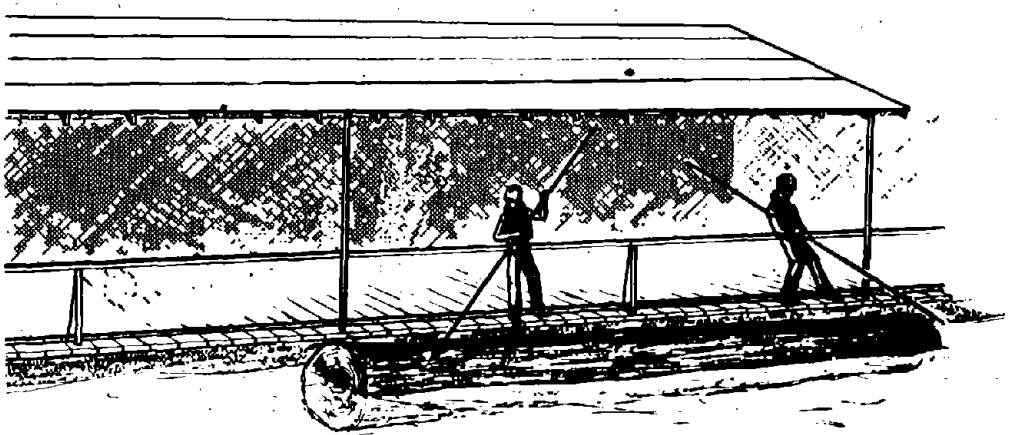
Any pile of lumber which becomes unstable must immediately be made safe, or the area into which the pile can fall must be fenced off or barricaded. Care must be exercised by lift truck and straddle buggy operators who handle wide or uneven loads. The ground surface and roadways must be maintained so as to permit safe operation of all materials handling vehicles.



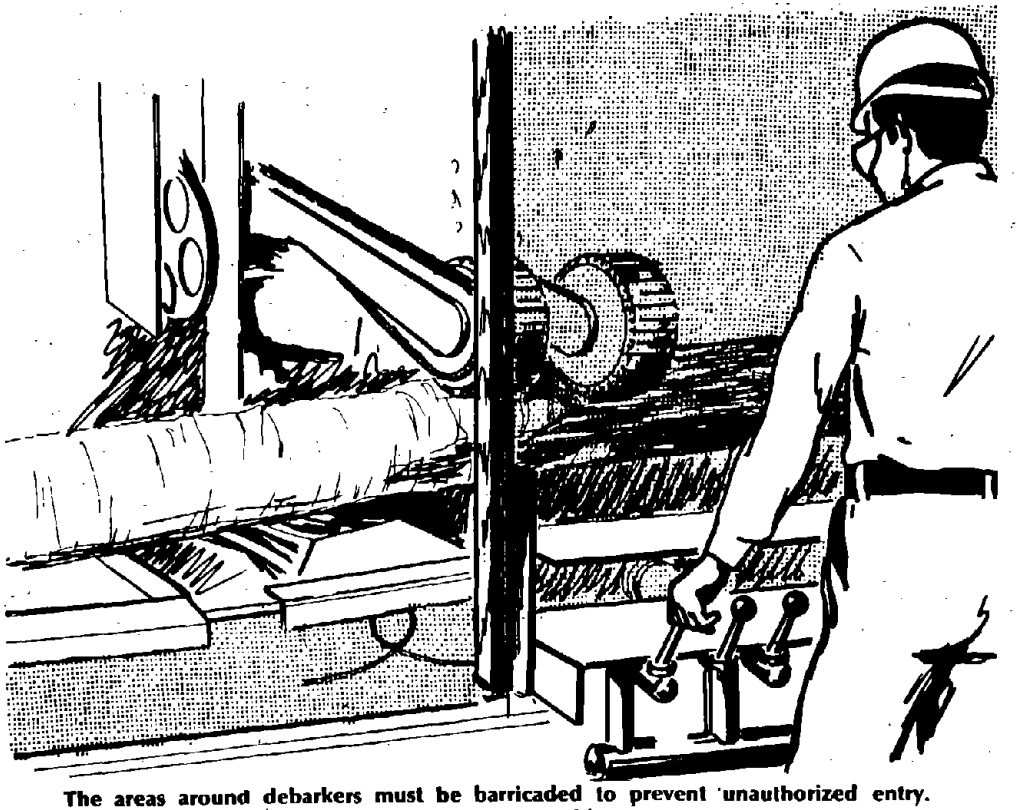
Log unloading areas must be barricaded to keep out unauthorized personnel. The brakes of mechanical unloading equipment must be checked regularly.



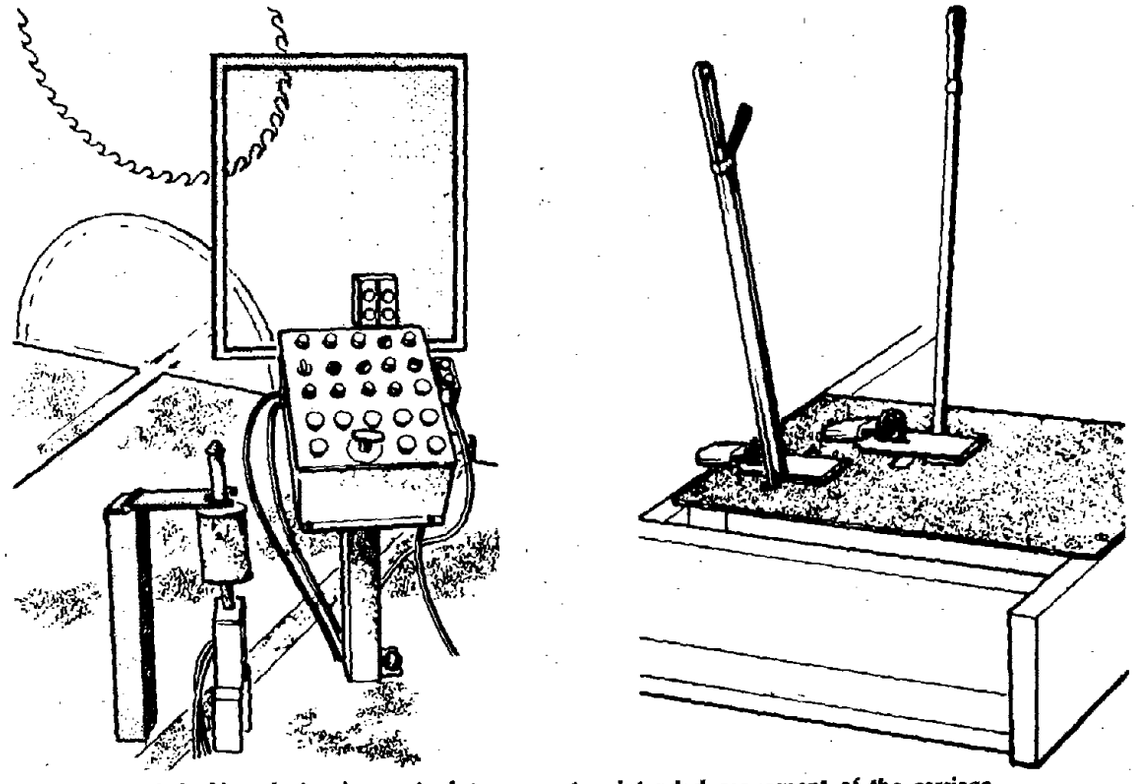
Logs in storage must be arranged to prevent rolling.



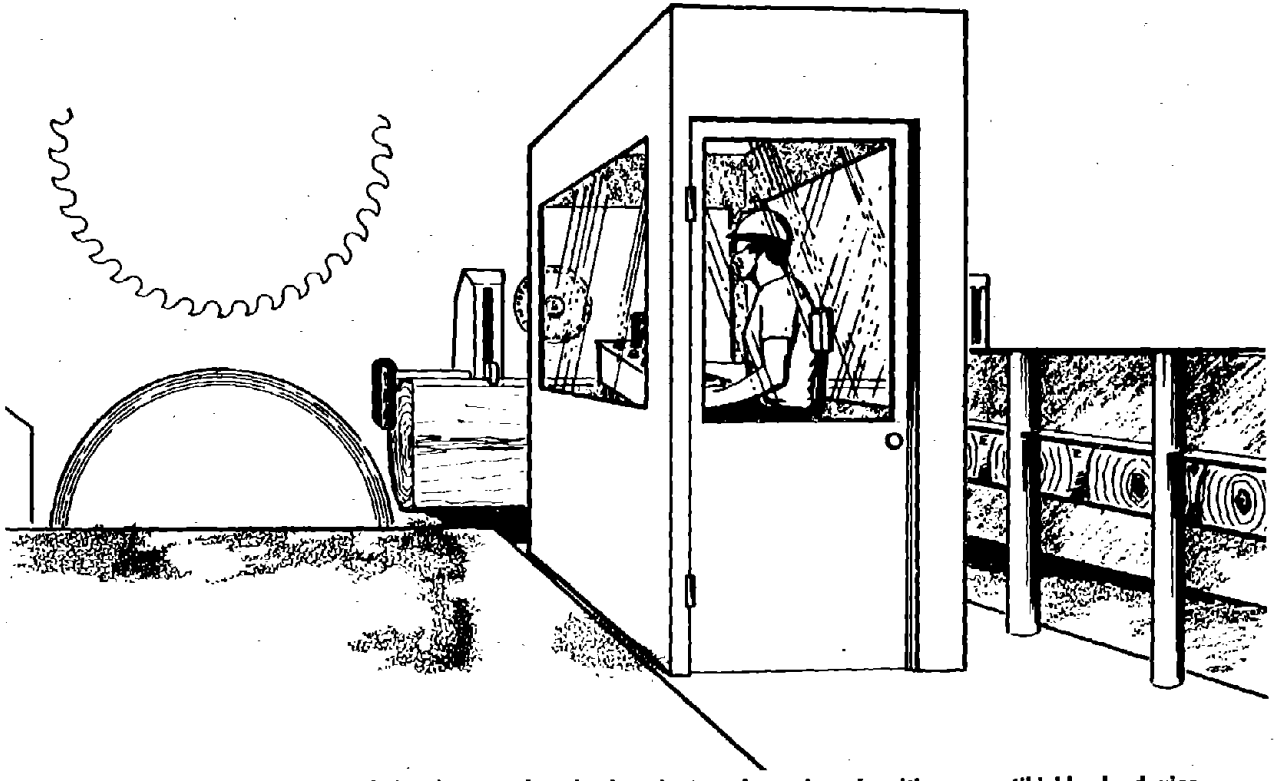
Employees working over water must wear approved bouyant devices.



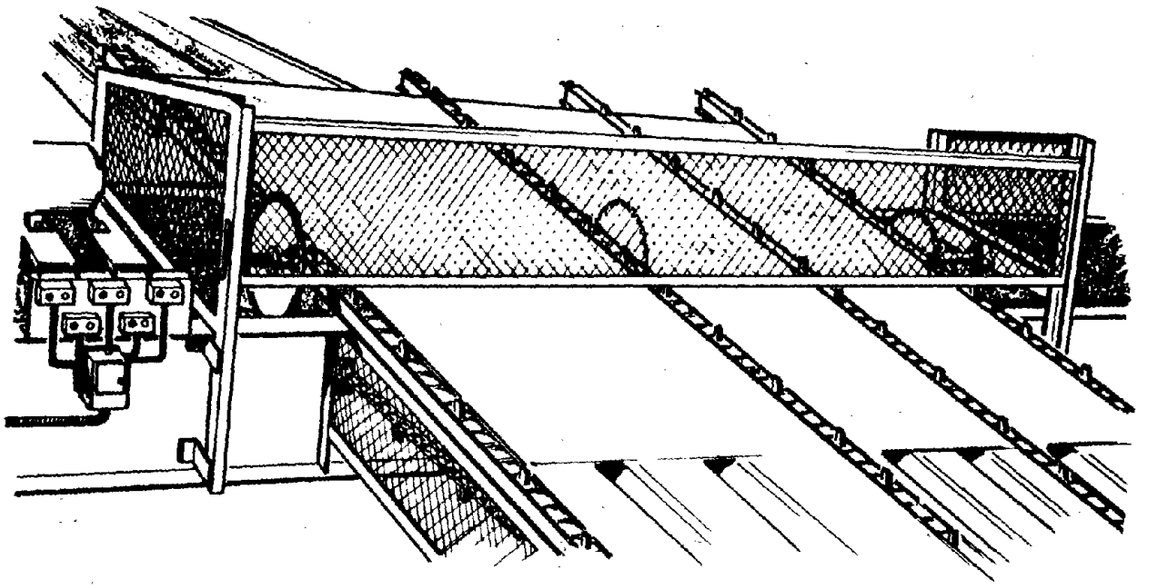
The areas around debarkers must be barricaded to prevent unauthorized entry. The operator must be protected from flying chips.



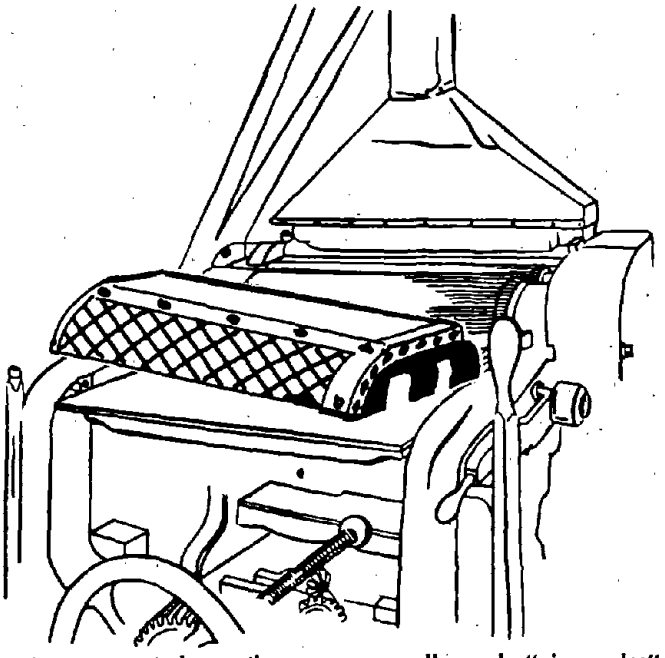
A locking device is required to prevent unintended movement of the carriage.



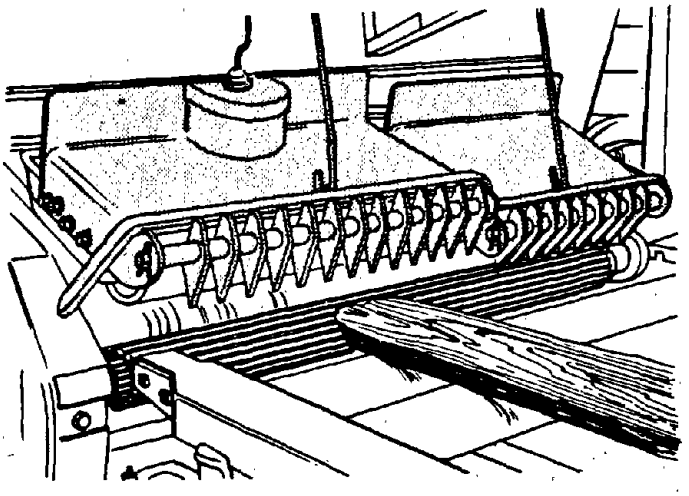
The head rig must be guarded (barrier guard or by location) and equipped with an antikickback device. The sawyer must be protected by a suitable barricade an enclosure reduces noise exposure.



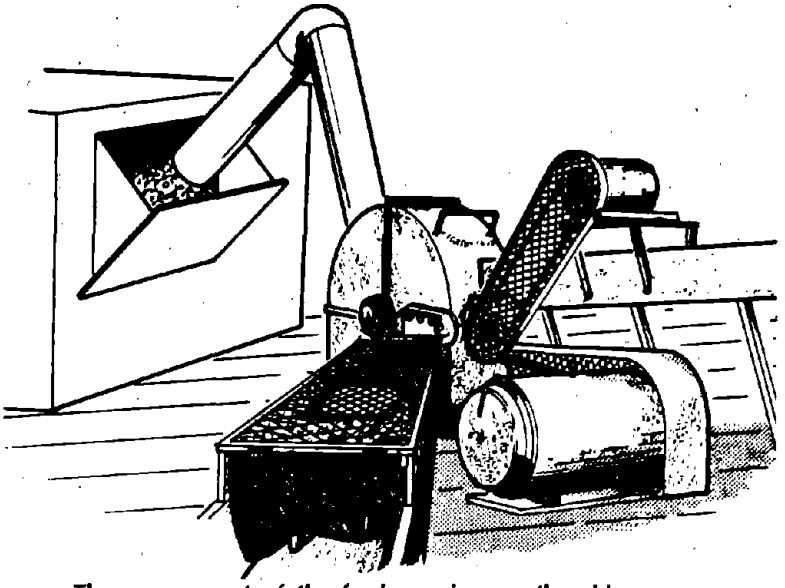
Trimmer saws must have guards to prevent flying debris.



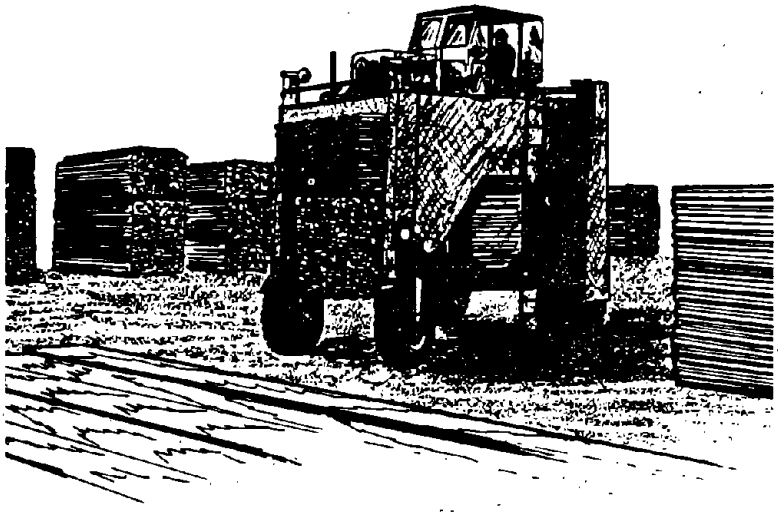
Planers must have the pressure rolls and "pineapples" guarded. All cutting heads of planers must be guarded.



Edgers must have antikickback devices such as safety fingers.



The arrangement of the feed opening on the chipper provides a safe distance from the cutting blades.



All lumber stored in the yard must be in stable piles. The roadways in the yard must be maintained to permit safe operation of materials handling vehicles.

