NIOSH

HEALTH AND SAFETY GUIDE FOR AUTO REPAIR AND BODY SHOPS

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INTRODUCTION

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) under the Department of Health, Education and Welfare (DHEW) and the Occupational Safety and Health Administration (OSHA) under the Department of Labor (DOL). The Act provides for research, information, education and training in the field of occupational safety and health and authorizes enforcement of the standards. As part of these activities, surveys have been made by NIOSH to determine the most common health and safety problems. Guidelines and regulations pertaining to these problems are included in this Health and Safety Guide, which is being distributed throughout the industry.

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 noncompliance. Additional information can be found in **general industry standards Title 29 Code of Federal Regulations Part 1910.**

Words such as "must", "required", "necessary", appearing in the text, denote direct applications from the Act. Procedures denoted by "should", "ought to", etc., constitute more indirect applications as well as generally-accepted, safe 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 the federal standards, they must be at least as effective as federal regulations.

A listing of NIOSH and OSHA Regional Offices throughout the United States where additional information and materials can be obtained, is presented on the last few pages of the Guide. Consultation resulting from requests for assistance will not precipitate a compliance visit by OSHA.

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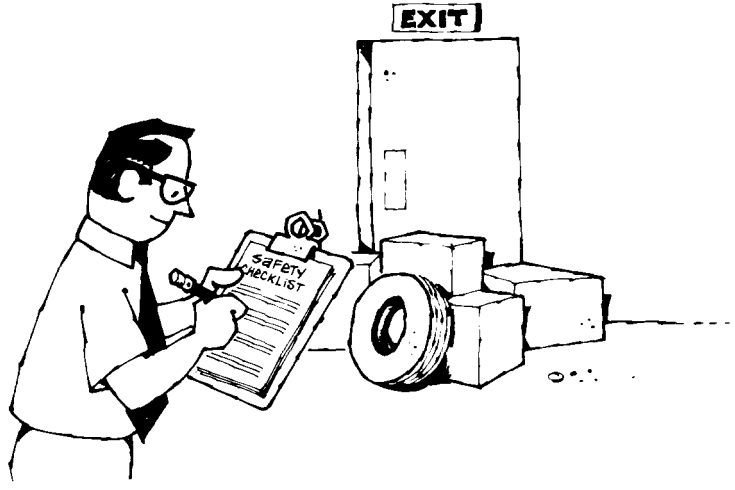
JOB HEALTH AND SAFETY GUIDELINES

GENERAL DUTY CLAUSE

Hazardous conditions or practices not covered in the 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 purpose of a job safety and health program is to protect the employee by the prevention and control of injuries and health hazards which are involved in the elements of production and the operation of any establishment. The elements are manpower, machinery, tools, material, equipment and time.

Unsafe and unhealthful working conditions can be discovered and corrected by examining the elements of production and implementing a safety and health program.



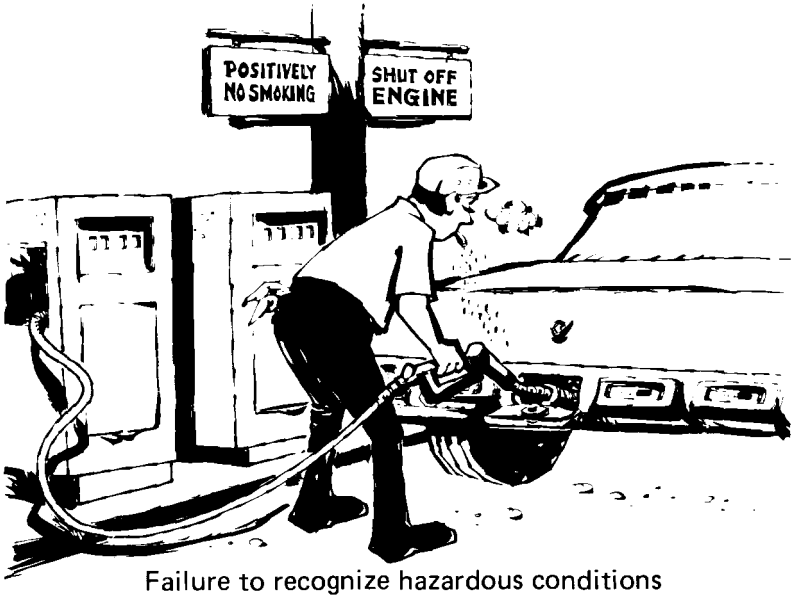
JOB HEALTH AND SAFETY GUIDELINES (Cont.)

Management leadership is necessary for the complete acceptance of the safety program.

The department head, foreman or supervisor who deals most directly with the employees, must bear the responsibility for implementing the safety and health program. With this responsibility, he must have appropriate authority, assistance, and support. A safety organization should be set up to carry out the firm's commitment to a safety and health program.

The safety and health program should include talking with employees about preventive measures, hazards, injury and illness records or occurrences, safety promotion and motivation, followed by:

- Inspections for hazards.
- Encouragement of suggestions.
- Provision of the latest information on safe working methods, protective equipment and clothing.
- Promotion of safety and first aid training.
- Investigation of accidents, injuries and illnesses.
- Motivation of workers' interest.



Failure to recognize hazardous conditions

JOB HEALTH AND SAFETY GUIDELINES (Cont.)

BUILT-IN HAZARDS

There are many tasks in an auto repair and body shop where accidents may occur. A worker is subject to a variety of hazards and is required to exercise caution in performance of his everyday duties in order to prevent accidents.

During periods of peak activity, cars are pulling in and out, customers are milling about and sometimes committing unsafe acts such as careless smoking or tinkering with tools and equipment. The employees may be too busy or distracted to keep an eye on everything. It is suggested that customers should not be permitted in the shop and signs posted to keep them out. Any effort made in the direction of positive safety controls is of the greatest importance. Consistent effort will pay off with fewer injuries and more real operating efficiency. The aim of this booklet is to help you and your employees make this effort.

The major sources of injury and illness are:

1. Improper use of tools.
2. Unguarded machinery.
3. Tripping and falling.
4. Excessive exposure to auto exhaust gases, parts cleaners, paints, dust, etc.
5. Electrical hazards.
6. Improper lifting.

Failure to recognize hazardous conditions or neglecting to eliminate them can result in injuries or illnesses to plant personnel.

The Checklist in the back of this booklet should be helpful when making a hazards review of your facilities.

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JOB HEALTH AND SAFETY GUIDELINES (Cont.)

REDUCING UNSAFE ACTS AND PRACTICES

Employee Training

A safe operation largely depends upon good management and employees who are properly informed and aware of potential hazards.

Training needs will vary according to the complexity of the operation. At the very least, all personnel should be thoroughly indoctrinated in possible hazards.

A good start would be to:

1. Impress upon the worker the need for constant awareness—even during automatically controlled operations.
2. Be sure all employees (both old and new) know how to and use appropriate personal protective equipment.
3. Develop and maintain check points to be observed (as part of the routine) during each shift.
4. Be sure all employees have available a printed list of standard procedures and emergency procedures.
5. Post appropriate warning signs.
6. Instruct employees in the use of portable fire extinguishers. (Refer to fold-out chart in this booklet and post in a conspicuous place.)
7. Have at least one person trained in first aid on each shift.
8. Be sure that employees who are authorized to use motorized equipment are thoroughly instructed in its operation and potential hazards.
9. Develop a "good housekeeping" awareness and assign someone responsibility for removing clutter from the work area on a regular basis.
10. Instruct employees to clean hands and arms frequently if they are exposed to used oil and grease to prevent skin irritation. Never use gasoline for this purpose.
11. When filling new batteries, employees should be instructed to pour acid into water to avoid splattering.
12. Be sure all materials are stored in a secure manner.
13. Instructing your employees in safe lifting practices may prevent many injuries. An easily understood chart, **How to Lift Safely** is included in the back of this book. We suggest that you remove this chart and post it where it will be seen by your employees.

JOB HEALTH AND SAFETY GUIDELINES (Cont.)

The following safety practices should be implemented to insure the safety of your employees when working with tow trucks:

1. Be sure the fire extinguisher is properly serviced, in good working condition, and securely mounted on the truck.
2. The maximum hoisting capacity of the unit should be prominently posted on the winch mast. Do not paint over or remove the manufacturer's data plate.
3. The crane's controls should be remotely located from the winch drum, traveling cables, and sheaves.
4. The truck should be equipped with flood lights for night-time use.
5. Wheel chocks and flares should be available on the truck.
6. Frequently inspect:
   a. Control mechanism for maladjustments or excessive wear.
   b. Safety devices for maladjustments and proper operation.
   c. Hooks for cracks or excessive deformation.
7. Periodically inspect for:
   a. Deformed, cracked, or corroded structural members.
   b. Cracked or worn sheaves and drums.
   c. Worn, cracked, or distorted pins, bearings, shafts, gears, and locking devices.
   d. Excessive cable wear, corrosion, broken strands, severe kinking; improperly applied, cracked, or corroded cable connections.

JOB HEALTH AND SAFETY GUIDE (Cont.)

SERVICE BAYS–HYDRAULIC VEHICLE LIFTS

Certain precautions are necessary for the safe operation of hydraulic vehicle lifts:

1. Employees should stand to one side of vehicles when directing them into position over the lift. Untrained or unauthorized personnel are not permitted to operate the lifts.
2. The hoist controls are to be manually operated, and not blocked into the open or shut position.
3. Vehicles may not be raised with passengers inside.
4. It is necessary to make certain that vehicle doors, hoods, etc., are closed prior to raising the vehicles.
5. Loads must be squarely engaged, and neither the lift nor adaptor are to be overloaded.
6. If a lift is equipped with a mechanical locking device, it must be made certain that the device is in place when the lift is up.
7. When a lift malfunctions (see below) it is **not** to be used, but should be removed from service and repaired immediately.

The lift needs immediate attention if it:

- Jerks or jumps when raised.
- Slowly settles down after being raised.
- Slowly rises when not in use.
- Rises slowly when in use.
- Comes down very slowly.
- Blows oil out of the exhaust line.
- Leaks oil at the packing gland.

8. To maintain a clean, safe floor area, employees should be instructed to make certain that grates over floor drains are large enough to cover the floor-drain opening and are securely in place; drain holes are to be cleaned periodically for good drainage.

TIRE-CHANGING EQUIPMENT

A safety tire rack, cage, or equivalent protection should be provided and used when inflating, mounting, or dismounting tires installed on split rims, or rims equipped with locating rims or similar devices.

A tire cage is required when repairing truck tires.

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FREQUENTLY VIOLATED REGULATIONS

WALKING AND WORKING SURFACES

GENERAL REQUIREMENTS

1. All passageways, storerooms and maintenance shops must be maintained clean, dry and orderly and in a sanitary condition. Spills must be promptly cleaned up.

2. Areas which are constantly wet, should have non-slip surfaces where personnel normally walk or work.

3. Every floor, working place and passageway must be maintained free from protruding nails, splinters, holes, loose boards, and so far as possible, in a dry condition.

4. Where mechanical handling equipment such as lift trucks are used, sufficient safe clearances must be provided for aisles at loading docks, through doorways, and wherever turns or passage must be made. No obstructions that could create a hazard are permitted in the aisles.

5. All permanent aisles must be easily recognizable. Usually aisles are identified by painting or taping lines on the floor.

6. The floor-load capacity is the maximum weight which can be safely supported by the floor, expressed in pounds per square foot. When this information is not available and when floor-load capacity is in doubt, it is suggested that a competent engineer be consulted. These floor-load capacities must be posted in a readily visible location.

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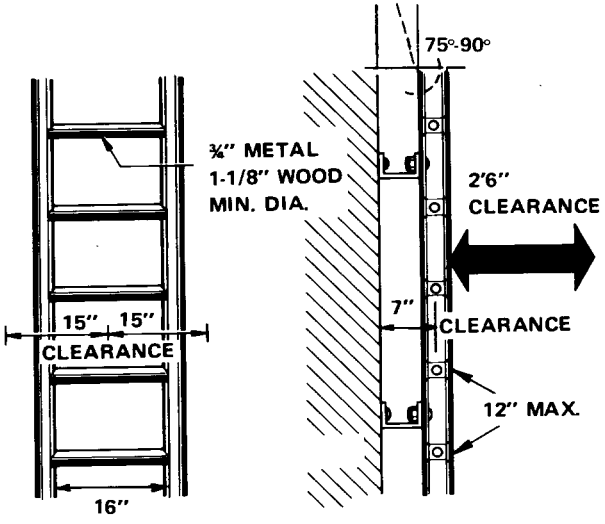
FREQUENTLY VIOLATED REGULATIONS

WALKING AND WORKING SURFACES (Cont.)

Fixed Ladders Must:

1. Be designed to withstand a single concentrated load of at least 200 pounds.

2. Have rungs with a minimum diameter of ¾" for metal ladders, or 1 1/8" for wood ladders.



3. Not have rungs spaced more than 12 inches apart and must be at least 16 inches wide.

4. Be painted (if metal) or otherwise treated to resist corrosion when location demands.

5. Have 2'6" clearance on the climbing side of the ladder (except caged ladders).

6. Have at least 7 inches clearance in back of the ladder to provide for adequate toe space.

7. Be equipped with cages if they are longer than twenty feet.

8. Have landing platforms if they are more than 30 feet long. A platform every 30 feet for caged ladders and every 20 feet for unprotected ladders is required.

9. Have a preferred angle of 75°-90° for safe descent.

10. Have side rails extend 3½' above landings.

FREQUENTLY VIOLATED REGULATIONS

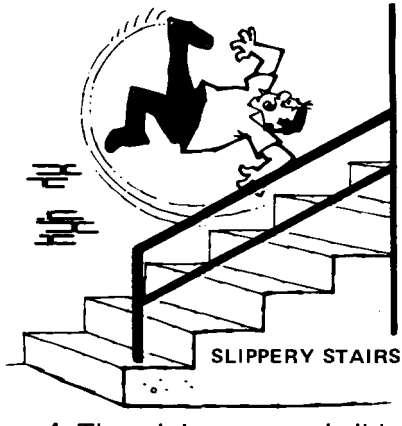
WALKING AND WORKING SURFACES (Cont.)

Portable Ladders:

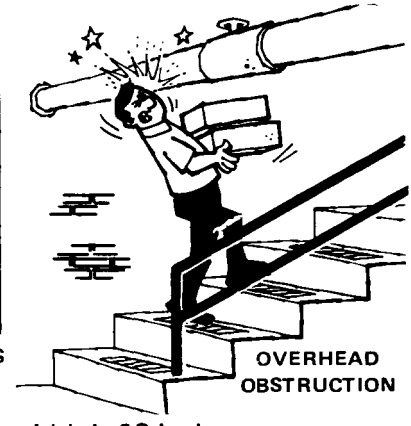
1. Must be maintained in good condition at all times.
2. Should be kept coated with a suitable protective material. Wood ladders can be painted if carefully inspected prior to painting, providing the ladder is not for resale.
3. Must be inspected frequently; those which have developed defects must be tagged, "DANGEROUS—DO NOT USE" and removed from service for repair or destruction.
4. If wooden, should be stored where they will not be exposed to the elements, and where there is good ventilation.
5. Metal ladders should not be used near energizer electrical equipment.
6. Must be so placed that the side rails have a secure footing. They may not be placed on boxes, barrels, or other unstable bases to obtain additional height.

Fixed Industrial Stairs:

1. Rise height and tread width must be uniform throughout any flight of stairs.
2. All treads must be reasonably slip resistant.
3. Vertical clearance above any stair tread to an overhead obstruction must be at least seven feet.