HEALTH AND SAFETY GUIDELINES

HEALTH AND SAFETY PROGRAM

Hazardous conditions or practices not covered by specific OSHA standards are covered under the general duty clause of the Act which states, "Each employer shall furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees." The employer can meet this requirement by utilizing an ongoing health and safety program to recognize, evaluate, and control hazards and potential hazards in the workplace.

Hazards may be identified by performing self-inspections, soliciting employee input (interviews, suggestions, and complaints), promptly investigating accidents, reviewing injury and illness records, and using material from this Guide and other sources.

The **"Checklist"** in the back of this book is of particular importance in identifying hazards. It should be customized to fit the needs of your program.

Situations that occur frequently or cause severe problems should be given priority for corrective action. This Guide contains many of the requirements and good practices needed to correct hazards. For more complex problems, such as those requiring engineering controls to reduce noise or airborne contamination, outside consultants may be needed.

Management may want to assign safety and health responsibilities in the areas of both program development and implementation. Regular meetings and informal discussions can be held to discuss safety promotions, hazards, and injury and illness records. To ensure program success, management leadership and support are necessary. The employee(s)' assigned responsibility for carrying out the program must be given the necessary authority and must have management support. Everyone in the establishment should be made aware of the program activities through a systematic interchange of information. Employees cannot take an interest in the program if they are unaware of what is occurring. Conversely, well informed employees will show an interest and a desire to participate.

EMPLOYEE TRAINING

A safe operation depends largely upon employees who are properly informed and aware of potential hazards. Training needs will vary according to the complexity of the operation. Some suggestions are:

- Impress upon the employee the need for constant awareness — even during automatically controlled operations.
- Be sure all employees know when and how to use appropriate personal protective equipment.
- Develop and maintain check points to be observed as a part of standard and emergency procedures.
- Post appropriate warning signs and operating procedures.
- Instruct employees in the use of portable fire extinguishers. (Refer to fold-out chart in this booklet and post in a conspicuous place.)
- Have at least one employee trained in first aid on each shift.
- Be sure employees authorized to use motorized equipment are thoroughly instructed in its operation and potential hazards.
- Develop a "good housekeeping" awareness to reduce accidents and to develop the employees' sense of pride in their surroundings. Responsibilities should be specifically assigned for clean-up.
- Instruct employees in safe lifting practices. Such instruction may prevent many injuries. An easily understood chart, "How to Lift Safely," which is included in the back of this book, may be removed and posted where it may be seen by all employees.

OCCUPATIONAL HEALTH AND ENVIRONMENTAL CONTROL

In the occupational environment, employees may be exposed to excessive levels of a variety of harmful materials including gases, dusts, mists, vapors, fumes, certain liquids and solids, and physical agents such as noise, heat, and cold. Health hazards are often not recognized because materials used are identified only by trade names. The problem is compounded by the fact that materials tend to contain mixtures of substances which makes identification still more difficult.

To begin identifying occupational health hazards, a materials analysis should be made showing all chemicals used and all products and by-products formed. All hazardous substances should be listed and evaluated and the most likely route of exposure noted (i.e., by mouth, through skin absorption, or by inhalation).

If the composition of a material cannot be determined, the information should be requested from the manufacturer or supplier who can provide Material Safety Data Sheets for the products. These sheets contain information on toxicity levels, physical characteristics, personal protective equipment requirements, emergency procedures, and incompatibilities with other substances.

Related activities such as maintenance and service operations should also be examined for health hazard potential. Examples of some hazards to watch for are:

> Welding performed around chlorinated materials may cause the formation of toxic gases in addition to welding fumes.
>
> If fork lift trucks with internal combustion engines are used for materials handling, hazardous exhaust gases such as carbon monoxide are generated.
>
> When certain cleaning agents are mixed, poisonous gases, such as chlorine, are sometimes formed.

After a thorough analysis of the hazard potential of the chemicals used, suitable methods to eliminate or reduce employee exposure to these hazards must be implemented.

POWER TOOLS

Employees who operate power tools should be instructed to:

Know the application, limitation, and potential hazards of the tool used.

Select the proper tool for the job.

Remove adjusting keys and wrenches before turning on tools.

Not use tools with frayed cords or loose or broken switches. Keep guards in place and in working order.

Have ground prongs in place or use tools marked "double-insulated."

Maintain work areas free of clutter.

Keep alert to potential hazards in the work environment such as damp locations or the presence of highly combustible materials.

Dress properly to prevent loose clothing from getting caught in moving parts.

Use safety glasses, dust or face masks, or other protective clothing and equipment when necessary.

Not surprise or distract anyone using a power tool.

FREQUENTLY VIOLATED REGULATIONS

This section outlines the OSHA regulations which are most applicable to general plant conditions and operations. The standards are listed in the same order as the OSHA regulations and the important points of each standard are summarized.

General conditions and controls are discussed. Your particular operation may vary, so some of these standards may not apply or additional standards may also be applicable. The control methods presented are only a brief, general suggestion as to how hazards may be corrected. For detailed information on control problems such as noise, air contaminants, and machine guarding, where specific designs must be implemented, you may need the services of a professional consultant.

WALKING AND WORKING SURFACES

GENERAL REQUIREMENTS

All work areas, passageways, storerooms, and service rooms must be kept clean, orderly, sanitary, and as dry as possible. All spills should be cleaned up promptly. Floors in work areas must be kept free of scrap, chips, spills, dust and other debris.

Areas which are constantly wet should have non-slip surfaces or mats where employees must walk or work.

Every floor, working place, and passageway must be maintained free from protruding nails, splinters, holes, and loose boards.

Where mechanical handling equipment such as lift trucks is used, sufficient safe clearance must be provided for foot and vehicular traffic. No obstructions that could create a hazard are permitted in the aisles. All permanent aisles must be easily recognizable.

Floorload capacities must be posted in a readily visible location (except for slab floors with no basement). The floorload capacity is the maximum weight which can be safely supported by a floor, expressed in pounds per square foot. If this information is not available, and when floorload capacity is in doubt, a competent engineer should be consulted.

THE STANDARD GUARD RAIL AND TOEBOARD

A standard guard railing consists of a top rail, intermediate rail, and posts. The nominal distance from the upper surface of the top rail to the floor, platform, runway, or ramp must be 42 inches. There must be an intermediate rail spaced approximately halfway between the top rail and the floor.

A standard guard railing can be of any configuration and construction that meets the basic dimension requirements (42 inches high with midrail), and can withstand 200 pounds applied in any direction at any point on the top rail.

For wood railings, the rails and posts must be of at least 2-x 4-inch stock with posts spaced not more than 6 feet apart.

For pipe railings, rails and posts must be at least 1½-inch outside diameter pipe with posts spaced not more than 8 feet apart.

For structural steel railings, posts and rails must be of 2-x 2-x ⅜-inch angles or other metal shapes of equivalent strength with posts spaced not more than 8 feet apart.

The standard toeboard must be approximately 4 inches in height from the floor to the top edge, with no more than a ¼-inch gap between the toeboard and the floor. The toeboard may be constructed of any solid or perforated substantial material, as long as the openings are smaller than 1 inch.

THE STANDARD GUARD RAILING AND TOEBOARD

As a general condition, a standard toeboard and guard railing are required wherever people walk beneath the open sides of a platform or under similar structures or where things could fall from the structure (for example, into machinery below).

Every open-sided floor or platform 4 or more feet above the adjacent floor or ground level must be railed on all open sides except where there is entrance to a ramp, stairway, or a fixed ladder. A standard toeboard must be provided if the height is more than 6 feet.

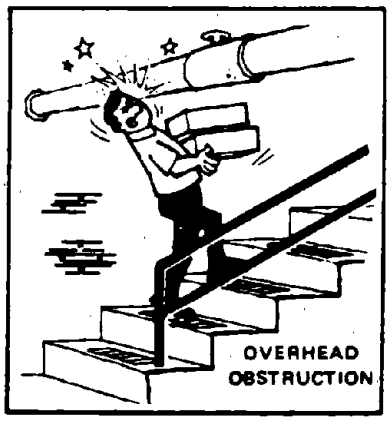
Every stairway floor opening must be guarded on all exposed sides except for the entrance to the stairs.

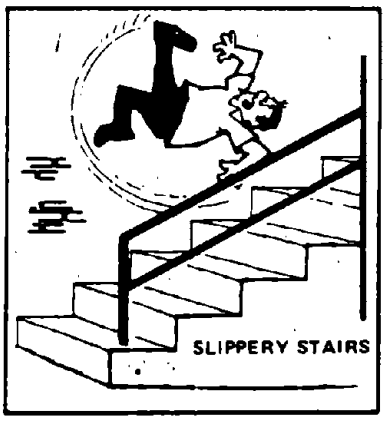
Every runway or catwalk must have railings on all open sides, if 4 or more feet above ground level. A standard toeboard must be provided if the height is greater than 6 feet.

Open bins, bunkers, and hoppers whose upper edges extend less than 3 feet above the working level must be equipped with standard handrails and toeboards.

FIXED INDUSTRIAL STAIRS

Riser height and tread width must be uniform throughout any flight of stairs. All treads must be reasonably slip resistant. Vertical clearance above any stair tread to any overhead obstruction must be at least 7 feet, measured from the leading edge of the tread.





The minimum permissible width of a stairway is 22 inches. If the stairway is a means of exit access, it must be at least 28 inches wide. The angle to the horizontal made by the stairs must be between 30° and 50°. All stairs should be adequately lighted. If the tread is less than 9 inches wide, the risers should be open.

The following requirements apply to flights of stairs having four or more risers:

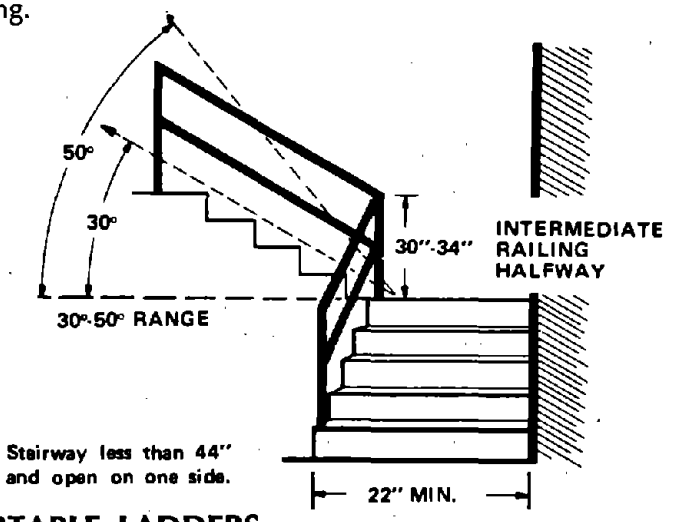
A stair railing is required on each open side.

If the stairway is less than 44 inches wide and both sides are enclosed, at least one handrail is required, preferably on the right side descending.

If the stairway is greater than 44 inches wide, a handrail is required on each enclosed side.

If the stairway is greater than 88 inches wide, an intermediate stair railing located midway is required.

The vertical height of a stair railing must be 30 to 34 inches, and it must be of construction similar to the standard guard railing.



PORTABLE LADDERS

Portable ladders must be maintained in good condition at all times with tight joints, securely attached hardware and fittings, and freely operating movable parts. They should be kept coated with a suitable protective material. They must be inspected frequently. Defective ladders must be tagged "Dangerous - Do Not Use" and removed from service for repair or destruction. Ladders with broken or missing steps, rungs, or cleats, cracked or broken side rails, or other faulty equipment must not be used.

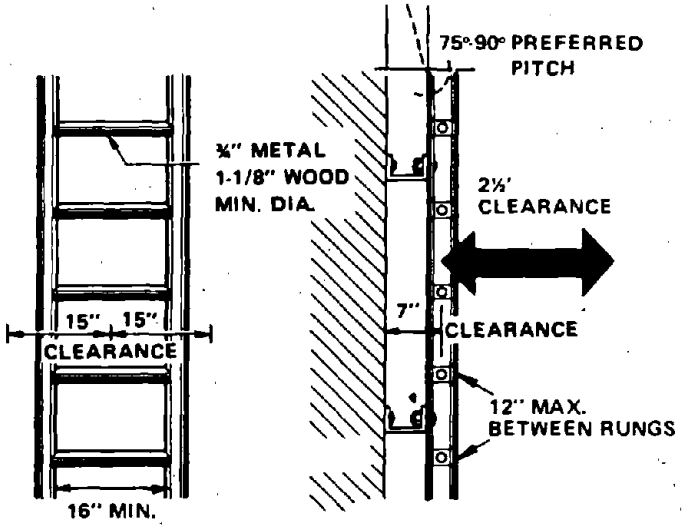
Ladders should be stored where they will not be exposed to the elements; wood ladders should be stored where there is good ventilation. Metal ladders must not be used near energized electrical equipment.

All ladders must be placed so that they have a secure footing. They may not be placed on boxes, barrels, boards, bricks, or other unstable bases to obtain additional height. Nonslip bases should be used.

FIXED LADDERS

Fixed ladders must be designed to withstand a single concentrated load of at least 200 pounds.

Rungs of metal ladders must have a minimum diameter of ¾ inch. Rungs of wood ladders must have a minimum diameter of 1⅛ inches. Rungs must be at least 16 inches wide, be spaced 12 inches apart, and be free of splinters and burrs.



Ladders, when their location so demands, must be painted or treated with a preservative to resist deterioration.

The preferred pitch for safe descent is 75° to 90° unless caged. Ladders with 90° pitch must have a 2½-foot clearance on the climbing side. There must be a 3-foot clearance on ladders with a 75° pitch.

There must be at least a 7-inch clearance in back of the ladder to provide adequate toe space.

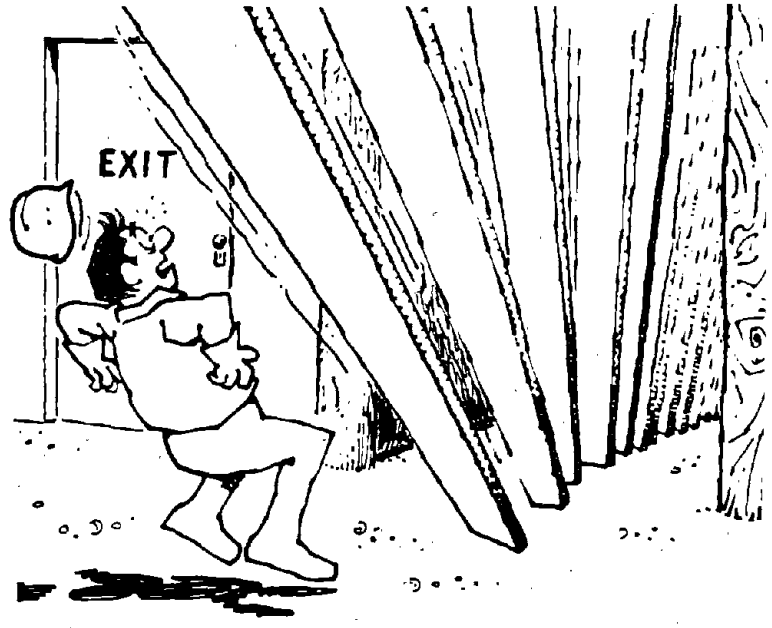
Ladders must have cages if they are longer than 20 feet. Landing platforms must be provided on ladders greater than 20 feet long. A platform is required every 30 feet for caged ladders and every 20 feet for unprotected ladders.

Side rails must extend at least 3½ feet above landings. There must be a clear width of 15 inches on each side of the center line of the ladder, unless the ladder is equipped with a cage or well.

EXITS AND EXIT MARKINGS

GENERAL REQUIREMENTS

The exit route must lead to a public way. Areas around exit doors and passageways leading to and from the exit must be kept free of obstructions.



Exit access must be arranged so that it is unnecessary to travel toward any area of high hazard potential in order to reach the nearest exit (unless the path of travel is effectively shielded by suitable partitions or other barriers).

A door from a room to an exit, or to a way of exit access, must be of the side-hinged, swinging type. It must swing out in the direction of travel if 50 or more persons occupy the room, or it is an exit from an area of high hazard potential.

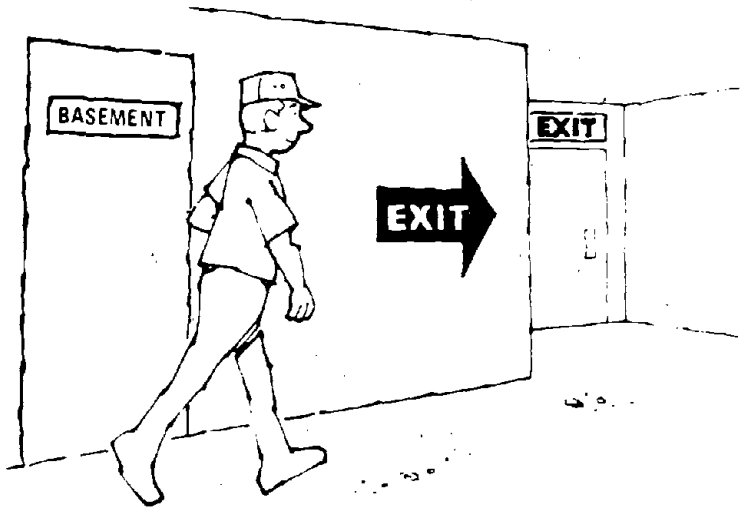
No lock or fastening may be used which prevents escape from inside the building.

There must be at least two means of exit remote from each other where occupants may be endangered by the blocking of any single exit due to fire or smoke.

SIZE AND PLACEMENT OF SIGNS

Every exit must have the word "EXIT" in plain, legible letters not less than 6 inches high with the strokes of the letters not less than ¾ inch wide. The visibility of the sign must not be impaired by decoration, furnishings, or other signs.

Doors, passageways, or stairways which are neither exits nor ways to an exit, but may be mistaken for an exit, must be clearly marked "NOT AN EXIT" or with a sign indicating their actual use, e.g., "STORAGE ROOM" or "TO BASEMENT."



In areas where the direction to the nearest exit may not be apparent to an occupant, an exit sign with a directional arrow must be used.

Exit signs must be illuminated by a reliable light source if occupancy is permitted at night, or if normal lighting levels are reduced at times during working hours.

OCCUPATIONAL HEALTH AND ENVIRONMENTAL CONTROL

ASBESTOS

Asbestos may be used in sawmills as an insulating material for steam pipes. The maintenance personnel risk exposure to asbestos dust when they tear apart and replace this insulation. Employees should wear a dust respirator approved for asbestos exposure. Wetting the material before handling helps to control some of the dust. During cleanup, asbestos dust should be vacuumed, not swept. Procedures should be developed, and the employees trained in the proper handling and disposal of asbestos. There are specific requirements for environmental monitoring, recordkeeping, and medical surveillance, as well as general requirements for proper work practices. These must be followed wherever asbestos is used. For further information, refer to Part 1910.-1001 of the OSHA regulations.