SLIPPERY STAIRS



OVERHEAD OBSTRUCTION

4. The minimum permissible width is 22 inches.
5. The angle to the horizontal made by the stairs must be between 30° and 50°.
6. All stairs should be adequately lighted.

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FREQUENTLY VIOLATED REGULATIONS

WALKING AND WORKING SURFACES (Cont.)

7. If the tread is less than nine inches wide, the risers must be open.

8. If the flight of stairs has four or more risers, railings or handrails must be provided:

a. if the stairway is less than 44 inches wide and open on both sides, a stair railing on each side is required.

b. if the stairway is less than 44 inches wide and open on one side, a stair railing on the open side is required.

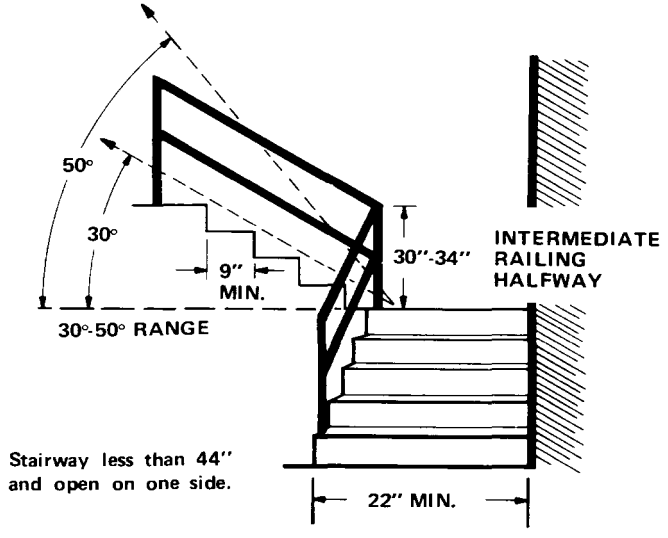
c. if both sides are enclosed on a stairway less than 44 inches wide, at least one handrail is required, preferably on the right side descending.

d. if the stairway is more than 44 inches wide but less than 88 inches wide, a stair railing on each open side and a handrail on each enclosed side are required.

e. if the stairway is 88 or more inches wide, a handrail on each enclosed side, a stair railing on each open side, and an intermediate stair railing located midway are required.

9. The vertical height of the railing must be between 30 to 34 inches.

10. The railing must be smooth surfaced and of construction similar to the standard railing described later in this section.



Stairway less than 44" and open on one side.

FREQUENTLY VIOLATED REGULATIONS

WALKING AND WORKING SURFACES (Cont.)

The Standard Railing and Toeboard:

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

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

For pipe railing, rails and posts must be at least 1½" outside diameter pipe with posts spaced not more than eight feet.

For structural steel railings, posts and rails must be of 2" x 2" x 3/8" angles or other metal shapes of equivalent strength with posts spaced not more than 8 feet apart.

A standard railing must be anchored and framed so that the completed structure is capable of withstanding a load of at least 200 pounds applied in any direction at any point on the top rail.

A standard railing can be of any configuration and construction that meets the above basic requirements.

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

Where a Standard Railing is Required:

1. Every **open-sided floor** or **platform** four feet or more above adjacent floor or ground level, must be railed on all open sides except where there is entrance to a ramp, stairway, or fixed ladder.

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

3. Every **ladderway floor opening** must be guarded by a standard railing and toeboard on all sides, with passage through the railing so constructed as to prevent a person from walking directly into the opening.

4. Every **runway** or **catwalk** must have railings on all open sides 4 feet or more above ground or floor level.

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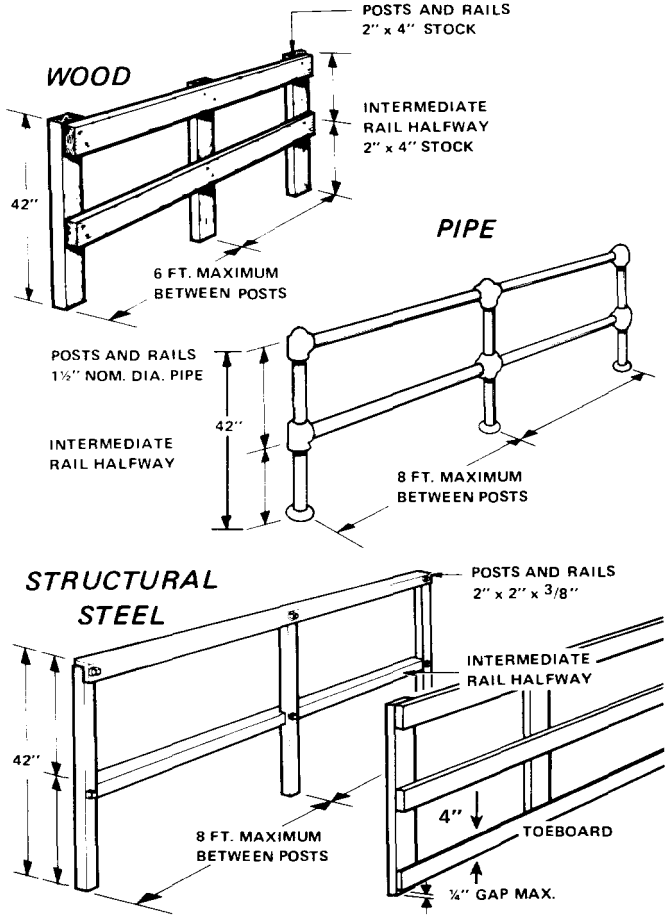
FREQUENTLY VIOLATED REGULATIONS

WALKING AND WORKING SURFACES (Cont.)

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

STANDARD RAILINGS AND TOEBOARDS



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FREQUENTLY VIOLATED REGULATIONS

EXITS AND EXIT MARKING

1. Every exit must have the word "EXIT" in plainly legible letters not less than 6 inches high with the strokes of the letters not less than three-fourths of an inch wide.

2. Doors, passageways, or stairways which are neither an exit nor a way to an exit, should be clearly marked NOT AN EXIT or should be marked by a sign indicating its actual use e.g., "storage room", "to basement", etc.

3. When the direction to the nearest exit may not be apparent to an occupant, an EXIT sign with an arrow indicating direction should be used.

4. Exit access should 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 physical barriers).

5. Nothing should impair the visibility of the exit sign, such as decorations, furnishings, or other signs.

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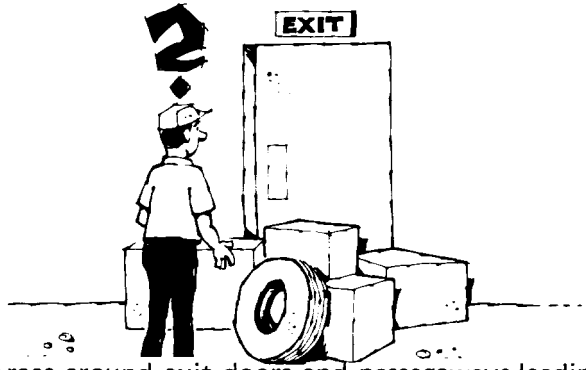
FREQUENTLY VIOLATED REGULATIONS

EXITS AND EXIT MARKING (Cont.)

6. All exit doors must be of the side hinged swing type. The exit doors must swing out in the direction of travel if the exit is for an area of high hazard potential.



7. Areas around exit doors and passageways leading to the exit must be free of obstructions at all times.

8. If occupancy is permitted at night, or if normal lighting levels are reduced at times during working hours, exit signs should be suitably illuminated by a reliable light source.

9. Exits and ways to exits may not be thru rooms or doors that can be locked from the other side.

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

11. Rooms in which flammable or combustible liquids are stored or handled by pumps must have exit facilities arranged to prevent occupants from being trapped in the event of a fire. These exits must be clearly marked and maintained unobstructed.

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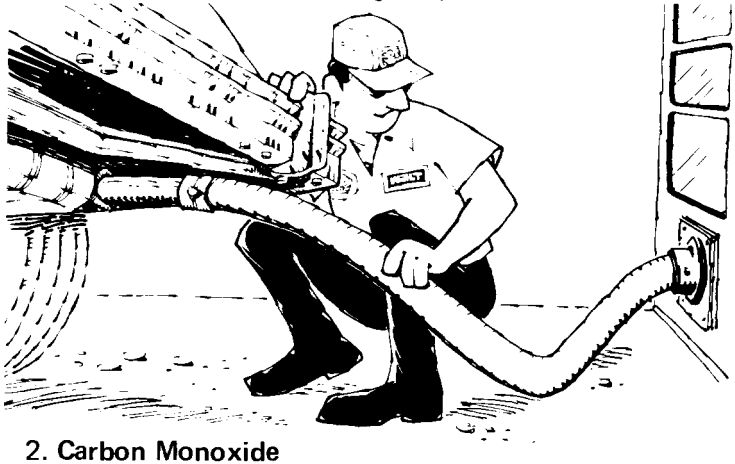
FREQUENTLY VIOLATED REGULATIONS

OCCUPATIONAL HEALTH AND ENVIRONMENTAL CONTROL

Persons working in repair garages and body shops are often exposed to dangerous amounts of various gases, dusts, and vapors. For example, carbon monoxide is a DEADLY gas. This gas can poison or kill a person in a matter of minutes. Asbestos dust is related to lung cancer when inhaled, and certain solvents and body plastics can cause allergies and skin conditions, etc. Because exposure of personnel to these substances is difficult for management to measure, (e.g.—special equipment is needed) excessive exposures often occur without management being aware of it. Some control measures are suggested for the following frequently-observed air contaminants and other hazardous substances.

1. **Asbestos**

When individuals repair brakes most of the day or where the linings are machined to fit the drums (especially in small rooms), excessive asbestos exposure could exist. To reduce the operator's exposure, a dust mask should be worn. Dust should be vacuumed (not blown) from the drums and the floor vacuumed instead of being swept.



2. **Carbon Monoxide**

Auto exhaust and space heaters are two sources of carbon monoxide observed in the shop. If your employees complain about headaches and you have not provided for environmental controls the levels may be too high.

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FREQUENTLY VIOLATED REGULATIONS

OCCUPATIONAL HEALTH AND ENVIRONMENTAL CONTROL (Cont.)

Although large amounts of general ventilation can be used, a tail pipe exhaust system is recommended for removing auto exhaust from garages. For all but the very small garages, where direct piping to the outside is possible, mechanical ventilation is needed. If you have such a system, make sure your employees use it. You should also determine if the mechanical ventilation is adequately designed. As an example, a 300 cubic-inch engine exhausts about 100 cubic feet per minute (cfm) at 600 RPM.

You should have an inspection program to make sure the system is performing properly. Some problems that have been observed are:

a. It becomes blocked with paper, rags, etc.
b. The fan belts slip or break.
c. Hose breaks or splits.

Space heaters can also be a serious source of carbon monoxide and therefore should be inspected to make sure they are adequately vented and do not become blocked.

3. **Solvents**

If a person spends a considerable amount of time cleaning parts, the tank should contain local exhaust ventilation and be vented to the outside.

4. **Paints and Thinners**

The thinners used in most paints will have a narcotic effect on the workers and may on a longer-term basis cause irreparable illness such as liver and lung damage. In addition to ventilation in the spray area or paint booth, respirators should be worn (see respirators under personal protective equipment).

Some of the newer paints contain hardeners and other additives that can cause skin rashes and dermatitis.

Do not permit the painters to wash their hands in the thinners because they take the fats out of the skin and increase the chance for skin rashes and can in some cases be absorbed through the skin. Rubber gloves worn while handling the paint will prevent this.

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FREQUENTLY VIOLATED REGULATIONS

OCCUPATIONAL HEALTH AND ENVIRONMENTAL CONTROL (Cont.)

5. **Body Fillers**

Plastic body fillers are the most popular type of materials used to repair auto bodies. When handling the raw materials (before they have dried or cured), rubber gloves should be worn. If any gets on the skin, it should be promptly washed off with soap and water.

6. **Lead**

When it is necessary to use lead as a body filler, your employees should wear a respirator to protect them from lead dust or fumes. They should also vacuum the area after use and should not smoke or eat until they have washed their hands.

7. **Dusts**

Dust is a problem in body shops. During dusty operations, such as sanding paints and primers, body fillers, etc., a lot of dust is produced. At this point, the person doing the work should wear a dust mask (it can be a disposable one).

8. **Noise**

Excessive noise is the greatest cause of hearing loss. The loudest noises produced in body shops are from hammers against sheet metal and pneumatic chisels. The noise produced by pneumatic chisels often exceeds the upper threshold standard. At this level, ear protection is mandatory. Ear protection should be used also when employees operate air driven sanding equipment a large part of the day.

9. **Hydrogen**

The battery charging operation produces hydrogen gas and an explosive atmosphere may result unless ventilation is provided to carry off the gas. NO SMOKING signs must also be posted.

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FREQUENTLY VIOLATED REGULATIONS

HAZARDOUS MATERIALS

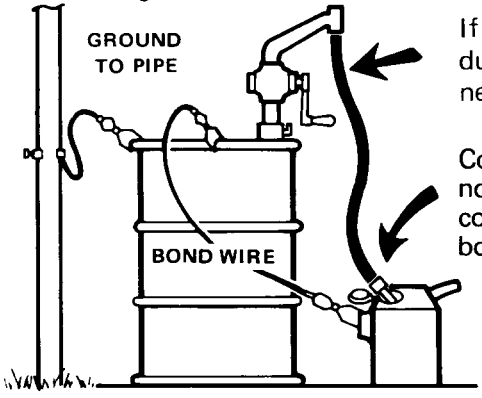
Many flammable and combustible materials are used in garages and body shops. They include paints, thinners, solvents for cleaning parts, gasoline, oils and others.

STORAGE

1. Paints, thinners, etc., must be stored in approved storage cabinets [Underwriters Laboratory (UL), or Factory Mutual Engineering Corp.] or rooms.
2. Storage rooms are required to have:
   a. Explosion-proof lights.
   b. Ventilation with at least 6 air changes per hour.
3. Never have more than 1 day's supply of paint outside of approved storage areas.

FLAMMABLE AND COMBUSTIBLE LIQUIDS

1. The connections on all drums and piped flammable and combustible liquids must be vapor and liquid tight.
2. When flammable liquids are transferred from one container to another, they must be effectively bonded together and also to ground.



3. All spills of flammable or combustible liquids must be cleaned up promptly.
4. Gasoline, paint thinner, etc., must be stored in approved safety containers.
5. All flammable liquids must be kept in closed containers when not in use (e.g., parts-cleaning tanks and pans, etc.).

FREQUENTLY VIOLATED REGULATIONS

HAZARDOUS MATERIALS (Cont.)

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

7. Do not use gasoline for cleaning.

GENERAL SPRAY PAINT OPERATIONS

1. Portable lamps must be removed during spraying.

2. Low flash-point thinners (less than 100°F) may only be used for cleaning purposes if performed in a well-ventilated area such as a spray booth.

3. The fire control sprinkler heads must be kept clean and free of paint build-up.

4. "NO SMOKING" signs must be posted wherever paint is sprayed or stored.

SPRAY AREAS

1. The spray area must be at least 20 feet from flames, sparks, non-explosion-proof electric motors or other ignitable sources.