BABBITT

Babbitt is used for spacers on planer knives and is usually composed of tin, antimony, and copper. Some babbitts may contain lead. Local exhaust ventilation installed over the melting pot will reduce the exposure to metal fumes. Antimony and copper fumes may cause irritation of the eyes and respiratory system. Long-term exposure may also result in damage to internal organs such as the liver and kidneys.

CARBON MONOXIDE

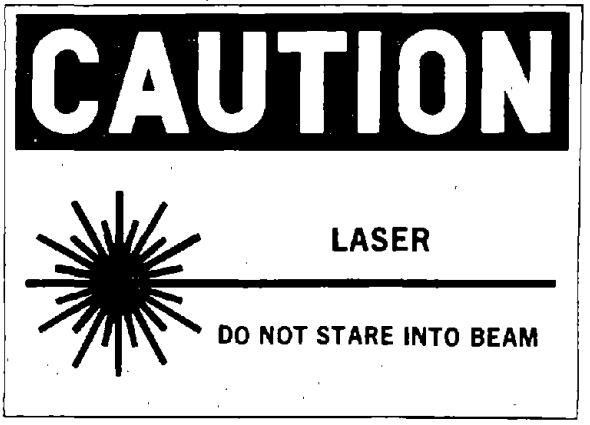
Carbon monoxide is formed as a by-product of combustion from LPG and gasoline powered materials handling equipment. Exposures to carbon monoxide may be excessive where forklifts are used in low-ceilinged areas, such as when loading semi-trailers or railroad cars. Carbon monoxide exposure results in headaches, nausea, and will also slow a person's reaction time. Good ventilation is needed wherever internal combustion engines are run for lengthy periods.

HOT ENVIRONMENTS

High temperatures are found in drying kilns and power plants. An employee not accustomed to working in these areas should be acclimated over a period of several days by working only a portion of the first day in the hot environment with increased workload and exposure time on succeeding days. Cool drinking water should be available to employees. General dilution ventilation should be installed to reduce environmental heat and humidity.

LASERS

Lasers are commonly used as cutting guides. Lasers are injurious to the eyes and body. Employees must be provided with eye protection, and must be instructed to never look in the beam, or work in the beam area. The laser and the beam area must be indicated by proper caution/warning signs. When adjustments or other work is to be performed in the beam area, the laser must be turned off.



PAINTS AND ADHESIVES

Epoxy paints and adhesives are used in many mills. Where large areas are painted, good ventilation is needed. Respirators should be worn when painting is being done. Skin contact with epoxy material should be avoided. Employees should wear rubber gloves and any material which is splashed onto the skin should be immediately washed away.

SILVER SOLDER

Silver solder is often used in the saw sharpening area. Silver solder may contain cadmium. Cadmium fumes may produce pulmonary edema in the exposed worker which may not manifest itself until several hours after initial exposure. The symptoms include a feeling of tightness in the chest and difficulty in breathing. Cadmium fumes must be controlled by the use of local exhaust ventilation.

WELDING FUMES

Welding fumes contain the fumes of the metals being joined, the filler material, and the coating of the welding rods. When welding is done over an extended period of time, there could be an excessive exposure to these materials and local exhaust ventilation must be provided.

WOOD PRESERVATIVES

Preservatives used in treating lumber may contain phenol, chlorophenol, or pentachlorophenol. These materials may cause dermatitis and severe irritation of the eyes and respiratory tract. Rubber gloves must be worn by employees handling wood wet with preservatives. Any spills on the skin must be washed off. An eye wash facility must be available in the area where these materials are handled. If the shoes become soaked with the preservative, they should be immediately changed and discarded. All spraying must take place in an isolated area, or equipped with exhaust ventilation to prevent the overspray from being thrown out at adjacent workers.

WOOD DUST

Wood dust, if not removed at the point of generation, can present a health hazard and also be a fire and explosion hazard. Some wood dusts are toxic, and some may cause

allergic responses in workers. Employees should wear dust respirators when cleaning the bag house or other areas where wood dust levels may be high and their exposure time is short. Excessive dust accumulation makes good housekeeping difficult and increases the fire potential. Blowing off the dust only redistributes it. Vacuuming with a special high efficiency filter is the method recommended for cleanup.

The best control for wood dust is removal by local exhaust ventilation systems and collection by cyclone or bag houses.

The duct velocity should be maintained at a minimum of 3500 feet per minute to effectively remove dust and to prevent the blocking of the system.

Duct velocity pressure should be checked at regular intervals. The ducts should be checked and cleaned at regular intervals.

Dust collectors should be regularly cleaned and maintained.

Belts on the drive units of exhaust fans should be checked regularly for slippage or breaks.

VENTILATION

Mechanical exhaust ventilation is, in most cases, the first choice for control of air contaminants which are potential health hazards. A properly designed local exhaust or dilution ventilation system will either remove air contaminants which may be present, or lower the concentration of fumes, vapors, dusts, mists, or other contaminants generated in the work environment to reduce or eliminate health or fire hazards.

Local exhaust ventilation removes the hazardous materials at or near their point of origin, and prohibits them from being drawn through the breathing zone of the worker. Local exhaust ventilation is the preferred type as it usually performs more efficiently and prevents air contaminants from being circulated through the entire work area.

General dilution ventilation depends upon pulling a sufficient volume of air through the work area to dilute the contaminants to a lower, or non-hazardous level. Dilution ventilation requires a greater volume of air movement for efficient operation than does a local exhaust system.

Local exhaust systems should be installed wherever a large volume of air contaminant is generated, or where a particularly hazardous substance is used. Some operations which usually require the use of local exhaust ventilation are plating, welding, spray painting, and processes involving the use of lead, mercury, resins, asbestos, beryllium, and flammable liquids.

General dilution ventilation is an effective control for areas generating low concentrations of hazardous substances. It may effectively be used in some flammable liquid storage areas or with low hazard potential substances.

The design of ventilation systems is somewhat detailed, involving determination of the volume of air which needs to be moved, the type of fan which will adequately exhaust the air volume, the placement of the exhausts, makeup air, and

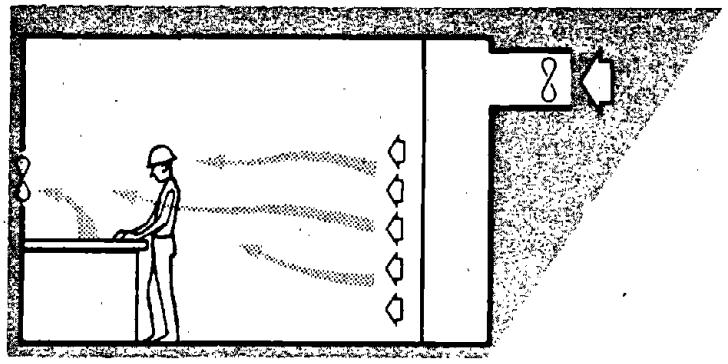
the positioning of the system. A mechanical engineer should be consulted to assist in providing an effective environmental control through the use of a ventilation system.

Mills that contain one or more machines that create dust, shavings, chips, or slivers during a period of time equal to or greater than one-fourth of the working day must be equipped with a continuous or automatic dust collecting system. The system must be of sufficient strength and capacity to remove the refuse from all points of operation and the immediate vicinity of machines and the work areas.

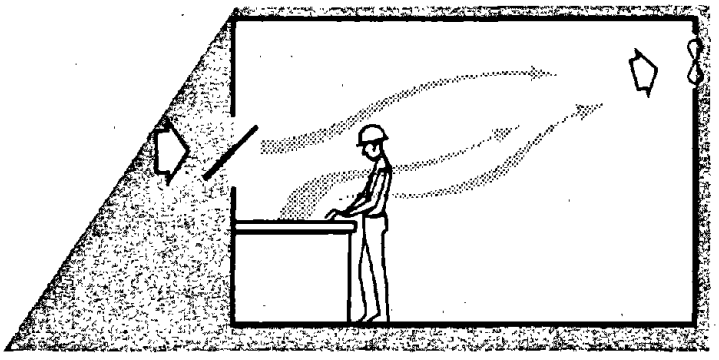
Each woodworking machine that creates dust, shavings, chips, or slivers must be equipped with an exhaust or conveyor system to remove the refuse from the point of operation and the immediate vicinity.

Exhaust ducts and pipes must be constructed and sized to minimize clogging. They must not discharge into an unconfined outside pile if the refuse creates a fire or explosion hazard.

Refuse must be removed daily in all operations not required to have an exhaust system or where the refuse cannot be handled by an exhaust system.



Good system — fresh air carries fumes away from worker



Bad system — incoming air draws vapors past worker.

OCCUPATIONAL NOISE EXPOSURE

Excessive noise can cause permanent hearing damage; yet the noise standard is one of the most commonly violated standards. It is management's responsibility to make sure employees are not exposed to noise levels in excess of the standard.

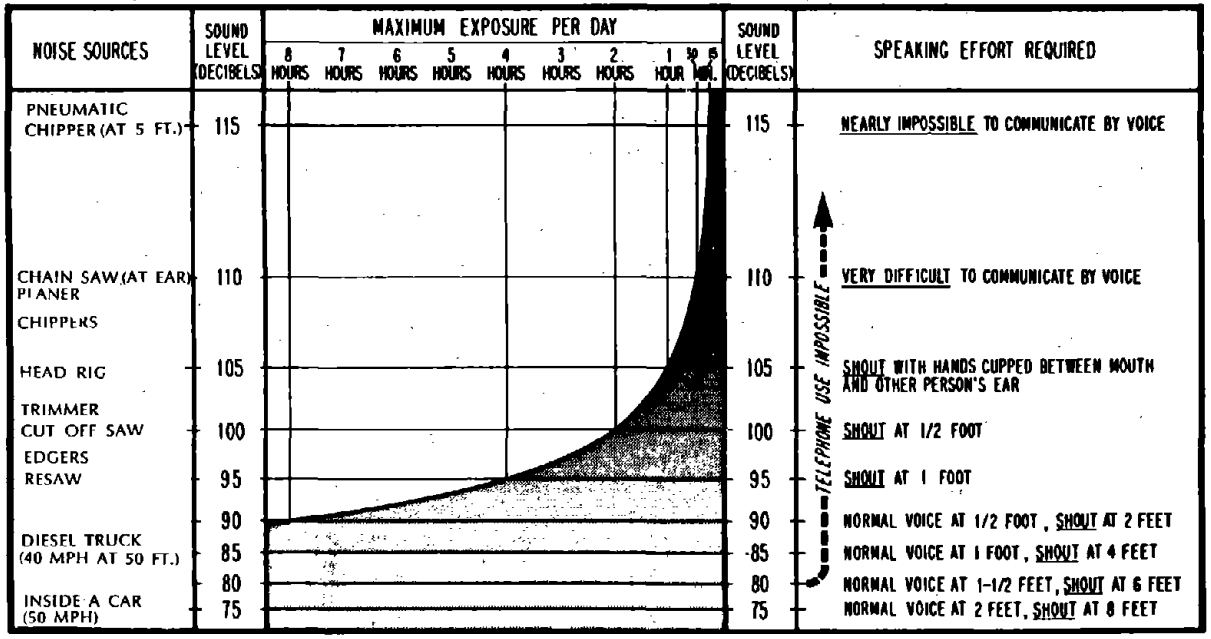
The current standard is 90 decibels, A-weighted (dBA), for an 8-hour exposure. Even at this noise level, hearing damage can be expected in some individuals. It may soon be a requirement, and it is considered good practice, to have hearing checked (audiometric testing) on an annual basis for all employees exposed to 85-90 dBA noise levels for 8 hours daily. If no hearing loss is observed, ear protection is not required.

At greater than 90 dBA exposure (8 hours per day) or for higher noise levels in excess of the allowable time (e.g., 100 dBA for more than 2 hours) a continuing, effective hearing conservation program must be administered. Reference to the following table gives estimates of noise levels and the maximum allowable exposure times. It is required that either engineering controls such as enclosing noisy equipment, or administrative controls, such as limiting time of exposure, be utilized to reduce noise levels or the exposure times to comply with the standard. If these control measures are not feasible, then effective personal protective equipment is required. There are many forms and types of ear protection that can be used such as ear muffs or ear plugs. Some are more useful than others, depending on the noise level, the frequency of the noise, and how well they fit the individual. It is necessary to provide protection that is effective and yet reasonably comfortable to the wearer.

The following table is provided to assist in the evaluation of the noise levels in the workplace. If referral to the table indicates that levels and time of exposure are such that corrective action is needed, it is recommended that professional help be sought to correct the problem. A noise survey by

adequately equipped and trained personnel should be made before engineering and administrative controls are implemented or a hearing conservation program is established.

PERMISSIBLE NOISE EXPOSURES



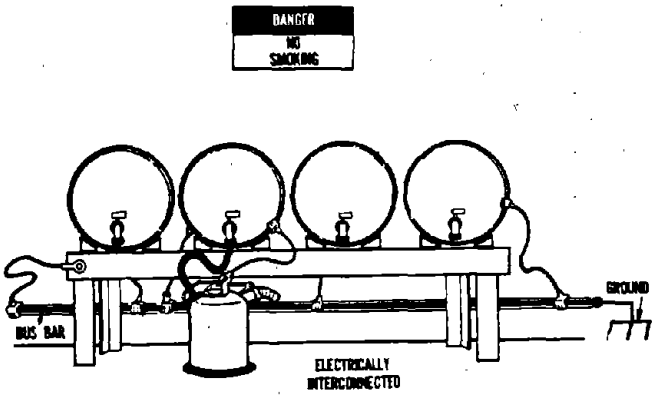
HAZARDOUS MATERIALS

FLAMMABLE AND COMBUSTIBLE LIQUIDS

The category of flammable and combustible liquids is determined by how easily they ignite (the flash point). Flammable liquids ignite more readily than combustible ones. Examples of flammables are gasoline, acetone, and lacquer thinner; examples of combustibles are kerosene, fuel oil, and Stoddard solvent.

Connections on all drums and piped systems of flammable and combustible liquids must be vapor and liquid tight.

When flammable liquids are transferred from one container to another (e.g., from a bulk container to a portable container), the containers must be effectively bonded and grounded. This practice prevents electrical discharge (i.e., sparks) from the accumulation of static charge because of the transfer process.



All spills of flammable and combustible liquids must be cleaned up promptly. Cleanup personnel must use appropriate personal protective equipment. If a major spill occurs, remove all ignition sources and ventilate the area. These liquids must never be allowed to enter a confined space,

such as a sewer, because of the possibility of an explosion. Supplies of flammable and combustible liquids must be stored in approved, fire-resistant safety containers equipped with self-closing lids. These containers can be purchased from an industrial supply house.

All flammable liquids must be kept in closed containers when not in use.

Combustible waste material, such as oily shop rags and paint rags, must be stored in covered metal containers and be disposed of daily.

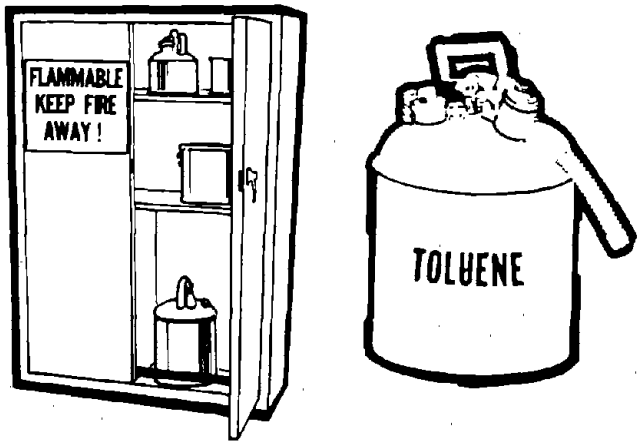
All storage areas must be posted as "NO SMOKING" areas.

STORAGE CABINETS

Storage cabinets must be distinctly labeled "FLAMMABLE — KEEP FIRE AWAY."

Metal cabinets must be constructed of at least no. 18 gauge sheet iron, double-walled with a 1½-inch air space and tight joints. Doors must have three-point locks and the sill must be at least 2 inches above the bottom of the cabinet.

Wooden cabinets must be constructed of at least 1-inch plywood. All joints must be rabbetted and fastened two-directionally with flathead screws.



INSIDE STORAGE AREAS

Each inside storage area must be prominently posted as a "NO SMOKING" area. Openings to other rooms or buildings must be provided with noncombustible, liquid-tight raised sills or ramps at least 4 inches in height. A permissible alternative to a sill or ramp is an open-grated trench inside of the room which drains to a safe location. General exhaust ventilation (either gravity or mechanical) which provides for a complete change of air within a room at least six times each hour is required for inside storage rooms. Explosion proof lights and switches are also required.

OUTSIDE STORAGE

If flammable and combustible liquids are stored outside, the area must be graded so that spills are diverted away from the building. The storage area should be kept free of combustible material not necessary for storage such as weeds and other debris. Smoking must be prohibited.

LP STORAGE AREA

"NO SMOKING" signs must be present on the storage tank. Units to be fueled must be turned off while they are being filled.

The LP tank must be guarded to protect it from vehicular damage. Electrical connections, pumps, switches, etc. must be vapor- and explosion-proof.

SPRAY PAINTING

GENERAL SPRAY OPERATIONS

Portable lamps must be removed during spraying.

Low flash point thinners (less than 100°F) may be used for cleaning purposes only in a well ventilated area such as a spray booth. The fire control sprinkler heads must be kept clean and free of overspray. "NO SMOKING" signs must be posted wherever flammable liquids are sprayed or stored.

SPRAY AREAS

Spray areas must be at least 20 feet from flames, sparks, non-explosion-proof electric motors or other ignition sources.

Spray areas must be free from hot surfaces such as heat lamps. Electric lights in a spray area must be covered and guarded from accidental breakage.

Spray areas must be kept clean and free of combustible residue. Mechanical ventilation must be provided and used to remove vapors during spraying operations. Fumes and vapors must not be drawn through the breathing zone of the operator.

SPRAY BOOTHS

Spray booths must be made of metal, masonry, or other suitable noncombustible material and be smooth on the inside to aid in cleaning. The floors and baffles must be noncombustible and easily cleaned.

Spray booth lights must be explosion-proof or enclosed in sealed panels.

Mechanical ventilation must be operated during spraying. The ventilation rate must be at least 100 linear feet per minute (average air velocity over the open face of the booth). (60 linear feet per minute for electrostatic spraying operations.)

Electric motors for the exhaust fans must be placed outside the booth or ducts and the belts and pulleys fully enclosed. Air exhausted from the paint booth must be discharged outside where it cannot re-enter the work area.

Air supply for spray booths:

Overspray filters must have pressure gauges to indicate when the filters are clogged and need replacement.

When temperatures are below 55°F, the make-up air must be heated to at least 65°. The heater for the make-up air must be located outside the spray booth.

Paint drying apparatus:

Mechanical ventilation must be left on while paint is drying. A warning sign to this effect must be attached to the drying apparatus.

Spray areas used for drying, where portable heaters or lights are used, must be kept clean of overspray. The heaters or lights must be removed before spraying again in the area.

Electrically operated drying apparatus must be properly grounded.

There must never be a supply of flammable and combustible liquids in the vicinity of spray operations greater than the amount needed for one day or one shift.

PERSONAL PROTECTIVE EQUIPMENT

GENERAL

Personal protective equipment may not be used as a substitute for feasible engineering or administrative controls. If these control methods are not feasible, personal protective equipment is required whenever there are hazards that can do bodily harm through absorption, inhalation, or physical contact. This equipment includes respiratory and hearing protective devices, clothing, and protective devices for the eyes, face, hands, head, and extremities. All personal protective equipment must be of safe design and construction for the work being performed. It must be maintained in a sanitary and reliable condition.

The chart opposite is a guide for the types of protective equipment required during various mill operations.

EYE AND FACE PROTECTION

It is recommended that an eye protection program be developed and enforced throughout the entire mill. Eye protection and/or face shields are required where there is a possibility of an eye injury from flying particles and chips, and splashes from hot liquids, caustics, solvents, or molten metals. Employees must wear this equipment when using saws, chippers, planers, etc. If face shields are worn, it is recommended that safety glasses be worn under them to provide additional protection.

Eye and face protection must be designed to adequately guard against the particular hazards to which the employee is exposed. The equipment must be both easy to clean and capable of being disinfected. If it is worn by persons whose vision requires corrective lenses, it must be capable of being worn over glasses, or constructed so that the corrective lenses can be mounted behind the protective lenses.

Suggested Use of Personal Protective Equipment in Sawmills

Job Description	Head Protection			Gloves		Eye or Face Protection				Apron		Welding					
												Gas			Arc		
	Safety Shoes	Hard Hat	Bump or Laceration cap	Rubber	Other than Rubber	Safety Glasses	Safety Goggles	Splash Goggles	Face Shield	Leather	Rubber	Welding Goggles	Face Shield	Helmet	Welders Gloves	Life Vest
Log yard employees	X	X			X	X				X						
Log deck employees	X	X				X										
Debarker operator	X	X				X			X							
Sawyer	X	X				X			X							
Off beater	X	X			X	X			X	X						
Slab trippers	X	X			X	X				X						
Edger	X	X			X	X				X						
Resaw feeder and tailer	X	X				X				X						
Gang saw feeder and tailer	X	X				X				X						
Trim saw operator	X	X				X			X							
Saw filer	X	X					X									
Green chain employees	X	X			X	X				X						
Wood preservative dipper employees	X	X		X				X	X		X					
Lumber stackers	X	X			X	X				X						
Maintenance employees	X	X				X										
Shipping employees	X	X			X	X										
Fork lift operator	X	X				X										
Cut-off saw operator	X	X				X			X							
Cutter or welder	X	X								X		X	X	X	X	
Log pond employees		X				X										X
Chipper and hog feeders	X	X				X			X							
Carloaders (hand)	X	X			X	X				X						

HEAD PROTECTION

Hard hats are required where workers may be subjected to impact or penetration from falling or flying objects. They should be required in log unloading areas, decking, and materials handling areas, and where overhead cranes operate in the yard.

FOOT PROTECTION

Foot protection is required to prevent injury from falling objects. Particularly in receiving and transferring operations, precautions are needed against falling logs, cants, and lumber.

HEARING PROTECTION

Appropriate hearing protection must be available to personnel and its use enforced where noise levels are in excess of the allowable limits. Such sound intensity is likely to occur around most of the equipment used in this industry.

GLOVES AND CLOTHING

When employees handle hazardous liquids such as preservatives they must wear gloves which are impervious to these liquids. They must be long enough to protect the forearms. Leather or heavy rubber gloves should be worn when handling lumber, such as by green and planer chain operators, yard workers, and checkers and graders. Wire mesh gloves should be worn by saw blade handlers and sharpeners. Heavy protective aprons should be worn by graders, green chain, and yard workers. When workers handle caustic substances, they should wear aprons which are impervious to the materials.

RESPIRATORY PROTECTION

NIOSH-approved respirators must be provided by the employer when the workplace air is contaminated with excessive concentrations of harmful dusts, fumes, mists, gases, or vapors. Respirators may be used as a control only when engineering or administrative controls are not feasible, or while they are being implemented.

If respirators are used, a written respirator program must be established and must include the following requirements:

The respirators selected for use must be designed to protect against the specific hazards to which the employees are exposed.

Written instructions on the selection and use of respirators must be available. A record of persons issued respirators must be maintained.

Employees must be trained in the use and limitations of respirators and in their proper fitting and maintenance.

Respirators should be cleaned at the end of each use. They should be taken apart, washed, dried, and defective parts replaced.

If a respirator is used by two people, it must be cleaned and disinfected after each use.

When the respirator is worn, all straps must be adjusted and tied.

To ensure proper function of the respirator, a good face seal is necessary. Beards, long sideburns, and glasses may interfere with the fit.

Filters used in dust respirators should be replaced when breathing becomes difficult or, preferably, at the end of each workshift. Cartridges used in chemical cartridge respirators should be replaced at the expiration of the lifetime of the cartridge, or when breathing becomes

difficult, or the employee can smell vapors in the mask, whichever comes first.

Respirator requirements vary, depending on the chemical composition of the air contaminants. The NIOSH Standards Completion Program "Guidelines" suggest the proper respirators to use for exposure to particular chemicals. Contact the NIOSH or OSHA Regional Office nearest you for information on respirator selection guidelines and use requirements.

SANITATION

Safe drinking water must be provided in all places of employment. The use of a common drinking cup is forbidden. Receptacles for waste food must be covered and kept in a clean and sanitary condition.

Restrooms must be kept in a clean and sanitary condition. Separate toilet facilities must be provided for each sex. If only one person at a time uses a toilet room and the door can be locked from the inside, separate facilities are not required. One toilet and one lavatory must be provided for approximately every 15 employees. Each lavatory must have hot and cold or tepid running water, hand soap, and individual hand towels or warm air blowers.

Beverages or food must not be stored or consumed in a toilet room or in any area exposed to toxic materials.

Employees working with toxic substances should wash and, where necessary, change from contaminated clothing before eating, drinking, or smoking.

MEDICAL AND FIRST AID

The employer who is interested in maintaining production, preventing loss of work time, and receiving efficient work performance and good morale from his employees should adopt ways to maintain the health of the employees. A good practice is to require preplacement medical examinations to insure that prospective employees are physically able to do the specific work. Periodic health evaluations for hazardous jobs and early treatment of any illness or injury should also be encouraged. Medical personnel must be readily available by phone or on-site for advice and consultation.

Emergency phone numbers must be posted near telephones. The Emergency Information Chart (printed inside the back cover of this Guide) may be helpful. Stretchers and blankets should be available for prompt transportation of injured or ill employees to a hospital.

In the absence of an infirmary, clinic, or hospital which is used for treatment of all injured employees in near proximity to the workplace the following are required:

At least one and preferably more employees on each shift must be adequately trained to render first aid. The American Red Cross, the U.S. Bureau of Mines, some insurance carriers,

local safety councils, and others with OSHA-approved programs provide acceptable training.

First aid supplies approved by a consulting physician must be readily available. The supplies should be in sanitary containers with individually sealed packages for material such as gauze, bandages, and dressings that must be sterile. Other items often needed are adhesive tape, triangular bandages (to be used as slings), inflatable plastic splints, scissors, and mild soap for cleansing of wounds or cuts.

Suitable facilities for quick drenching or flushing the eyes and body must be provided within the work area when a person may be exposed to corrosive material.

Some states have laws concerning medical practice which establish limits on first aid given by the lay person. Trained employees should understand where first aid ends and treatment by a physician begins.

NOTE: First aid is immediate, temporary treatment given in the event of accident or illness — before the doctor arrives. Immediate first aid (within four minutes) may be the difference between complete recovery, permanent impairment, or death.

FIRE PROTECTION

GOOD HOUSEKEEPING HELPS PREVENT FIRES

Maintaining a clean and orderly workplace reduces the danger of fires. Combustible material of any type should be kept only in places which are isolated by fire-resistant construction.

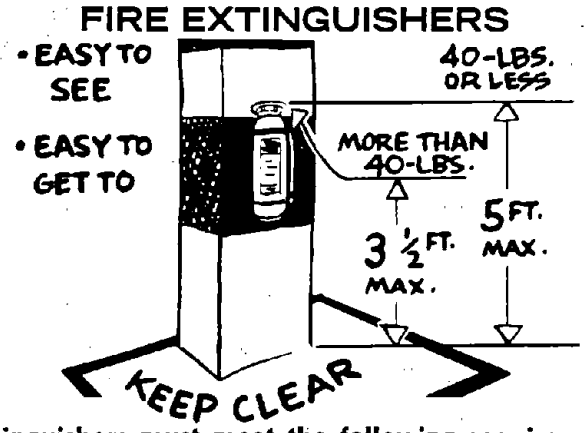
Rubbish should be disposed of regularly. If it is necessary to store combustible waste materials, a covered metal receptacle is suggested.

The materials used for cleaning can create hazards. Combustible sweeping compounds, such as oil-treated sawdust, can be a fire hazard. Floor coatings containing low-flash-point solvents can be dangerous, especially near sources of ignition. All oily mops and rags must be stored in closed metal containers.

Some common causes of fires in all businesses are:

electrical malfunctions
friction
open flames
sparks
hot surfaces
smoking

Proper maintenance and awareness of these conditions through a safety program can reduce these hazards.



Fire extinguishers must meet the following requirements:

Be kept fully charged and in their designated places.

Be located along normal paths of travel.

Not be obstructed or obscured from view.

Not be mounted higher than 5 feet (to the top of the extinguisher) if 40 pounds or less. If heavier than 40 pounds, they must not be mounted higher than 3½ feet.

Be inspected by management or a designated employee at least monthly to insure that they:

- are in their designated places
- have not been tampered with or actuated
- do not have corrosion or other impairments.

Be examined at least yearly and/or recharged or repaired to insure operability and safety. A tag must be attached to show the maintenance or recharge date and signature or initials of the person performing the service.

Be hydrostatically tested. Extinguisher sales representatives usually will perform this service at appropriate intervals.

Be selected on the basis of type of hazard, degree of hazard, and area to be protected.

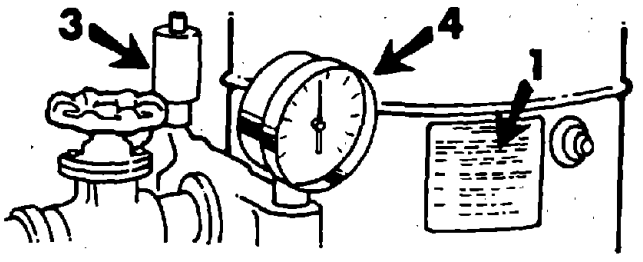
Be placed so that the maximum travel distances, unless there are extremely hazardous conditions, do not exceed 75 feet for Class A or 50 feet for Class B.

A chart showing fire extinguishers by class, and how to use them, is located in the back of this booklet.

COMPRESSED AIR EQUIPMENT

Employees should be familiar with the air compressor's operating and maintenance instructions.

1. New air tanks must be constructed in accordance with the American Society of Mechanical Engineers (A.S.M.E.) Boiler and Pressure Vessel Code, Section VIII. The A.S.M.E. Code requires this information to be permanently stamped on the air tank.



2. The drain valve on the air tank should be opened frequently to prevent excessive accumulation of liquid.

3. Air tanks must be protected by adequate safety-relief valve(s). These valves must be tested at regular intervals to be sure they are in good operating condition.

4. The pressure controller and gauge must be maintained in good operating condition.

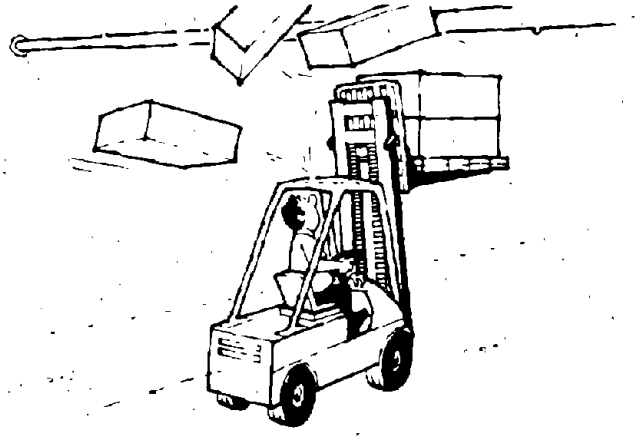
5. There must be no valves between the air tank and the safety valve.

MATERIALS HANDLING AND STORAGE

POWERED INDUSTRIAL TRUCKS

Powered industrial trucks are classified into categories for the purpose of determining what type of truck may be used in a certain location. The type of hazard in a location determines whether diesel, electric, gasoline, or LP-gas powered trucks may be used and what additional safeguards must be present. Suppliers can assist in the proper selection.

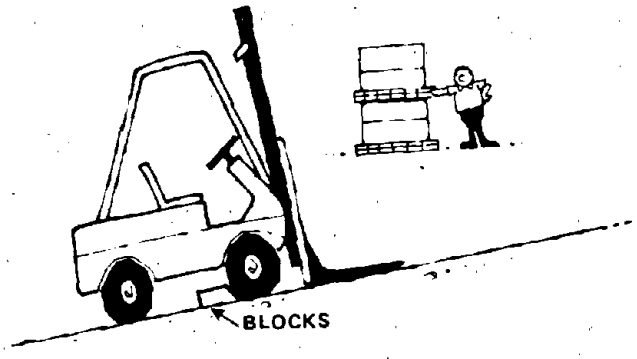
High-lift rider trucks must be fitted with an overhead guard to protect the operator from falling objects.



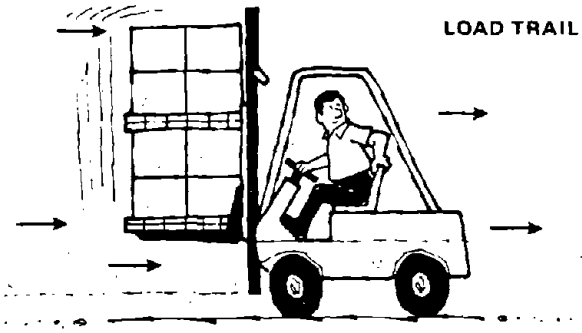
Methods must be developed and used to effectively train operators in the safe operation of powered industrial trucks, and only trained and authorized employees may operate the truck. Truck manufacturers and suppliers may provide training courses.

When a powered industrial truck is left unattended (operator 25 feet or more away, or the truck is not in view), the forks must be fully lowered, the control lever positioned in neutral, the power shut off, and the brakes set. The wheels must be blocked if parked on an incline.

Industrial trucks must be examined daily for any conditions adversely affecting the safety of the vehicle before being



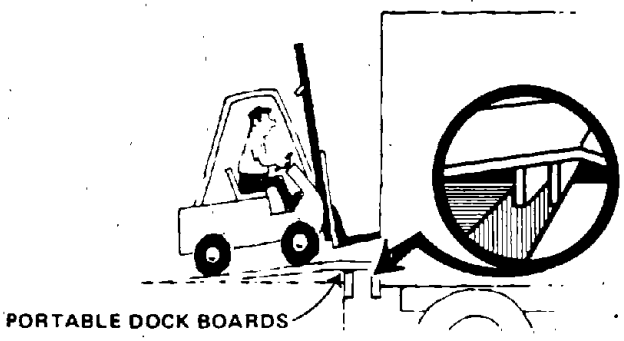
placed into service. If the truck is used around the clock, it must be inspected after each shift.



If the load being carried obstructs forward view, the operator is required to travel with the load trailing.

When unloading or loading from trucks, trailers, or railroad cars with forklift trucks, provision must be made for securing the truck, trailer, or railroad car by setting the brakes and placing wheel chocks under the rear wheels. Portable dock boards must be secured in position with devices which will prevent their slipping during loading and unloading.

If battery-operated equipment is used, the battery charging area is to be designated with a "NO SMOKING" sign due to the hydrogen gas emitted during the charging process.



HOISTS

Although the information provided in this section on hoists pertains specifically to cranes, these requirements should be applied to all hoisting equipment.

The rated load must be legibly marked on each side of the hoist. Employees should be made aware of the weight of the loads to be carried.

The hoist must be equipped with a self-setting brake applied to the motor shaft or some part of the gear train. For powered hoists, holding brakes must be applied automatically when the power is off.

Hooks, chains, and all functional operating mechanisms must be visually inspected daily for any indication of damage and wear, and monthly inspection records must be maintained. Loads must not be carried over the heads of people.

The operator must test the brakes each time a near-capacity load is handled. This test is done by raising the load a few inches and applying the brakes.

The hoist rope or chain must be free from kinks or twists and must not be wrapped around the load.

MACHINERY AND MACHINE GUARDING

GENERAL REQUIREMENTS FOR MACHINE GUARDING

One or more methods of machine guarding must be provided to protect the operator and other employees in the machine area from hazards such as those created by point of operation, in-running nip points, rotating parts, flying chips, and sparks. All such hazards located 7 feet or less above the ground, floor, or working platform, must be guarded to prevent accidental contact. Guards must be attached to the machine if possible, or secured elsewhere if attachment to the machine is not possible. The guard must not offer an accident hazard in itself. Machines designed for fixed locations must be securely anchored to prevent "walking" or tipping.

A booklet entitled "The Principles and Techniques of Mechanical Guarding," OSHA 2057, can be obtained by writing to OSHA Regional Offices listed in the back of this book. Many equipment representatives can assist in obtaining the necessary protective devices.