2. The spray area must be free from hot surfaces such as heat lamps.

3. The electric lights in the spray area must be covered and and guarded from accidental breakage.

4. The spray area must be kept clean of combustible residue.

5. Mechanical ventilation must be provided and turned on to remove vapors during the painting.

SPRAY BOOTHS

1. Spray booths must be made of metal, masonry or other suitable non-combustible material and be smooth on the inside to aid in cleaning.

2. The floors and baffles must be non-combustible and easily cleaned.

3. Spray-booth lights must be explosion-proof, or sealed, clear panels.

4. Ventilation:

   a. Mechanical ventilation must be installed and operating during spraying.

FREQUENTLY VIOLATED REGULATIONS
HAZARDOUS MATERIALS (Cont.)

b. The ventilation rate must be at least 100 linear feet per minute.

c. The electric motors for the exhaust fans must be placed outside the booth or ducts and the belts and pulleys fully enclosed.

d. The air exhausted from the paint booth must be discharged outside where it cannot re-enter the body shop.

e. Ducts connected to the booth must have access doors to allow for cleaning.

5. Air supply for paint booths

a. Overspray filters, if installed, must have pressure gages to indicate when the filters are plugged and need replacement.

b. When temperatures are below 55°, the make-up air must be heated to at least 65°.

c. The heater for the make-up air must be located outside the spray booth.

6. Paint drying apparatus

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

b. The spray area used for drying with portable heaters or lights must be kept clean of overspray products.

c. Heat lamps, etc., must be kept out of the spray area during spray operations.

d. The electrical drying apparatus must be properly grounded.

NIOSH

FREQUENTLY VIOLATED REGULATIONS

PERSONAL PROTECTIVE EQUIPMENT

Where personal protective equipment is used or required, management is responsible to see to it that it is properly worn and maintained.

EYE PROTECTION

Eye protection is required where there is a possibility of an eye injury from flying particles, chips, etc. Your employees must wear them when using grinders, power drills, pneumatic chisels, etc. and should wear eye protection when working under autos.

HEARING PROTECTION

In a body shop, excessive noise occurs during certain operations, such as pneumatic chiseling where the noise can very easily exceed the upper threshold standard. Under these conditions, hearing protection must be worn.

RESPIRATORS

Ventilation should be provided to eliminate hazardous levels of airborne contamination. If this is not possible or feasible, respirators must be used. They are usually needed in body repair shops. Dust masks should be worn when grinding and when sanding body fillers. Dust masks are not to be used when spray painting. . .a paint respirator must be worn. It may be either a full or a half face respirator with two cartridges designed for use with organic vapors. A cloth prefilter is inserted in front of the cartridges to remove the solid particles of the paint overspray.

Respirators are not usually needed in a garage. The one place where a dust mask should be worn is where a person relines brakes most of the day or the linings are ground in a small room. The brake linings contain asbestos and if brake drums are blown out with air, excessive exposure to asbestos dust could occur.

When respirators are used, employees must be trained to use them properly, and a respirator maintenance program must be established. Important elements of this program include:

1. The selection of the proper respirator and cartridges

FREQUENTLY VIOLATED REGULATIONS

PERSONAL PROTECTIVE EQUIPMENT (Cont.)

for the job.

2. Respirators should be cleaned at the end of the day (taken apart and washed, dried, filters replaced, worn parts replaced broken straps, valves, etc.) and stored in a clean place (e.g., plastic bag).

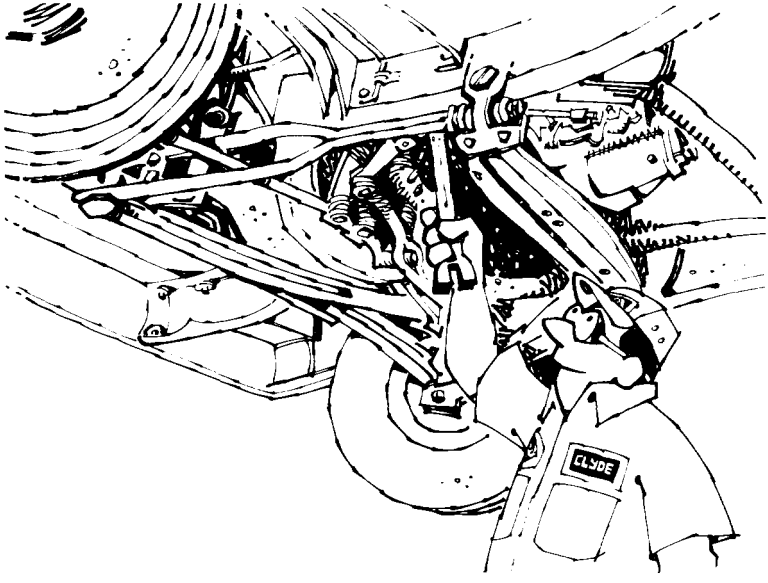
3. Two people should never wear the same respirator unless it has been cleaned between uses.

4. Making sure employees are aware that:

a. All straps must be tied and adjusted.

b. Respirators must **not** be worn over beards.

c. The filters must be replaced when worker can smell paint vapors in the mask, breathing becomes difficult, or he has used them for the lifetime specified on the cartridge.



EYE PROTECTION IS NEEDED WHEN WORKING UNDER CARS.

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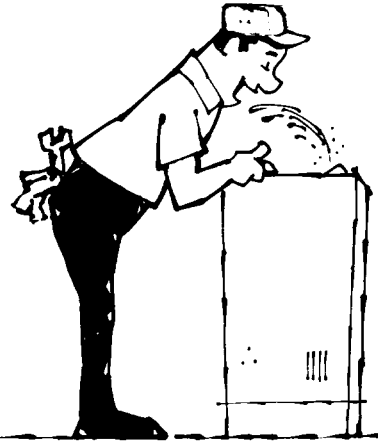
FREQUENTLY VIOLATED REGULATIONS

SANITATION

Federal Standards for Occupational Safety and Health which apply to your place of business require that:



1. Safe drinking water is provided in all places of employment. A common drinking cup is forbidden.

2. Receptacles for waste food are to be covered and kept in a clean and sanitary condition.

3. Restrooms are kept in a clean and sanitary condition, including covered containers for sanitary napkins.

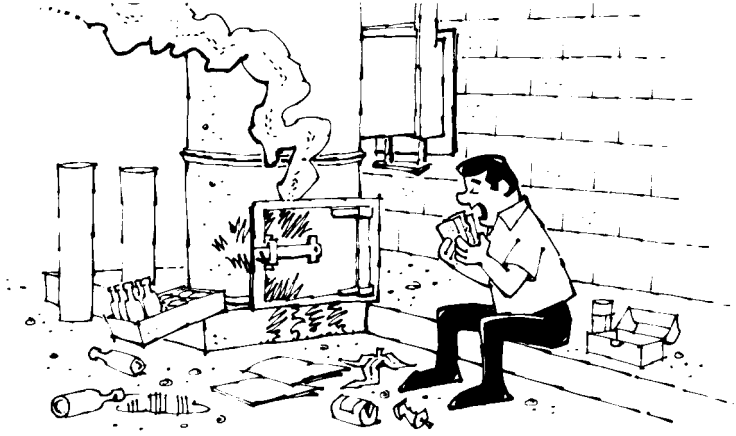
4. Toilet facilities are provided for each sex, except where the toilet room will be occupied by only one person at a time. It is necessary that the toilet can be locked from the inside, and that it contain at least one water basin.

FREQUENTLY VIOLATED REGULATIONS

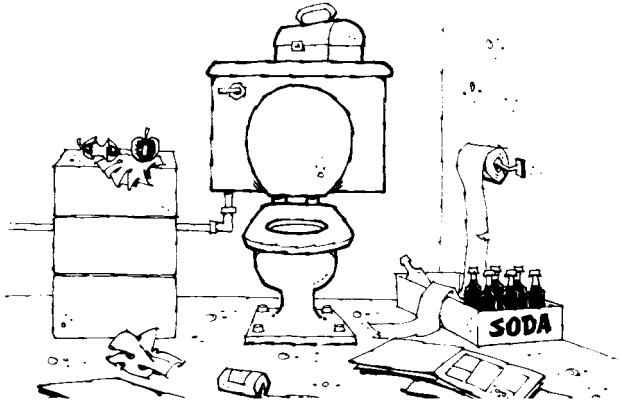
SANITATION (Cont.)