The most common methods of guarding a hazard or hazardous machine operation are:

- enclosing the operation (preferred)
- interlocking devices
- moving barriers
- removal devices
- remote control
- two-hand tripping devices
- electronic safety devices

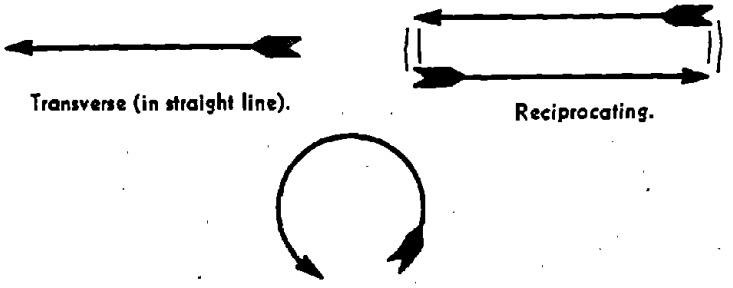
Certain guarding methods are preferable to others. The type of operation, the size or shape of stock, the method of handling stock, the physical layout, the type of material, and the production requirements or limitations are important considerations. Certain flexibility in operations may also de-

termine the method to be used. As a general rule, however, power transmission apparatus can be protected by fixed enclosure guards.

The following pages contain examples of specific equipment that must be guarded. This listing is not intended to include all equipment that may require guarding nor are the guarding methods suggested the only ones that may be effective.

ROTATING AND RECIPROCATING MOTION

Collars, couplings, cams, clutches, flywheels, shaft ends, spindles, rotating bar stock, lead screws, and horizontal or vertical shafting are typical examples of common rotating mechanisms which are hazardous. The danger increases when bolts, oil cups, nicks, abrasions, and projecting keys or screw threads are exposed when rotating.



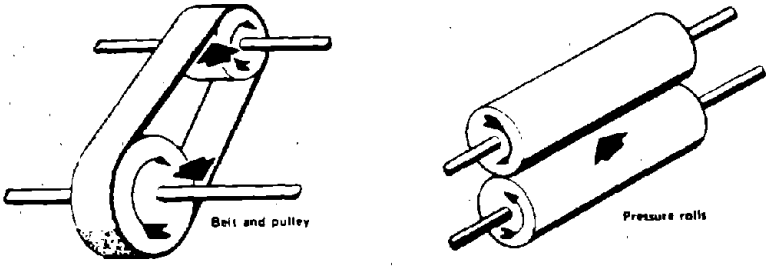
Transverse (in straight line).

Reciprocating.

Rotating.

IN-RUNNING NIP POINTS

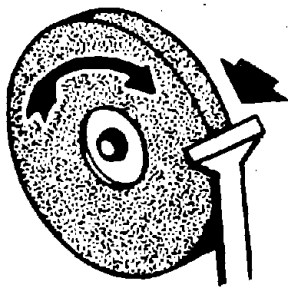
In-running nip points are a special danger created by the action of rotating objects. Whenever machine parts rotate toward each other or where one rotates toward a stationary object, an in-running nip point is formed. Objects or parts of the body may be drawn into this nip point and be bruised or crushed.



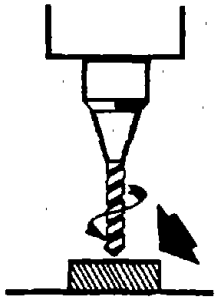
CUTTING ACTIONS

Cutting action results when rotating, reciprocating, or transverse motion is imparted to a tool so that the material removed is in the form of chips. The danger of cutting action exists at the movable cutting edge of the machine as it approaches or comes in contact with the material being cut. Such action takes place at the point of operation in cutting wood, metal, or other materials as differentiated from punching, shearing, or bending by press action.

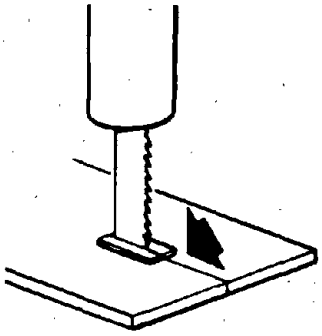
Typical examples of cutting action are band and circular saws, milling machines, planing or shaping machines, turning machines, boring or drilling machines, and grinding machines.



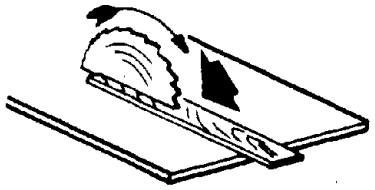
Abrasive wheel



Drill

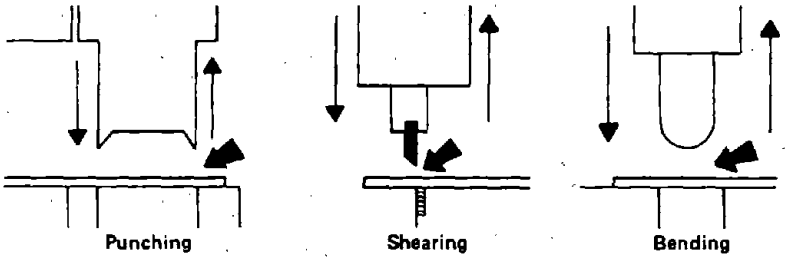


Band saw

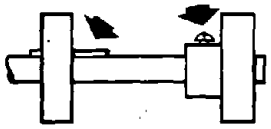


Circular saw

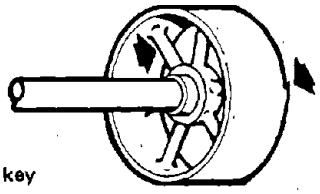
PUNCHING, SHEARING, AND BENDING



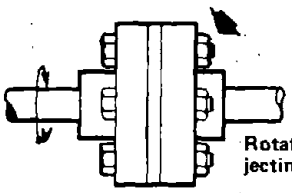
ROTATING PARTS



Rotating shaft and pulleys with projecting key and set screw

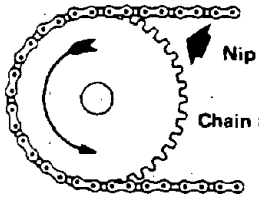


Rotating pulley with spokes and projecting burr on face of pulley



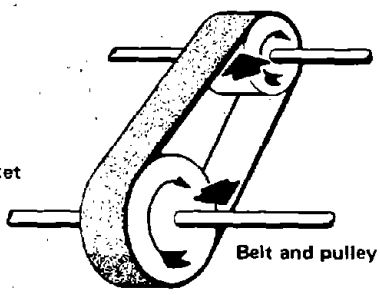
Rotating coupling with projecting bolt head

IN-RUNNING NIP POINTS

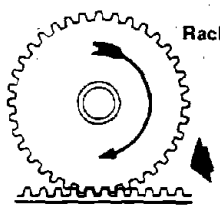


Nip Point

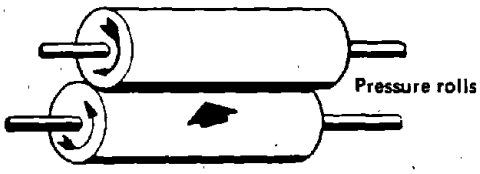
Chain and sprocket



Belt and pulley

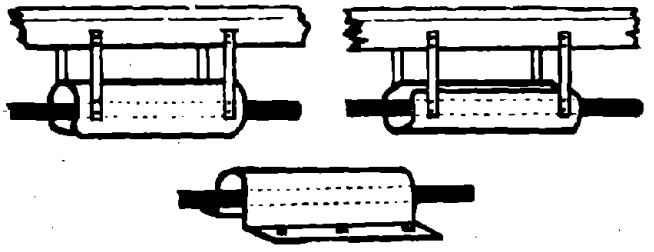


Rack and gear

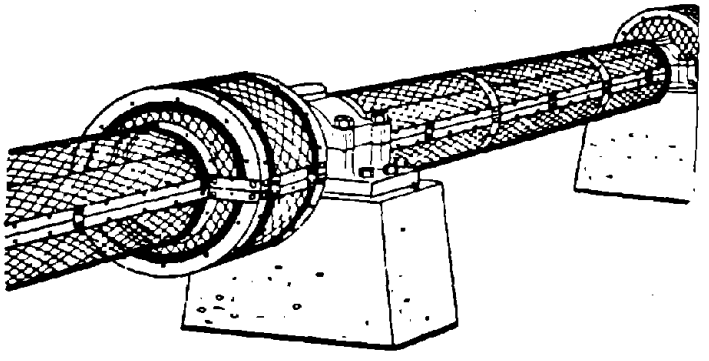


Pressure rolls

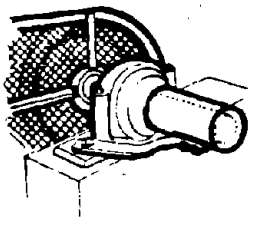
GUARDING ROTATING MOTION BY ENCLOSURE GUARDS



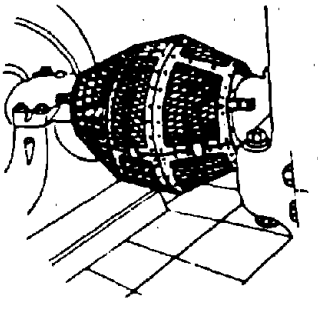
Horizontal shafting



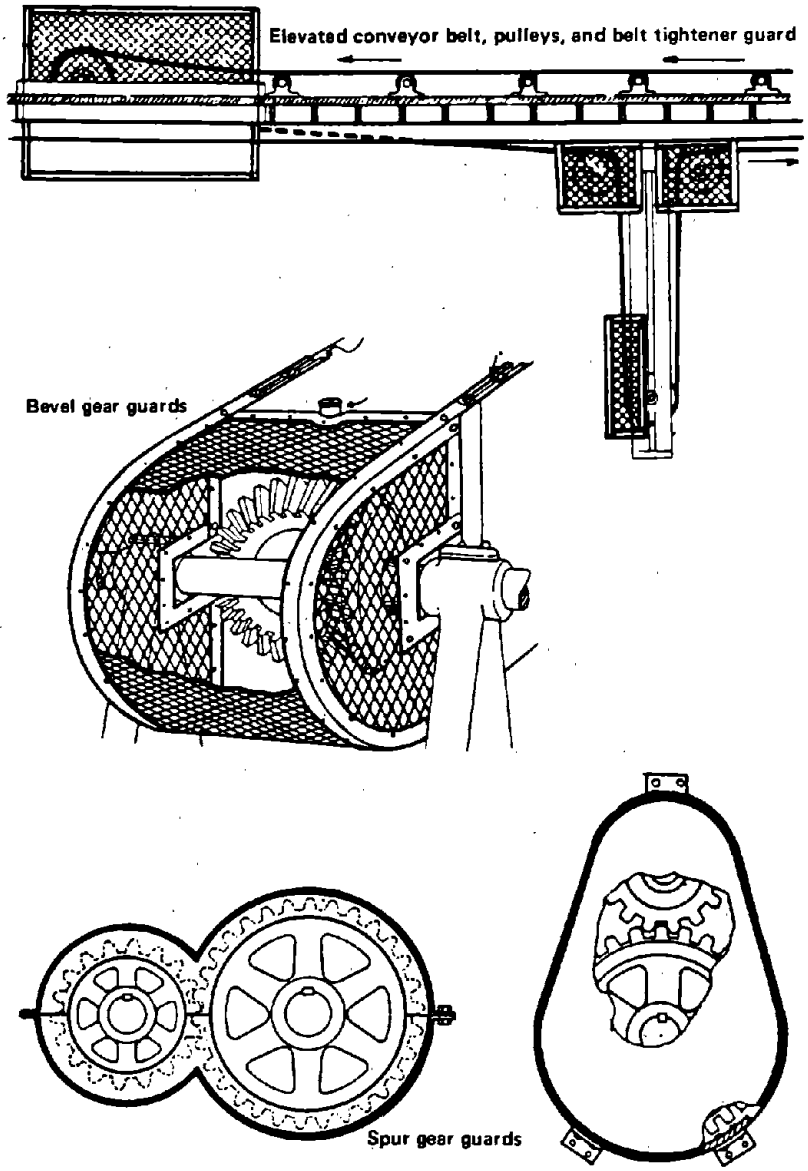
Horizontal shafting



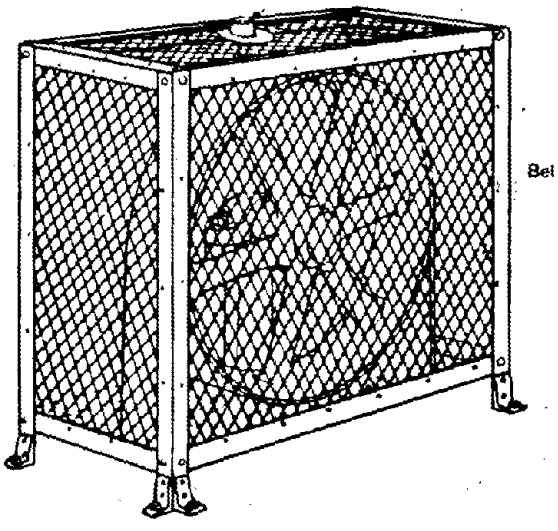
Sleeve for shaft end



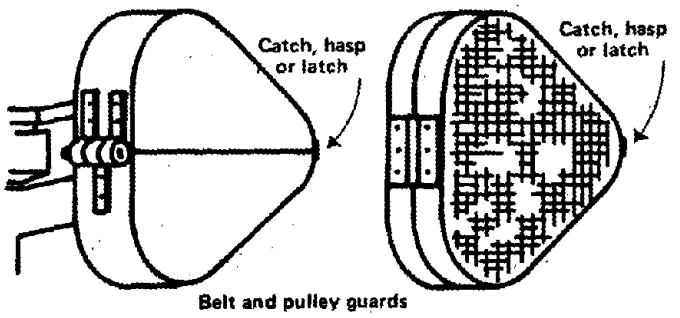
Coupling



Totally enclosed guard. Split and hinged for either top or side opening



Belt and pulley guard



Belt and pulley guards

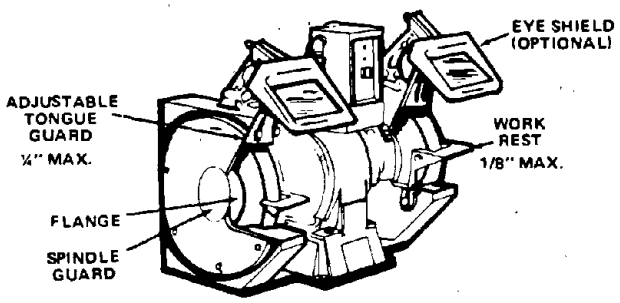
GRINDERS

Wheel safety guards must cover the spindle end, nut, and flange projections. The exposed area of the grinding wheel should not exceed more than one-fourth of the area of the entire wheel. When the guard opening is measured, the visors and other accessory equipment are not included as part of the guard unless they are as strong as the guard.

Work or tool rests must be of strong construction and must be adjustable to compensate for wheel wear. Work rests must be kept closely adjusted to the wheel to prevent the work from becoming jammed between the wheel and the work rest. The maximum clearance allowed is ⅛-inch.

Tongue guards (upper peripheral guards) must be constructed so that they adjust to the wheel as it wears down. A maximum clearance of ¼-inch is allowed between the wheel and the tongue guard.

Goggles or a face shield must be worn by grinder operators.

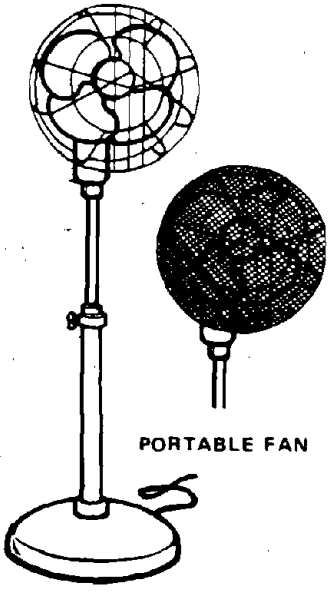


FANS

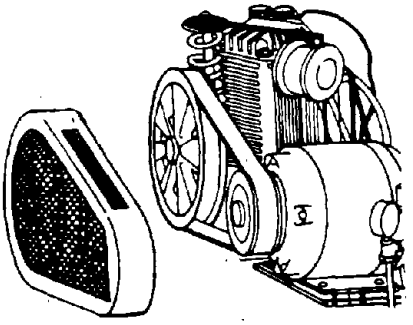
If fans are located within 7 feet of the floor, they must be guarded with grille or mesh, limiting openings to not more than ½-inch (least dimension).

AIR COMPRESSORS

The pulleys and drive belts of air compressors must be fully enclosed.



PORTABLE FAN



AIR COMPRESSOR

HAND AND PORTABLE POWERED TOOLS

The following is a list of general requirements governing the use of hand tools:

Each employer is responsible for the safe condition of tools and equipment used by employees, including tools and equipment which may be furnished by employees.

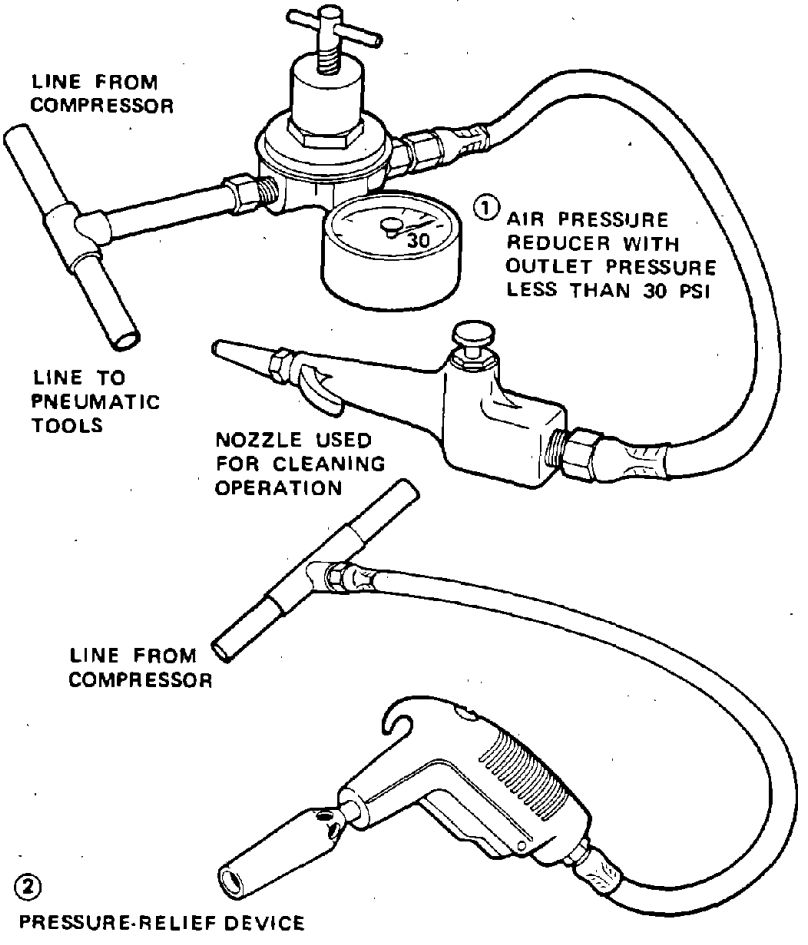
Hammers with broken or cracked handles, chisels and punches with mushroomed heads, wrenches with sprung jaws, or bent or broken wrenches should not be used.