5. Approximately one toilet and one lavatory should be provided for every fifteen employees.

6. Each lavatory has hot and cold or tepid running water, hand soap, hand towels, cloth or paper, or warm air blowers.



7. No employee is allowed to eat or drink in a toilet room or in any area exposed to toxic materials.



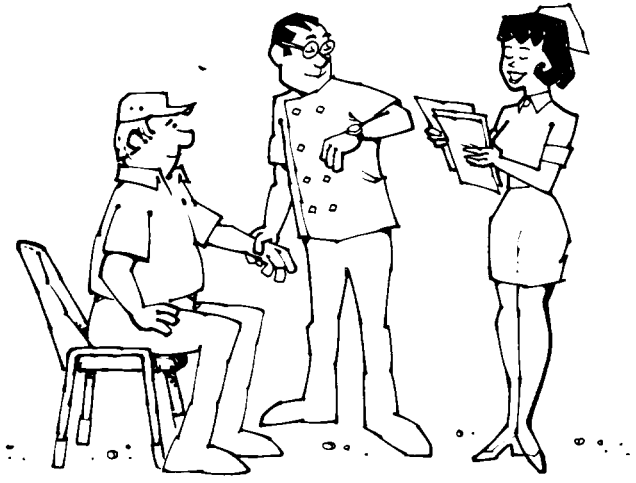
8. No food or beverages are stored in a toilet room or in an area exposed to toxic materials.

FREQUENTLY VIOLATED REGULATIONS

MEDICAL AND FIRST AID

The employer interested in maintaining production, preventing loss of work time, receiving efficient employee performance, and achieving good morale, should adopt ways of preserving his employees' health. A good practice is to require pre-placement 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. On matters of health, medical personnel must be readily available by phone or on-site for advice and consultation.

Emergency phone numbers should be posted near telephones. Stretchers and warm blankets should be available for prompt transportation of injured or ill employees to a hospital.



In the absence of an infirmary, clinic, or hospital in near proximity to the workplace (usually interpreted to be within 10 minutes under worst conditions) which is used for treatment of all injured employees the following are required:

1. At least one and preferably two employees on each shift should be adequately trained to render first aid. The American Red Cross, the U.S. Bureau of Mines, insurance carrier, local safety councils and others provide acceptable training.

FREQUENTLY VIOLATED REGULATIONS

MEDICAL AND FIRST AID (Cont.)

2. First aid kits must be readily available and approved by a consulting physician. The kits 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.

Note:

First aid is immediate, temporary treatment given in the event of accident or illness—before the doctor arrives.

Most 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.

Refer to RECORDKEEPING REQUIREMENTS toward the back of this Guide for records which must be maintained for occupational injuries and illnesses. The Emergency Information Chart (printed inside the back cover of this booklet) may also be helpful.

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FREQUENTLY VIOLATED REGULATIONS

FIRE PROTECTION

Good Housekeeping Helps Prevent Fires

Maintaining a clean and orderly environment reduces the danger of fires. However the "sweep it under the rug" type of cleaning creates new built-in fire hazards. An example of such a hazard is the temporary hiding of combustible waste in unsafe areas such as closets or basements. Combustible material of any type should be kept only in spaces which are isolated by fire-resistive construction.

Rubbish should not be allowed to accumulate. A routine of safe disposal of rubbish should be followed. If it is necessary to store rubbish or combustible packing materials, a metal receptacle with a tight-fitting cover must be used.

The materials used for cleanup operations can create hazards. Combustible sweeping compounds such as oil treated sawdust can be a fire hazard. Floor waxes containing low-flash-point solvents can be dangerous, especially when using electric polishers. A water-emulsion wax is preferred. All oily mops and rags must be stored in metal containers to reduce fire hazards.

Some common causes of fires in all businesses are:

1. Electrical malfunctions
2. Friction
3. Open flames
4. Sparks
5. Hot surfaces and
6. Smoking

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

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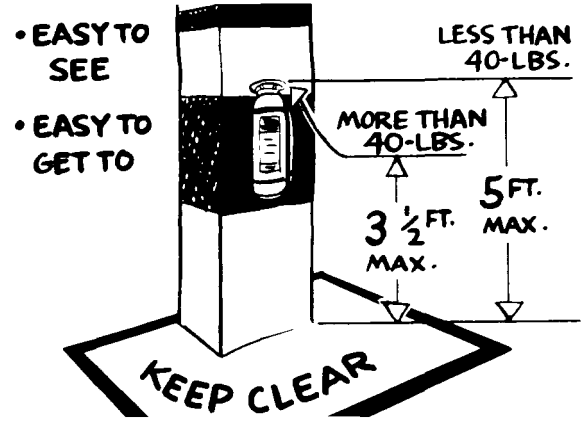
FREQUENTLY VIOLATED REGULATIONS

FIRE PROTECTION (Cont.)



PORTABLE FIRE EXTINGUISHERS MUST:

1. Be kept fully charged and in their designated places.
2. Be located along normal paths of travel.
3. Not be obstructed or obscured from view.
4. Not be mounted higher than 5 feet (to the top of the extinguisher) if lighter than 40 pounds or 3½ feet if heavier than 40 pounds.
5. Be inspected by management or a designated employee at least monthly to insure:
   a. They are in their designated places.
   b. They have not been tampered with or actuated.
   c. They do not have corrosion or other impairment.
6. Be inspected 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.
7. Be hydrostatically tested. The local fire department or extinguisher manufacturer will usually perform this service at appropriate intervals.
8. Be selected on the basis of type of hazard, degree of hazard, and area to be protected.
9. Maximum travel distance to an extinguisher: Class A, 75 feet; Class B, 50 feet.

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

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FREQUENTLY VIOLATED REGULATIONS

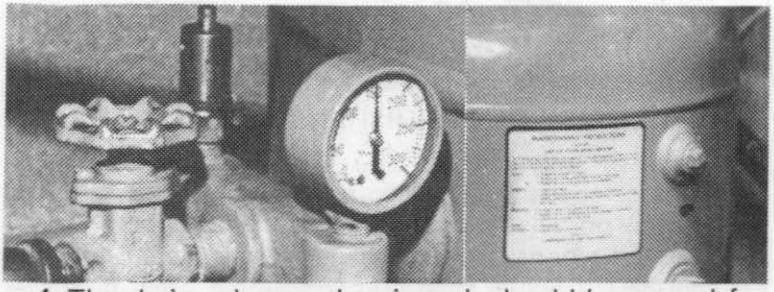
COMPRESSED AIR EQUIPMENT

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

1. Rotating pulleys and belts on compressor and electric motors must be completely guarded.

2. Any deteriorated flexible cords or plugs on electric motor driven compressors must be periodically checked or replaced.

3. New air tanks, installed after February 15, 1972, must be constructed in accordance with the A.S.M.E. Boiler and Pressure Vessel Code, Section VIII, Division 1. The A.S.M.E. Code requires this information to be permanently stamped on the air tank.



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

5. 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.

6. **Beware of compressed air—it can be dangerous.** Management must prohibit the use of compressed air to blow dirt from clothing or body because it can enter the body through cuts or openings and cause serious harm.

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

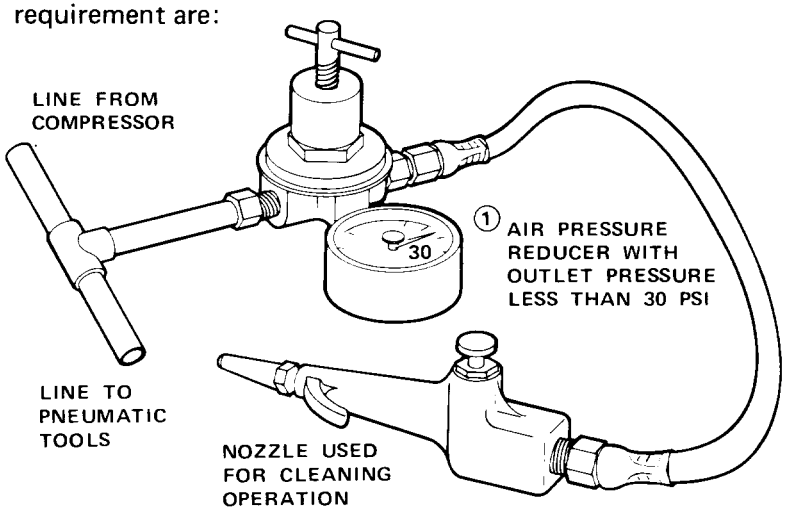
8. There must be no valves between the air tank and safety valve.

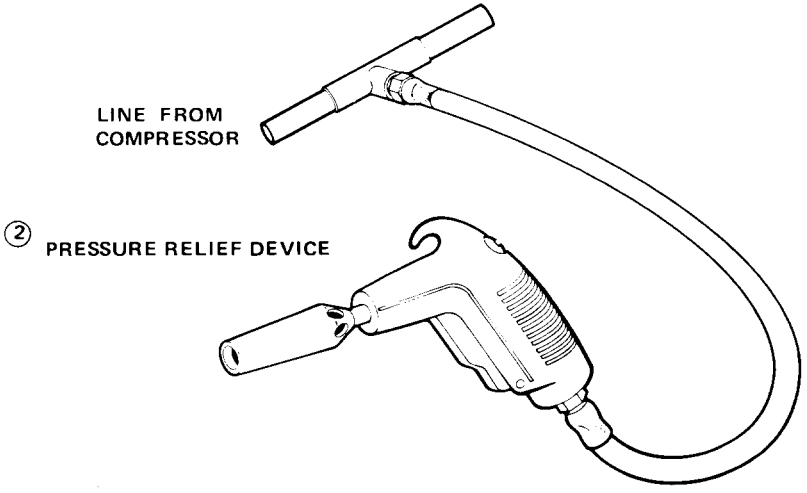
NIOSH

FREQUENTLY VIOLATED REGULATIONS

COMPRESSED AIR EQUIPMENT (Cont.)

The downstream pressure of compressed air used for cleaning purposes must remain at a pressure level below 30 psi **whenever the nozzle is dead ended**, and then only when effective chip guarding and personal protective equipment are used. Two acceptable methods of meeting this requirement are:





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FREQUENTLY VIOLATED REGULATIONS

MACHINE GUARDING

People react differently to the same environment because of physical, mental, and emotional differences. Some act safely, others unsafely. The behavior of the same person will vary from time to time. Because of this, even the well-coordinated and highly trained individual may at times perform unsafe acts leading to injury or death unless machinery in motion is properly guarded to protect him.

Machines present several hazardous conditions in the normal work environment if not properly guarded. All mechanical action or motion of a machine creates a hazard in varying degrees. Hence, the value of guarding a machine normally does not present a question and is indicative of management's interest in the working environment. Particular attention should be given to providing guards for:

1. Power transmission.
2. Moving parts.
3. Point of operation.

A few methods for guarding are:

1. Enclosing the hazard or hazardous operation.(Preferable)
2. Interlocking out the hazard or hazardous operation to activate a brake, enclosure, or preclude actual mechanical action.
3. Automatically limiting the hazard or hazardous operation with moving barrier, removal device, and similar release devices.
4. Remote control of the hazard or hazardous operation by remote actuating devices which are located away from the hazard.

General Requirements for Machine Guarding

1. One or more methods of machine guarding must be provided to protect the operator and other employees in the machine area from hazards.
2. Guards must be attached to the machine if possible. The guard should be such that it does not constitute a hazard.
3. All fixed machines must be secured to prevent movement.
4. The guarding device must conform to appropriate

FREQUENTLY VIOLATED REGULATIONS
MACHINE GUARDING (Cont.)

devices. Also a booklet entitled "The Principles and Techniques of Mechanical Guarding" OSHA 2057 may be obtained by writing to OSHA Regional Offices (listed in the back of this book).

5. All belts, pulleys, chains, sprockets and gears must be effectively guarded.

6. All belts, chain drives, shafting, couplings, keys, collars, clutches located 7 feet or less above the ground, floor, or working platform, must be guarded to prevent accidental contact. V belts and chain drives must be completely enclosed.

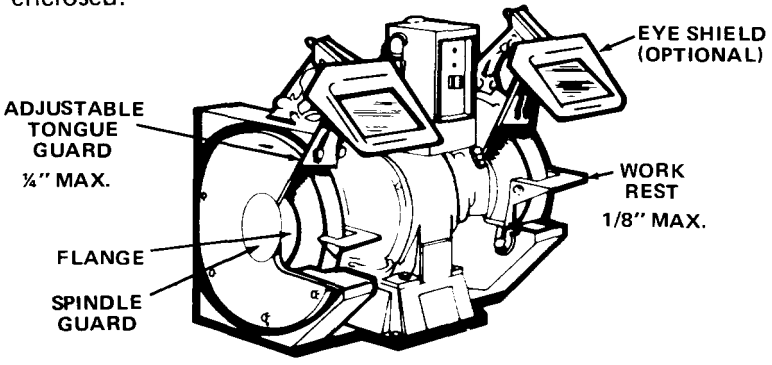


Table Top Grinders:

Wheel Guard—Safety guards must cover all abrasive wheels. Check that the safety guard covers the spindle, end nut and flange projection.

The exposed area of the grinding wheel and sides for the safety guards should not exceed more than one-fourth of the entire wheel.

Work or Tool Rests—These rests must be of strong construction and designed to be adjustable to compensate for wheel wear. Work rests must be closely adjusted to the wheel, with a maximum clearance of 1/8 inch. This 1/8-inch clearance or less will prevent the work from becoming jammed between the wheel and the work rest.

Exposure Adjustment or Tongue Guards—If an operator stands in front of the opening, the safety guard must be constructed so that the tongue guard can be adjusted to the

FREQUENTLY VIOLATED REGULATIONS

MACHINE GUARDING (Cont.)

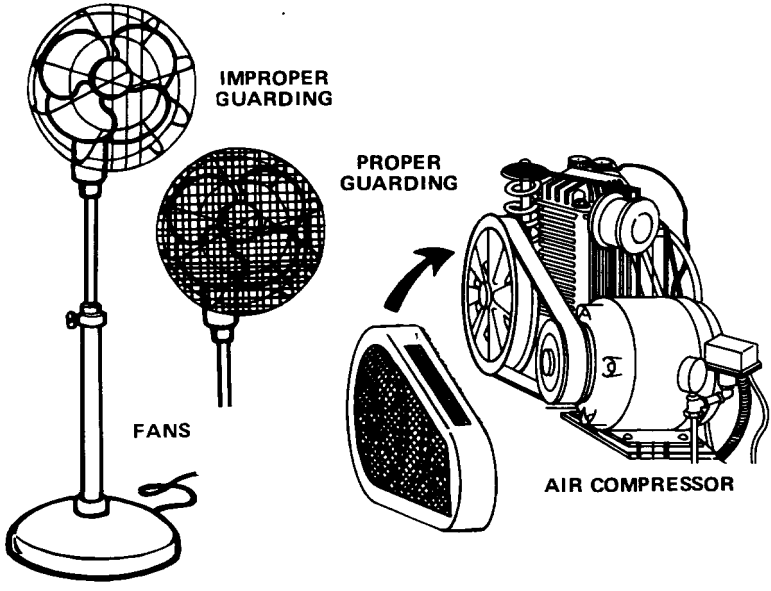
constantly decreasing diameter of the wheel. The distance between the tongue guard and the wheel must never be more than one-fourth inch.