Most hand-held electrical tools must be equipped with a "dead-man" or "quick-realease" control, so that power is shut off automatically whenever the operator releases the control.

Portable circular saws must be equipped with guards above and below the base plate or shoe. The lower guard must retract when the blade is in use, and automatically return to the guarding position when the tool is withdrawn from the work.

All hand-held portable electrical equipment must have its frame grounded or be double-insulated and identified as such.

Beware of compressed air, it can be dangerous. Alternative methods of cleaning surfaces should be sought. Compressed air must never be used to blow debris from a person. Compressed air may be used for cleaning surfaces if there is no other acceptable method. The downstream pressure of compressed air must remain below 30 psi whenever the nozzle is dead-ended; effective chip guarding and personal protective equipment must be used. Two acceptable methods of meeting the 30 psi requirement are illustrated.



WELDING, CUTTING, AND BRAZING

GENERAL

Management must establish areas for cutting and welding operations based on the fire potentials of the plant. Special procedures must be established for welding and cutting in high hazard locations. Preferably, cutting or welding should be done in an area with no surrounding combustible material. If combustibles in the immediate vicinity are unavoidable, guards must be used to protect against the fire hazards from heat and sparks. Suitable fire extinguishing equipment (pails of water, buckets of sand, hose, or portable extinguisher) must be maintained for instant use.

Torch cutters and welders must be suitably trained in the safe operation of their equipment. Printed rules and instructions (supplied by the manufacturers) covering operation of equipment must be strictly enforced.

No welding, cutting, or other hot work may be performed on used drums, barrels, tanks, or other containers until they have been cleaned so thoroughly as to make absolutely certain that there are no flammable materials present or any substances such as greases, tars, acids, or other materials which, when subjected to heat, might produce flammable or toxic vapors.

The atmosphere in the welding area must be free of flammable gases, liquids, and vapors.

Goggles or other suitable eye protection (helmets, hand shields) must be used during welding or cutting operations as a protection against sparks and debris.

Employees adjacent to the welding areas must be protected from ultraviolet rays by noncombustible or flameproof screens or shields, or they must be required to wear appropriate goggles.

Employees exposed to hazards created by cutting and welding must be protected by personal protective equipment. For example:

- Flameproof gauntlet gloves (except when engaged in light work) should be worn.
- Flameproof aprons (leather for example) may be desirable as protection against sparks and radiant heat.
- Fire resistant leggings or high boots should be worn.

The potential health hazard to a welder or cutter from gases or metal fumes depends on the toxicity of the materials involved (types of metals, fluxes, coatings, etc.) the duration and location of the process, and ventilation.
There are specific requirements concerning ventilation and respirators when welding or cutting is performed on the following:

- stainless steel, lead, zinc, or cadmium
- metals coated with lead or mercury-containing materials such as paint
- fluxes or other materials containing fluorides.

REQUIREMENTS FOR VENTILATION AND RESPIRATORS WHEN WELDING OR CUTTING

Welding or Cutting on Materials Containing or Coated With	*Location of Operation*		
	Confined Spaces	*Indoors*	*Outdoors*
Lead	A	B	E
Zinc	A	B	F
Fluorine	A	C	C
Cadmium	C	C	F
Beryllium	D	D	D
Mercury	C	C	F

Stainless Steel = Mechanical ventilation adequate to remove the fumes generated.

A = Adequate ventilation to prevent the accumulation of toxic materials or possible oxygen deficiency. Where it is impossible to provide such ventilation, approved airline respirators must be used.

B = Mechanical local exhaust by means of hoods or booths with sufficient airflow to maintain a velocity, away from the worker, of at least 100 linear feet per minute.

C = If conditions warrant, mechanical local exhaust (B) or approved airline respirators.

D = If conditions warrant, mechanical local exhaust (B) *and* approved airline respirators.

E = Approved respirators.

F = If conditions warrant, approved respirators (E).

Mechanical ventilation must be provided when welding or cutting is done on metals not covered in the table when

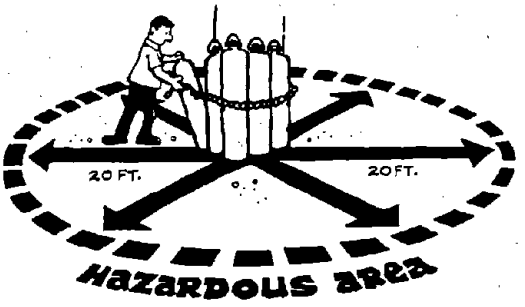
(a) the volume of space per welder is less than 10,000 cubic feet,

(b) the ceiling is less than 16 feet high, or

(c) work is done in confined spaces.

Such mechanical ventilation must be at the minimum rate of 2,000 cubic feet per minute per welder, unless hoods or booths are provided with sufficient airflow to maintain a velocity, away from the worker, of at least 100 linear feet per

minute. Alternatively, NIOSH-approved supplied-air respirators must be used.



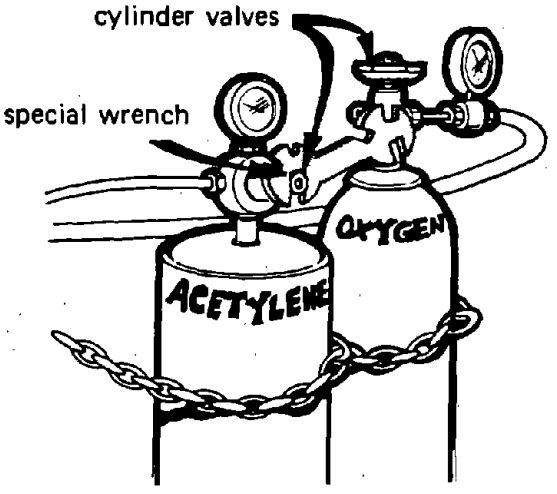
GAS WELDING

General requirements governing gas welding:
All cylinders must be away from radiators and other sources of heat.

All cylinders stored inside buildings must be located in a well-protected, well-ventilated, dry location at least 20 feet from highly combustible materials and away from elevators, stairs, or gangways. They must not be kept in unventilated enclosures such as lockers and cupboards.

Valve protection caps must be utilized where the cylinder is designed to accept a cap except when cylinders are in use or connected for use.

Stored oxygen cylinders must be kept separated from stored fuel gas cylinders or combustible materials (especially oil or grease) by a minimum distance of 20 feet or by a non-combustible barrier at least 5 feet high and having a ½ hour fire resistance rating. A sheet metal partition is not an acceptable method of separating cylinders.



All cylinder valves must be closed when work is finished. Where a special wrench is required, it must be left in position on the stem of the valve while the cylinder is in use so that the fuel-gas flow can be quickly turned off in case of emergency. In the case of manifolded or coupled cylinders, at least one such wrench must always be available for immediate use.

All cylinders must be legibly marked to identify contents.

No cylinder should be permitted to stand alone without being secured with lashing or chain to prevent it from toppling over.

Acetylene must not be utilized at a pressure in excess of 15 psi gauge (or 30 psi absolute). Above this pressure acetylene may become unstable.

Indoor storage of fuel gas is limited to a total capacity of 2,000 cubic feet or 300 pounds of liquified petroleum gas.

Hoses showing leaks, burns, or worn places which render them unfit for service must be replaced or repaired.

ELECTRIC ARC WELDING

Wherever electric arc welding is done, it is required that: If the welding machine is wet, it must be thoroughly dried and tested before it is used again.

Coiled welding cable must be spread out and the ground lead must be firmly attached to the work.

Cables must be inspected for damage and loss of insulation and be repaired immediately.

Ground and electrode cables may only be joined together with connectors specifically designed for that purpose.

Cables with splices within 10 feet of the operator may not be used; neither may the operator coil cables around his body.

Welding helmets or hand shields must be worn by the operator. Persons close by must wear eye protection. Shields or screens must protect others in the vicinity from arc welding rays.

Arc welders should wear clean, fire-resistant gloves and clothing with collars and sleeves buttoned.

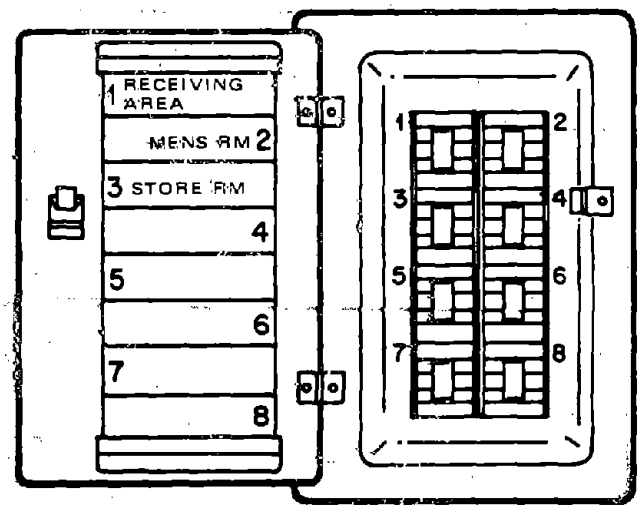
Electrode holders which are not in use must be placed in a safe place away from conductive objects.

THE NATIONAL ELECTRICAL CODE (NEC)

More fires are caused by electrical malfunction than any other cause, and standards pertaining to electrical equipment and its use in all industries have been cited as violations more frequently than any others.

The National Electrical Code, NFPA 70-1971; ANSI C1-1971, has been adopted as a national consensus standard by OSHA (Refer to "Information Sources"). The purpose of the NEC is the practical safeguarding of persons, and buildings and their contents from hazards arising from the use of electricity. The code contains minimum provisions considered necessary for safety. The electrician should be familiar with these requirements.

Each disconnecting means (e.g., circuit breaker or fuse box) must be legibly marked to indicate its purpose unless its purpose is evident.



Proper labeling of circuit breakers.

Frames of electrical motors, regardless of voltage, must be grounded.

Exposed noncurrent-carrying metal parts of fixed equipment that may become energized under abnormal conditions must be grounded under any of the following circumstances:

- in wet or damp locations
- if in electrical contact with metal
- if operated in excess of 150 volts to ground
- when in a hazardous location.

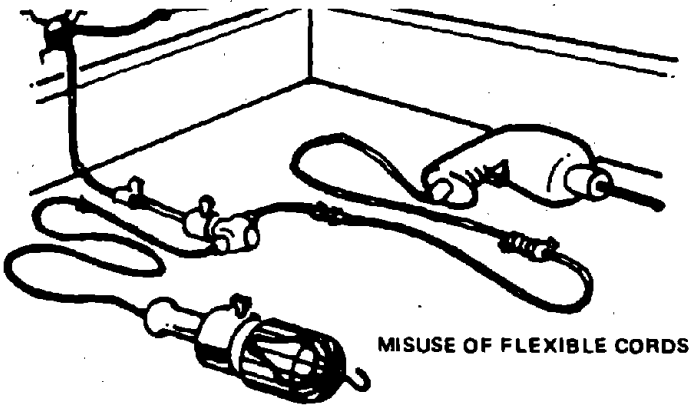
Exposed noncurrent-carrying metal parts of the following plug-connected equipment, which are liable to become energized, must be grounded or double-insulated and distinctly marked:

- portable hand-held motor-operated tools
- appliances
- any equipment operated in excess of 150 volts to ground

Outlets, switches, junction boxes, etc., must be covered.

Flexible cords may not be:

- used as a substitute for fixed wiring
- run through holes in walls, ceilings, or floors
- run through doors, windows, etc.
- attached to building surfaces.



MISUSE OF FLEXIBLE CORDS

Flexible cord must be fastened so that there is no pull on joints or terminal screws. It must be replaced when frayed or when the insulation has deteriorated.

All splices in flexible cord must be executed by brazing, welding, or soldering, or by joining the conductors with suitable splicing devices. Any splices, joints, and the free ends of conductors must be properly insulated.

Electrical repairs may be made only by authorized qualified persons.

Switches must be open and tagged, blocked, or locked out before work on electrical equipment is begun. It is recommended that each person working on equipment have a separate lock. The locks or tags must not be removed until all work is completed.

Passageways to switch centers or panels must be kept free from obstructions, with not less than 3 feet of clear space maintained.

RECORDKEEPING REQUIREMENTS

Recordkeeping requirements under OSHA compile factual information about accidents that have happened. These records provide employers with a measure for evaluating the success of their safety and health activities and of identifying high risk areas of their businesses to which attention should be directed. Employers must report within 48 hours to OSHA (or a state agency in states which have operational safety and health plans) any incident or accident which results in hospitalization of 5 or more employees or a fatality.

Federal regulations require employers with 11 or more employees at any time during the preceding calendar year to complete OSHA Forms 100, 101 (or equivalent), and 102. The following cases must be recorded on the OSHA Form 100 (Log of Occupational Injuries and Illnesses): every death, every illness, and any injury which results in loss of consciousness, loss of time, restriction of work or motion, temporary or permanent transfer to another job, or medical treatment other than first aid. Illnesses and injuries are classified by lost workdays, restriction of duties or "light duty," and no lost time.

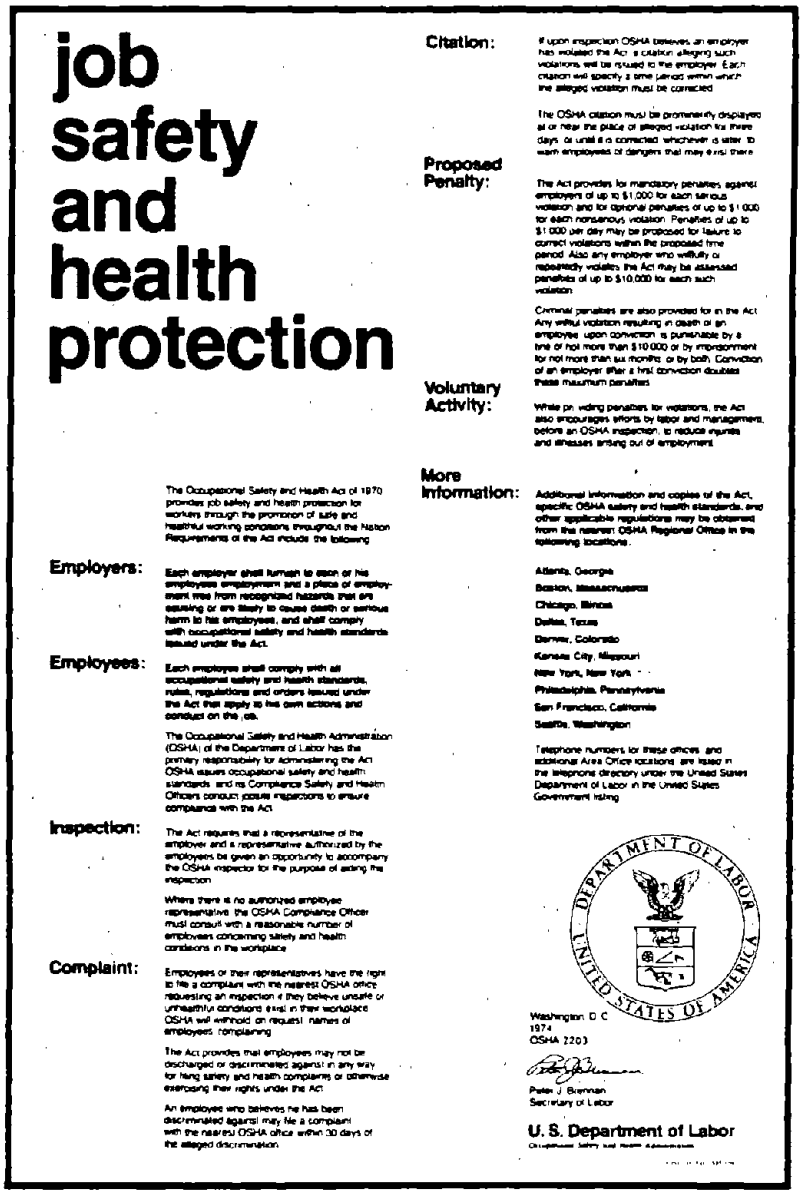
A supplementary record must be completed for each recordable case. OSHA Form 101 may be used; a state workers' compensation report or other form is acceptable if it contains the equivalent information as the OSHA 101. Forms 100 and 101 must be kept current to within six days.

An annual summary, OSHA Form 102 must be posted for the entire month of February in a place where all employees are likely to see it. All of these forms (100, 101, and 102) must be retained for five years, excluding the current calendar year.

A booklet "Recordkeeping Requirements Under the Wil-

liams-Steiger Occupational Safety and Health Act of 1970" which provides a supply of forms and more detailed information is available from OSHA regional or area offices or from the regional offices of the Bureau of Labor Statistics.

Employers are also required to maintain accurate records of certain potentially toxic or harmful physical agents which must be monitored or measured and to promptly advise employees of any excessive exposure and the corrective action taken. In certain cases, physical examinations and testing are required. Examples of these agents are asbestos, ionizing radiation, etc. Any OSHA office can supply a list of these hazardous substances and explain what records may be required.



job safety and health protection

The Occupational Safety and Health Act of 1970 provides job safety and health protection for workers through the promotion of safe and healthful working conditions throughout the Nation. Requirements of the Act include the following:

Employers: Each employer shall furnish to each of his employees employment and a place of employment free from recognized hazards that are causing or are likely to cause death or serious harm to his employees, and shall comply with occupational safety and health standards issued under the Act.

Employees: Each employee shall comply with all occupational safety and health standards, rules, regulations and orders issued under the Act that apply to his own actions and conduct on the job.

The Occupational Safety and Health Administration (OSHA) of the Department of Labor has the primary responsibility for administering the Act. OSHA issues occupational safety and health standards and its Compliance Safety and Health Officers conduct job site inspections to ensure compliance with the Act.

Inspection: The Act requires that a representative of the employer and a representative authorized by the employees be given an opportunity to accompany the OSHA inspector for the purpose of aiding the inspection.

Where there is no authorized employee representative, the OSHA Compliance Officer must consult with a reasonable number of employees concerning safety and health conditions in the workplace.

Complaint: Employees or their representatives have the right to file a complaint with the nearest OSHA office requesting an inspection if they believe unsafe or unhealthful conditions exist in their workplace. OSHA will withhold, on request, names of employees complaining.

The Act provides that employees may not be discharged or discriminated against in any way for filing safety and health complaints or otherwise exercising their rights under the Act.

An employee who believes he has been discriminated against may file a complaint with the nearest OSHA office within 30 days of the alleged discrimination.

Citation: If upon inspection OSHA believes an employer has violated the Act, a citation alleging such violations will be issued to the employer. Each citation will specify a time period within which the alleged violation must be corrected.

The OSHA citation must be prominently displayed at or near the place of alleged violation for three days, or until it is corrected, whichever is later, to warn employees of dangers that may exist there.

Proposed Penalty: The Act provides for mandatory penalties against employers of up to $1,000 for each serious violation and for optional penalties of up to $1,000 for each nonserious violation. Penalties of up to $1,000 per day may be proposed for failure to correct violations within the proposed time period. Also, any employer who willfully or repeatedly violates the Act may be assessed penalties of up to $10,000 for each such violation.

Criminal penalties are also provided for in the Act. Any willful violation resulting in death of an employee, upon conviction, is punishable by a fine of not more than $10,000 or by imprisonment for not more than six months, or by both. Conviction of an employer after a first conviction doubles these maximum penalties.

Voluntary Activity: While providing penalties for violations, the Act also encourages efforts by labor and management, before an OSHA inspection, to reduce injuries and illnesses arising out of employment.

More Information: Additional information and copies of the Act, specific OSHA safety and health standards, and other applicable regulations may be obtained from the nearest OSHA Regional Office in the following locations:

Atlanta, Georgia
Boston, Massachusetts
Chicago, Illinois
Dallas, Texas
Denver, Colorado
Kansas City, Missouri
New York, New York
Philadelphia, Pennsylvania
San Francisco, California
Seattle, Washington

Telephone numbers for these offices and additional Area Office locations are listed in the telephone directory under the United States Department of Labor in the United States Government listing.

DEPARTMENT OF LABOR
UNITED STATES OF AMERICA

Washington, D.C.
1974
OSHA 2203

Peter J. Brennan
Secretary of Labor

U.S. Department of Labor

Occupational Safety and Health Administration

Employers must post one of the full size versions (10x16) of this type of OSHA poster or a state-approved poster where required.

CHECKLISTS

Since safe conditions depend on identifying and correcting hazards, periodic inspections are one of the most important aspects of a successful safety and health program.

Management will find a checklist, such as the one presented on the following pages, helpful in performing inspections of the facility. Because businesses vary, it is best that each business develop a customized list from the information in this booklet and a walk-through inspection.

Using this checklist, the manager, supervisor, or employee representative should make periodic inspections (preferably at least once each month) to identify problem areas so that corrective action may be taken.

Reference made in the "CHECKLIST" subtitles refers to appropriate sections of *"General Industry Standards, Title 29 Code of Federal Regulations Part 1910."*

WALKING AND WORKING SURFACES

AISLES AND FLOORS (29 CFR 1910.22)

	Yes	No
Are all places of employment kept clean and orderly?	☐	☐
Are floors, aisles, and passageways kept clean and dry and all spills cleaned up immediately?	☐	☐
Are floor holes, such as drains, covered?	☐	☐
Are permanent aisles appropriately marked?	☐	☐
Are wet surface areas covered with non-slip materials?	☐	☐

STORAGE LOFTS, SECOND FLOORS, ETC. (29 CFR 1910.22, .23)

Are signs showing floor load capacity present?	☐	☐
Are platforms, storage lofts, balconies, etc. that are more than 4 feet above the floor protected with standard guardrails?	☐	☐
Are all platforms, lofts, and balconies (where people or machinery could be exposed to falling objects) guarded with standard 4-inch toeboards?	☐	☐

STAIRS (29 CFR 1910.24)

Are there standard stair rails or handrails on all stairways having 4 or more risers?	☐	☐
Are all stairways at least 22 inches wide?	☐	☐

Do stairs have at least a 7-foot overhead clearance? _____ ☐ ☐

Do stairs angle no more than 50° and no less than 30°? _____ ☐ ☐

LADDERS (29 CFR 1910.25, .26, .27)

Have defective ladders (e.g., with broken rungs or split side rails, etc.) been tagged as "DANGEROUS, DO NOT USE" and removed from service for repair or destruction? _____ ☐ ☐

Is it prohibited to use the top of an ordinary step ladder as a step? _____ ☐ ☐

Do fixed ladders have at least 3½ feet of extension at the top of the landing? _____ ☐ ☐

Is the distance between the centerline of rungs on a fixed ladder and the nearest permanent object in back of the ladder at least 7 inches or more? _____ ☐ ☐

Do all fixed ladders have a preferred pitch of 75°-90°? _____ ☐ ☐

EGRESS (29 CFR 1910.36-.38)

Are all exits marked with an exit sign and illuminated by a reliable light source? _____ ☐ ☐

Is the lettering at least 6 inches high with the principal letter strokes at least ¾ of an inch wide? _____ ☐ ☐

Is the direction to exits, when not immediately apparent, marked with visible signs? _____ ☐ ☐

Are doors or other passageways, that are neither exits nor access to an exit, and located where they may be mistaken for exits, appropriately marked "NOT AN EXIT," "TO BASEMENT," "STOREROOM," etc.? _____ ☐ ☐

Are exit doors side-hinged? _____ ☐ ☐

Are all doors that must be passed through to reach an exit or way to an exit, always free to access with no possibility of a person being locked inside? _____ ☐ ☐

Are all exit routes kept free of obstructions? _____ ☐ ☐

OCCUPATIONAL HEALTH AND ENVIRONMENTAL CONTROL

(29 CFR 1910.1000,.94,.95)

Is management aware of the hazards caused by various chemicals used in the plant? (Solvents, wood preservatives, dusts, etc.) _____ ☐ ☐

Is employee exposure to these chemicals kept within acceptable limits? _____ ☐ ☐

Are all containers, such as vats, storage tanks, etc. labeled as to their contents? _____ ☐ ☐

Are employees required to wear personal protective equipment when handling hazardous materials (gloves, eye protection, respirators, etc.)? _____ ☐ ☐

If internal combustion engines are used, is carbon monoxide kept within acceptable levels? _____ ☐ ☐

Is employee exposure to hazardous materials controlled by ventilation, use of respirators, protective equipment administrative control or other means?	☐	☐
Wherever possible, is dust removed by vacuuming, rather than by blowing or sweeping?	☐	☐
Are grinders, saws, and other machines which produce respirable dusts vented to a collector system?	☐	☐
Are all local exhaust ventilation systems operating properly?		
Ducts not plugged.	☐	☐
Belts not slipping.	☐	☐
Proper air flow and air volume.	☐	☐
Are laser signs installed in the laser use area?	☐	☐
Are lasers turned off or covered when employees are in the beam area?	☐	☐
Are engineering controls used to reduce noise exposures?	☐	☐
Are ear plugs or ear muffs worn when employees are in high noise areas?	☐	☐

HAZARDOUS MATERIALS

FLAMMABLE AND COMBUSTIBLE LIQUIDS (29 CFR 1910.106)

	Yes	No
Are all connections on drums and combustible liquid piping vapor and liquid tight?	☐	☐
Are flammable liquids kept in closed containers when not in use (e.g., parts cleaning tanks, or pans, etc.)?	☐	☐
Are all spills of flammable or combustible liquids cleaned up promptly?	☐	☐
Is combustible waste material (oily rags, etc.) stored in covered metal receptacles and disposed of daily?	☐	☐
Are bulk drums of flammable liquids grounded and bonded to containers during dispensing?	☐	☐
Are gasoline and flammable liquids stored in approved containers?	☐	☐
Do storage rooms for flammable and combustible liquids have explosion-proof lights?	☐	☐
Do storage rooms for flammable and combustible liquids have mechanical or gravity ventilation (at least six air changes per hour)?	☐	☐
Are storage cabinets for flammable liquids labeled "FLAMMABLE—KEEP FIRE AWAY"?	☐	☐
Is there never more than one day's supply of flammable liquids outside of approved storage cabinets or rooms?	☐	☐

PERSONAL PROTECTIVE EQUIPMENT (29 CFR 1910.132-.137)

Is personal protective equipment provided, used, and properly maintained wherever it is necessary?	☐	☐

Is employee-owned personal protective equipment, such as gloves and protective shoes, adequate and properly maintained? ☐ ☐

Is eye protection available where debris or flying objects could be a hazard? ☐ ☐

RESPIRATORY PROTECTION DEVICES (29 CFR 1910.134)

Are respirators provided and worn during dusty operations, paint spraying, etc.? ☐ ☐

Is the proper respirator in use for the hazards present? (For example, dust masks do not protect against solvent vapors.) ☐ ☐

Are there written standard operating procedures for the selection and use of respirators? ☐ ☐

Are employees instructed in the proper use of respirators? ☐ ☐

Where practicable, are respirators assigned for use by employees individually? ☐ ☐

Are respirators cleaned and disinfected after use? ☐ ☐

Are respirators stored in a convenient, clean, and sanitary location? ☐ ☐

Are routinely-used respirators inspected during cleaning? ☐ ☐

GENERAL ENVIRONMENTAL CONTROLS

SANITATION (29 CFR 1910.141.149)

Are restrooms and washrooms kept in clean and sanitary condition? _____ ☐ ☐

Are covered receptacles for waste food kept in clean and sanitary condition? _____ ☐ ☐

Is all water that is provided for drinking, washing, and cooking, suitable for that purpose? _____ ☐ ☐

Are all outlets for water that is not suitable for drinking clearly posted as "UNSAFE FOR DRINKING, WASHING, OR COOKING"?
_____ ☐ ☐

Are employees prohibited from eating in areas where toxic materials are present?
_____ ☐ ☐

Is pest and rodent control exercised where needed _____ ☐ ☐

If employees are permitted to eat on the premises, are they provided with a suitable space for that purpose? _____ ☐ ☐

MEDICAL AND FIRST AID (29 CFR 1910.151)

Is at least one employee on each shift currently qualified to render first aid in the absence of a nearby clinic or hospital? (Some states require first aid trained persons regardless of nearby clinics or hospitals.)
_____ ☐ ☐

Are first aid supplies ready available, inspected, and replenished? _____ ☐ ☐

Are first aid supplies approved by a consulting physician? _____ ☐ ☐

Are medical personnel readily available for advice and consultation on matters of employee health? _____ ☐ ☐

Is there a first aid kit easily accessible to the work area? _____ ☐ ☐

Are emergency phone numbers posted? ____ ☐ ☐

FIRE PROTECTION (29 CFR 1910.157; .159, .160)

Are extinguishers selected for the types of combustibles and flammables in the areas where they are to be used?

Class A. Ordinary combustible material fires

Class B. Flammable liquid or grease fires

Class C. Energized electrical equipment fires

Are extinguishers fully charged and in their designated places? _____ ☐ ☐

Are extinguishers located along normal paths of travel? _____ ☐ ☐

Are extinguisher locations free from obstruction or blockage? _____ ☐ ☐

Are extinguishers properly mounted? If they weigh more than 40 lbs., the top must not be more than 3½ feet above the floor. If less than 40 lbs., the top must not be higher than 5 feet. _____ ☐ ☐

Have all extinguishers been serviced, maintained, and tagged at intervals not exceeding one year? _____ ☐ ☐

Are all extinguishers checked (by management or designated employee) monthly to see if they are in place or if they have been discharged, etc.? _____ ☐ ☐

Have all extinguishers been hydrostatically tested according to schedules set for the type of extinguisher? _____ ☐ ☐

AUTOMATIC SPRINKLER (if applicable)

Is there at least one automatic water supply of adequate pressure, capacity, and reliability? _____ ☐ ☐

Are water-flow alarms provided on all sprinklers? _____ ☐ ☐

Are the sprinkler systems periodically inspected and continuously maintained? _____ ☐ ☐

Is the clearance between sprinkler deflectors and the top of storage at least 18 inches? _____ ☐ ☐

Is combustible material never piled within 36 inches of the sprinkler system? _____ ☐ ☐

DRY CHEMICAL SYSTEMS (if applicable)

Does a competent inspector make annual inspections and perform tests on all dry chemical systems? _____ ☐ ☐

Are the inspector's reports kept on file? _____ ☐ ☐

Are visual inspections regularly made? _____ ☐ ☐

COMPRESSED AIR (29 CFR 1910.169)

Are pulleys and belts on compressors and motors completely guarded? _____ ☐ ☐

Are flexible cords or plugs on electric motors periodically checked and replaced if in a deteriorated condition? _____ ☐ ☐

Do the relief valves operate properly? _____ ☐ ☐

Are air tanks drained regularly? _____ ☐ ☐

Is the pressure-relief device and gauge in good operating condition? _____ ☐ ☐

MATERIALS HANDLING AND STORAGE (29 CFR 1910.176-.181)

Is there safe clearance for equipment through aisles and doors? _____ ☐ ☐

Is stored material stable and secure? _____ ☐ ☐

Are storage areas free from tripping hazards? _____ ☐ ☐

Are only trained operators allowed to operate powered lift trucks? _____ ☐ ☐

Are appropriate overhead guards installed on powered lift trucks? _____ ☐ ☐

Is battery charging on electric units performed only in designated areas? _____ ☐ ☐

Are "NO SMOKING" signs posted near electric battery charging units? _____ ☐ ☐

On units using internal combustion engines, do the exhaust gases in the room not exceed allowable limits for carbon monoxide? _____ ☐ ☐

Are dock boards (bridge plates) used when loading or unloading from dock to truck or dock to rail car? _____ ☐ ☐

Is lumber stacked in the yard stable and secure? ☐ ☐

Are containers of combustibles or flammables, when stacked one upon the other, always separated by dunnage sufficient to provide stability? ☐ ☐

Are racks and platforms loaded within the limits of their capacity? ☐ ☐

Is all storage secured against sliding or collapsing? ☐ ☐

Are all vehicles shut off prior to loading? ☐ ☐

Have aisles been designated and kept clear to allow unhindered passage? ☐ ☐

If motorized equipment, such as lift trucks, is used, are aisles permanently marked, providing sufficient clearance for passage of the equipment? ☐ ☐

Are specifications posted for maximum loads which are approved for floors (except slabs with no basements), roofs of buildings, or some other structures? ☐ ☐

MACHINERY AND MACHINE GUARDING (29 CFR 1910.212)

Are belts, pulleys, and rotating shafts (air compressors, drill presses, etc.) properly guarded? ☐ ☐

Are chains, sprockets, and gears properly guarded? ☐ ☐

Are all in-going nip points properly guarded? ☐ ☐

Are rotating shafts that are not smooth properly guarded? ☐ ☐

Are all rotating parts (lubrication, fittings, etc.) recessed or covered with collars? _____ ☐ ☐

Are all pieces of equipment with an electric motor or any electrical connection effectively grounded? _____ ☐ ☐

Are sprockets and belt drives within reach of platforms and passageways or less than 7 feet from the floor completely enclosed? _____ ☐ ☐

Are fans less than 7 feet above the floor guarded with openings ½ inch or less? _____ ☐ ☐

ABRASIVE WHEEL MACHINERY (Grinders 29 CFR 1910.215)

Is the work rest used and kept adjusted to within ⅛ inch of wheel? _____ ☐ ☐

Is the adjustable tongue on top side of grinder used and kept adjusted to within ¼ inch of wheel? _____ ☐ ☐

Do side guards cover the spindle, nut, and flange and 75% of the wheel diameter? _____ ☐ ☐

Are bench and pedestal grinders permanently mounted? _____ ☐ ☐

Are goggles or face shields always worn when a worker is grinding? _____ ☐ ☐

HAND AND PORTABLE POWER TOOLS (29 CFR 1910.242-.244)

Are tools and equipment (both company and employee-owned) in good condition? _____ ☐ ☐

Have mushroomed heads on chisels, punches, etc. been reconditioned or replaced if necessary? _____ ☐ ☐

Have broken hammer handles been replaced? ☐ ☐

Have worn or bent wrenches been replaced? ☐ ☐

Has compressed air used for cleaning been reduced to 30 psi when dead ended? ☐ ☐

Have employees been instructed that the use of compressed air to blow debris from clothing or body is prohibited because it can enter the body and cause serious harm? ☐ ☐

Have deteriorated air hoses been replaced? ☐ ☐

Are portable abrasive wheels appropriately guarded? ☐ ☐

Have employees been made aware of the hazards caused by faulty or improperly used hand tools? ☐ ☐

WELDING, CUTTING, AND BRAZING (29 CFR 1910.252)

Are fuel gas cylinders and oxygen cylinders separated by 20 feet or a barrier 5 feet high having a ½-hour fire resistance rating? ☐ ☐

Are cylinders secured and stored where they cannot be knocked over? ☐ ☐

Are cylinder protective caps in place except when the cylinder is in use? ☐ ☐

Are compressed gas cylinders kept away from sources of heat, elevators, stairs, or gangways? ☐ ☐

Are only instructed employees, who are judged competent by the employer, allowed to use oxygen or fuel gas equipment? ☐ ☐

Do all cylinders (except those with fixed hand wheels) have non-adjustable wrenches, keys, or handles in place on valve stems while cylinders are in use? _____ ☐ ☐

Is welding always conducted at a safe distance from flammable liquids or dusty areas? _____ ☐ ☐

Are all compressed gas cylinders legibly marked for identifying the content? _____ ☐ ☐

Are the valves shut off when the cylinder is not in use? _____ ☐ ☐

Are flash shields provided to protect nearby workers from the welding flash? _____ ☐ ☐

Is there a fire extinguisher nearby? _____ ☐ ☐

Do the electrical leads not contain a splice within 10 feet of the electrode holder? _____ ☐ ☐

Is the arc welding equipment in good repair? _____ ☐ ☐

Is appropriate protective clothing worn? _____ ☐ ☐

Is the proper shade of lens used for the welding being done? _____ ☐ ☐

Are the welders protected from excessive amounts of welding fumes by the use of ventilation, respirators, etc.? _____ ☐ ☐

NATIONAL ELECTRICAL CODE (1910.308-.309)

Have exposed wires, frayed cords, and deteriorated insulation been repaired or replaced? _____ ☐ ☐

Are junction boxes, outlets, switches, and fittings covered? _____ ☐ ☐

Is all metal fixed electrical equipment grounded?	☐	☐
Does all equipment connected by cord and plug have grounded connections?	☐	☐
Are electrical appliances such as vacuums, polishers, vending machines, etc. grounded?	☐	☐
Are all portable electrical hand tools grounded? (Double-insulated tools are acceptable without grounding.)	☐	☐
Are breaker switches identified as to their use?	☐	☐
Do flexible cords and cables not run through holes in walls or ceilings, or through doorways or windows?	☐	☐
Are flexible cords and cables free from splices or taps?	☐	☐
Is electrical equipment accessible?	☐	☐
Are all conduit connections intact?	☐	☐
Do all extension cords being used have a ground wire?	☐	☐
Are all extension cords in use of appropriate wiring capacity to carry the current being drawn?	☐	☐
Are multiple plug adapters not used?	☐	☐
In wet locations, is the electrical equipment properly protected?	☐	☐
Are flexible cords and cables never substituted for fixed wiring?	☐	☐

Are flexible cords and cables not attached to building surfaces? ☐ ☐

Is polarity maintained throughout all electrical circuits? ☐ ☐

SAWMILL EQUIPMENT

Is eye protection provided and its use enforced throughout the mill? ☐ ☐

Are all work areas adequately illuminated? ☐ ☐

Are all physical hazards properly marked? ☐ ☐

Are bridges provided where employees must walk over conveyors? ☐ ☐

Are there guardrails or lifelines provided where employees must work over conveyors? ☐ ☐

Is all power transmission apparatus on the conveying system guarded (e.g., gears, belts, chain and sprocket drives)? ☐ ☐

Are all spiked live rolls properly guarded? ☐ ☐

Is a lockout or tagout procedure used during repairs on all machinery? ☐ ☐

Is all materials handling equipment inspected regularly for general operating condition, including brake function? ☐ ☐

Are employees prohibited from riding hooks, slings, lines, cradles, or other rigging? ☐ ☐

Is protection provided against forward movement of the load for operators of lumber hauling trucks? ☐ ☐

Are "safety hooks" (spring-latch type) used where required? _____ ☐ ☐

Are all slings inspected daily for wear or damage and those found defective removed from service? _____ ☐ ☐

Is all wire rope inspected at least once a week for kinks, corrosion, or broken wires? _____ ☐ ☐

Are all running lines within 6 feet 6 inches of the working level barricaded, guarded, or in a restricted operating area? _____ ☐ ☐

Are all hoisting drums flanged to prevent the rope from slipping? _____ ☐ ☐

Are there always at least two wraps of rope left on the drum when the block is fully lowered? _____ ☐ ☐

Are all chains inspected at least once a week for stretching, twisting, or gouging that would make them unfit for service? _____ ☐ ☐

Are signs prohibiting unauthorized traffic posted in unloading and storage areas? _____ ☐ ☐

Are roadways and walkways in log unloading areas properly graded and maintained? _____ ☐ ☐

Are logs secured with lines before binders are released? _____ ☐ ☐

Are the tripping mechanisms on log hauling trucks located on the side opposite the load being tripped? _____ ☐ ☐

Are the brakes on unloaders checked regularly to ensure that they are capable of holding a maximum load suspended? _____ ☐ ☐

Are unloading lines, crotch lines, or other means used to prevent swingback during manual unloading? _____ ☐ ☐

Are pike poles kept sharpened and in good repair? _____ ☐ ☐

Do all floats and walkways in pond areas provide secure footing? _____ ☐ ☐

Are employees working over the water provided and required to wear approved buoyant devices? _____ ☐ ☐

Are powered boats and rafts equipped with life rings? _____ ☐ ☐

Are all logs in storage and deck areas arranged or secured to minimize the chance of rolling? _____ ☐ ☐

Are caulk boots required on the log deck? _____ ☐ ☐

Is overhead protection provided for employees working below logs being moved to the deck? _____ ☐ ☐

Is there an adequate barricade between the deck and the sawyer's stand? _____ ☐ ☐

Are picaroons kept sharp and in good repair? _____ ☐ ☐

Are the areas around debarkers fenced off and posted to prohibit entry by unauthorized persons? _____ ☐ ☐

Are adequate chip guards installed on debarkers? _____ ☐ ☐

Are mechanical debarkers equipped with holddown rolls at the two ends? _____ ☐ ☐

Are there baffles installed at the ends of hydraulic barkers? _____ ☐ ☐

Is there a barrier or shield installed to protect the debarker operator from flying debris? _____ ☐ ☐

Are all buck saws properly guarded? _____ ☐ ☐

Is access to the head rig safe? _____ ☐ ☐

Are log carriage runways equipped with bumpers? _____ ☐ ☐

Is the travel area of the carriage barricaded and are the entry points posted to keep out unauthorized persons? _____ ☐ ☐

Are rail sweeps installed on the carriages? _____ ☐ ☐

Are the logs of sufficient strength to prevent movement of the logs during sawing? _____ ☐ ☐

Is there a positive stopping means installed to prevent unintended carriage movement? _____ ☐ ☐

Are band head saws regularly inspected for defects such as cracks, splits, and broken teeth? Are the blades immediately repaired or removed from service? _____ ☐ ☐

Are bandsaw wheels inspected monthly for defects? _____ ☐ ☐

Are bandsaw wheels enclosed or guarded, except for the portion of the upper wheel where the operator must observe the equipment? _____ ☐ ☐

Is there an antikickback spreader, splitter, or roll installed behind a circular head saw? _____ ☐ ☐

If a double circular mill is used, is the upper saw guarded? _____ ☐ ☐

Is the sawyer protected from flying debris by a screen or barrier?	☐	☐
Are edgers equipped with pressure feed rolls?	☐	☐
Are the feed rolls guarded to prevent accidental contact?	☐	☐
Is there an antikickback device or barricade at the back of the edger blades?	☐	☐
Are the edger blades, top, and side openings guarded against accidental contact?	☐	☐
Are all resaws guarded and equipped with pressure feed rolls, antikickback devices, and spreaders?	☐	☐
Are trimmer saws equipped with adequate chip guards?	☐	☐
Are the trimmer end saws guarded for at least the width of the saw?	☐	☐
Are the pressure rolls and pineapples on planer saws guarded?	☐	☐
Are all cutting heads on planers guarded?	☐	☐
Are protective gloves and aprons of suitable strength worn by green chain and planer chain workers?	☐	☐
Where lumber is treated with preservatives are spray operations located so that overspray is not blown back into the breathing zone of the operators?	☐	☐
Do employees handling boards wet with preservative wear rubber gloves, boots, and aprons?	☐	☐
Are chippers and hogs guarded to prevent contact with the cutting blades?	☐	☐

Are the steam mains in kilns guarded or insulated? _____ ☐ ☐

Is adequate emergency egress provided in kilns? _____ ☐ ☐

Are clear passageways maintained through the kilns at all times? _____ ☐ ☐

Do employees who handle saw blades wear wire mesh protective gloves? _____ ☐ ☐

Are babbitt pots equipped with local exhaust ventilation? _____ ☐ ☐

Are roadways in lumber storage yards maintained in good condition? Are the roadways and aisles designed to provide safe clearance for all traffic? _____ ☐ ☐

Are stacked lumber foundations arranged to support maximum loads? _____ ☐ ☐

Are stickers spaced uniformly and aligned one above the other? _____ ☐ ☐

Do stickers extend the full width of the lumber packages? _____ ☐ ☐

Are at least two sets of cross stickers used on each unit of lumber? _____ ☐ ☐

Are all machines that generate dust, shavings, chips, or slivers for one-fourth of the work day or longer equipped with a continuous or automatic dust collecting system? _____ ☐ ☐

Are all woodworking machines that create dust, shavings, chips, or slivers equipped with an exhaust or conveyor system to remove the refuse? _____ ☐ ☐

Is refuse removed daily from all other operations? _____ ☐ ☐

RECORDKEEPING (29 CFR 1904.2-.8)

Is employee poster (OSHA or equivalent state poster) prominently displayed? _____	☐	☐
Have occupational injuries or illnesses, except minor injuries requiring only first aid, been recorded on OSHA Form Nos. 100 and 101, or equivalent? _____	☐	☐
Has a summary of all occupational injuries and illnesses been compiled at the conclusion of each calendar year and been recorded on OSHA Form No. 102? Was it posted during the month of February? _____	☐	☐
Have all OSHA records been retained for a period of 5 years, excluding the current year? year? _____	☐	☐

INFORMATION SOURCES

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)
1430 Broadway, New York, N.Y. 10018

- ☐ A12.1 Floor and Wall Openings
- ☐ A14.1 Portable Wood Ladders
- ☐ A58.1 Minimum Design Load
- ☐ A64.1 Fixed Stairs
- ☐ B15.1 Mechanical Power Transmission
- ☐ C1 National Electric Code
- ☐ Z4.1 Sanitation in Places of Employment
- ☐ Z49 Welding and Cutting
- ☐ Z87.1 Eye and Face Protection

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)
470 Atlantic Ave.
Boston, Mass. 02210

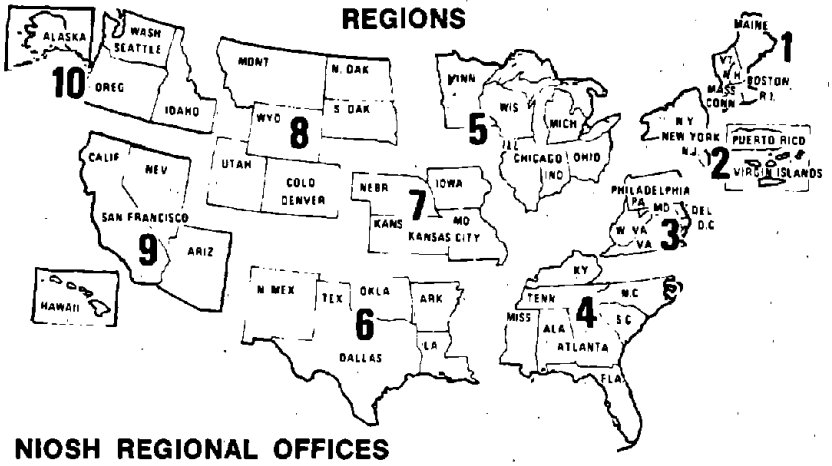
- ☐ NFPA-10-1970 Installation of Portable Fire Extinguishers
- ☐ NFPA-101-1970 Life Safety Code
- ☐ NFPA-13A-1971 Sprinkler Systems, Maintenance
- ☐ NFPA-17-1969 Dry Chemical Extinguishing System
- ☐ NFPA-70-1971 National Electric Code

NATIONAL SAFETY COUNCIL
444 North Michigan Avenue
Chicago, Illinois 60611

NIOSH Regional Directors, OSHA Area Directors, your trade association, state and local governmental agencies, and your workmens' compensation insurance carrier can also provide you with useful information. The Small Business Administration will provide information concerning procedures for securing economic assistance for compliance with the OSHA Standards (if needed).

NIOSH 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
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.: 404/881-4474

DHEW, Region V
300 South Wacker Drive
Chicago, Illinois 60607
Tel.: 312/886-3881

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

NOTE: For an office close to you, check your telephone directory under United States Government or dial 800-555-1212 and ask for the toll-free number of the OSHA office nearest you.

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

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KIND OF FIRE

DECIDE THE CLASS OF FIRE YOU ARE FIGHTING. . .

. . .THEN CHECK THE COLUMNS TO THE RIGHT OF THAT CLASS

APPROVED TYPE OF EXTINGUISHER

MATCH UP PROPER EXTINGUISHER WITH CLASS OF FIRE SHOWN AT LEFT

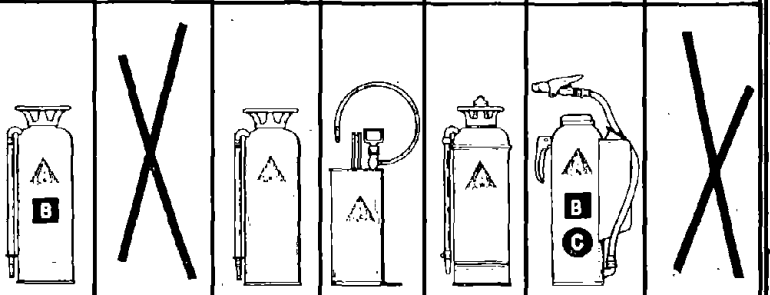
FOAM	CARBON DIOXIDE	SODA ACID	PUMP TANK	GAS CARTRIDGE	MULTI-PURPOSE DRY CHEMICAL	ORDINARY DRY CHEMICAL
Solution of Aluminum Sulphate and Bicarbonate of Soda	Carbon Dioxide Gas Under Pressure	Bicarbonate of Soda Solution and Sulphuric Acid	Plain Water	Water Expelled by Carbon Dioxide Gas		

CLASS A FIRES

USE THESE EXTINGUISHERS

ORDINARY COMBUSTIBLES
- WOOD
- PAPER
- CLOTH

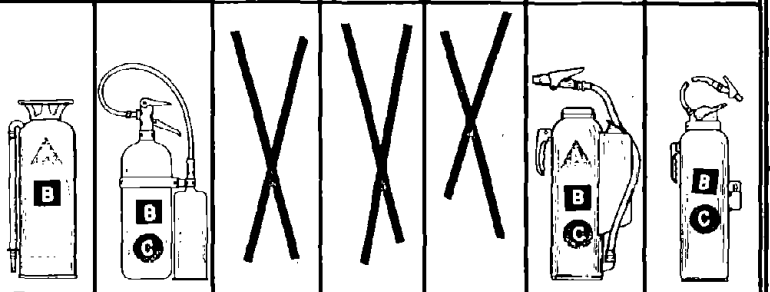
ETC.



CLASS B FIRES

USE THESE EXTINGUISHERS

FLAMMABLE LIQUIDS, GREASE
- GASOLINE
- PAINTS
- OILS, ETC.

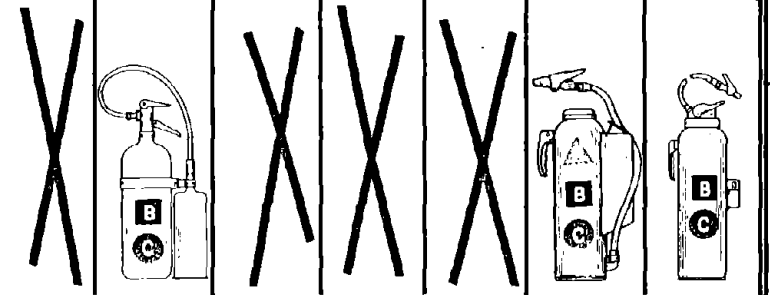


CLASS C FIRES

USE THESE EXTINGUISHERS

ELECTRICAL EQUIPMENT
- MOTORS
- SWITCHES

ETC.

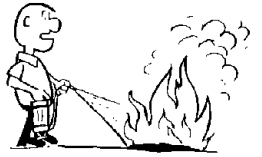


HOW TO OPERATE

FOAM: Don't Play Stream into the Burning Liquid. Allow Foam to Fall Lightly on Fire

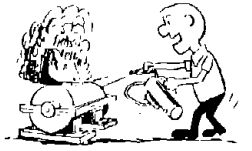
CARBON DIOXIDE: Direct Discharge as Close to Fire as Possible. First at Edge of Flames and Gradually Forward and Upward

SODA-ACID, GAS CARTRIDGE: Direct Stream at Base of Flame



PUMP TANK: Place Foot on Footrest and Direct Stream at Base of Flames

DRY CHEMICAL: Direct at the Base of the Flames. In the Case of Class A Fires, Follow Up by Directing the Dry Chemicals at Remaining Material That is Burning



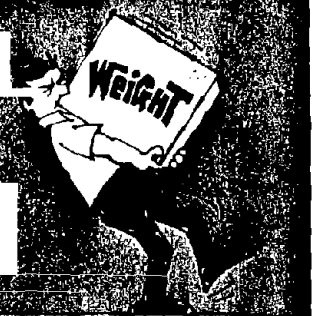
IMPORTANT! USING THE WRONG TYPE EXTINGUISHER FOR THE CLASS OF FIRE MAYBE DANGEROUS!

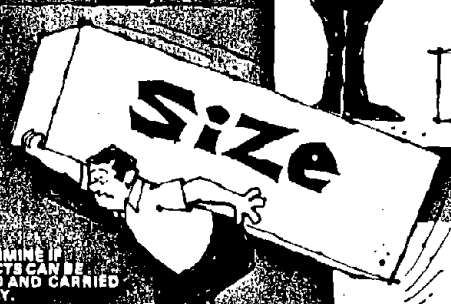
NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH

HOW TO LIFT SAFELY

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

The factors that contribute to safe lifting are...

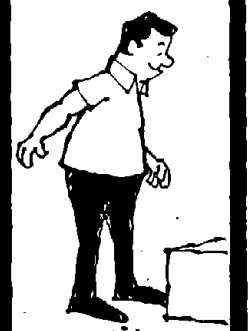




DETERMINE IF OBJECT CAN BE LIFTED AND CARRIED SAFELY.

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

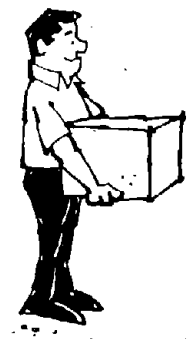
2. Place the feet close to the object to be lifted 8 to 12 inches apart *for good balance.*



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

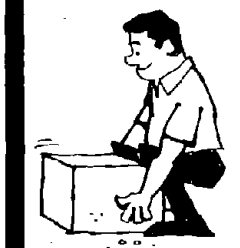
4. Lift the load straight up—smoothly and evenly. Pushing with your legs, keep load close to your body.

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.

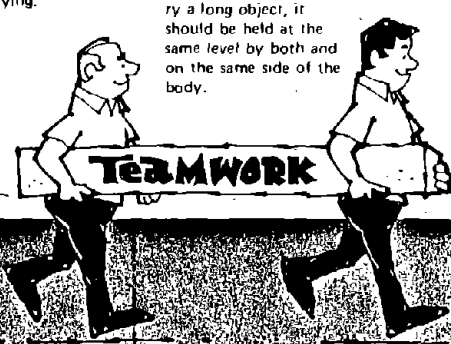


Stack material in such a manner as to permit full view while carrying.

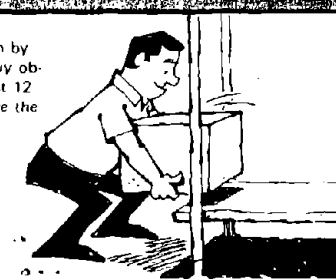
When lifting and carrying with another person—teamwork is important.

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.

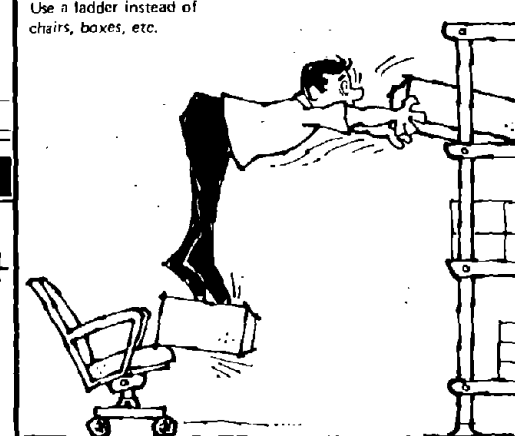


Avoid strain by storing heavy objects at least 12 inches above the floor.



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.



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