Bench Grinders:

Must be permanently mounted.

Goggles or a Face Shield:

Must be worn by the operator.



Fans:

If located within seven feet of the floor, fans shall be guarded with grille or mesh limiting openings to not more than ½ inch.

Air Compressors:

Must have flywheel and drive pulley's enclosed.

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FREQUENTLY VIOLATED REGULATIONS

HAND AND PORTABLE POWER 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.

The following is presented as a partial list of regulations governing use of hand tools.

1. Hammers with broken or cracked handles, chisels and punches with mushroom heads, or bent or broken wrenches should not be used.

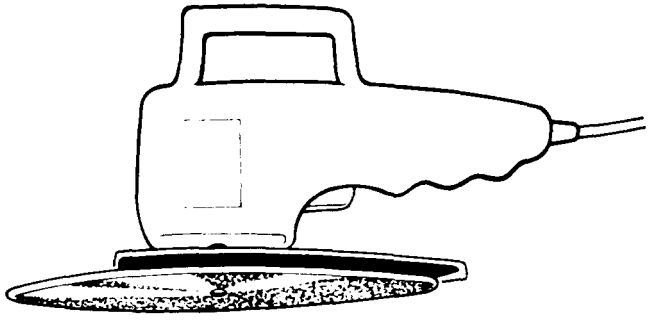
2. Hand-held electrical power tools must be equipped with a "dead man" control so that the power is automatically shut off whenever the operator releases the control.

3. All hand-held portable electrical equipment operating at more than 90 volts must have its frame grounded by means of a separate ground wire or be doubly insulated.

FREQUENTLY VIOLATED REGULATIONS

HAND AND PORTABLE POWER TOOLS (Cont.)

4. Right angle grinders must be provided with a guard.



5. Pneumatic chisels, etc. must have safety devices to keep the part in the tool when activated.

6. All hand-held portable electrical equipment operating at more than 90 volts must have its frame grounded by means of a separate ground wire or be doubly-insulated.

JACKS

Jacks are often one of the most carelessly used pieces of equipment. Unless the jack is securely positioned on a dry, smooth and clean surface and absolutely perpendicular to the load, there is danger of the car falling off the jack.

1. The rated load shall be legibly and permanently marked on the jack.

2. Each jack shall be regularly inspected:

   a. For constant or intermittent use at one locality, once every 6 months.

   b. For a jack subjected to abnormal load or shock, immediately before and after using.

3. Jacks which are out of order must be tagged and shall not be used until repaired.

4. Cars on jacks must be cribbed, blocked or secured at once.

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FREQUENTLY VIOLATED REGULATIONS

WELDING, CUTTING, AND BRAZING

COMPRESSED GAS

It is required that:

1. All cylinders are away from radiators and other sources of heat.

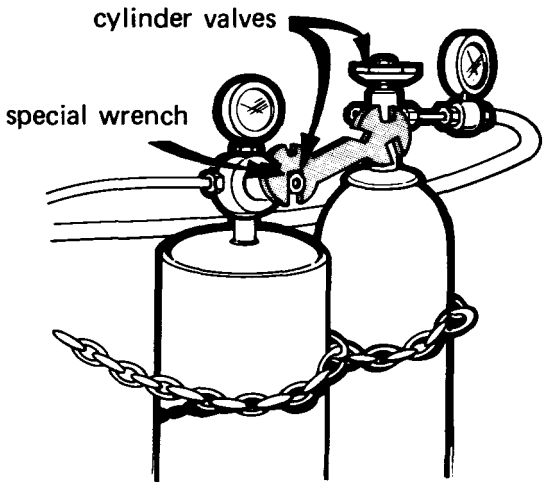
2. All cylinders stored inside buildings are located in a well-protected, well-ventilated, dry location at least 20 feet from highly combustible materials and away from elevators, stairs, or gangways. They are not to be kept in unventilated enclosures such as lockers and cupboards.

3. Cylinder caps are in place when cylinders are not in use.

4. Stored oxygen cylinders are separated from stored fuel gas cylinders or combustible materials (especially oil or grease) by a minimum distance of 20 feet or by a noncombustible barrier at least 5 feet high and having a one-half hour fire-resistance rating.

FREQUENTLY VIOLATED REGULATIONS

WELDING, CUTTING, AND BRAZING (Cont.)



5. All cylinder valves are 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.

6. All cylinders are legibly marked to identify contents.

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

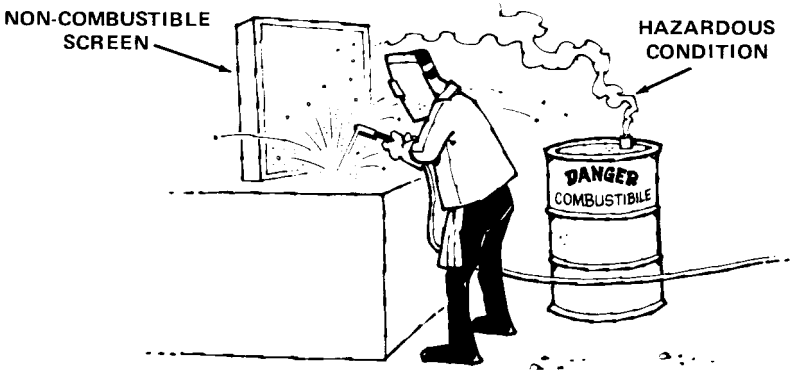
8. Acetylene is not used at a pressure in excess of 15 psi gauge, or 30 psi absolute.

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

FREQUENTLY VIOLATED REGULATIONS
WELDING, CUTTING, AND BRAZING (Cont.)

10. Hoses showing leaks, burns or worn places which render them unfit for service are replaced.

11. Management establish areas for cutting and welding based on the fire potentials of the plant, and procedures for welding and cutting in areas.



12. Cutting or welding is not permitted in the presence of explosive atmospheres which may develop inside uncleaned or improperly prepared tanks or equipment.

13. Periodic inspection of all resistance welding equipment is made by maintenance personnel trained in safety procedures and records of the inspections maintained.

FREQUENTLY VIOLATED REGULATIONS

WELDING, CUTTING, AND BRAZING (Cont.)

14. Individual booths or non-combustible screens are provided to enclose the welder.

15. Proper eye protection is provided for welders and adjacent persons exposed to flash.

16. Respirators should be worn when welding or cutting in confined spaces and cutting through the leaded joints on roof tops.

ELECTRICAL ARC WELDING

Management is responsible for seeing to it that equipment is properly handled and personnel protected when doing electrical arc welding. The following regulations apply:

1. Employees who operate resistance welding equipment must be properly instructed and judged competent to operate this equipment.

2. If the welding machine is wet, it must be thoroughly dried and tested before it is used again.

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

4. Suitable fire-extinguisher equipment must be handy.

5. Coiled welding cable is to be spread out; the ground lead must be firmly attached to the work.

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

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

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

9. Welding helmets or hand shields must be worn by the operator. Persons close-by must wear eye protection.

10. Shields, such as fire-resistant curtains, must protect others in the vicinity.

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

12. It is necessary to mark any hot material with soap stone or in some other way.

13. Electrode holders which are not in use must be placed in a safe place, for example, away from conducting objects.

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FREQUENTLY VIOLATED REGULATIONS

ELECTRICAL REQUIREMENTS

THE NATIONAL ELECTRICAL CODE

The National Electrical Code NFPA 70-1971; ANSI C1-1971 (Rev. of 1968), has been adopted as a national consensus standard and has been incorporated by reference in Subpart S—Electrical, of the Federal Register, 29 CFR 1910.

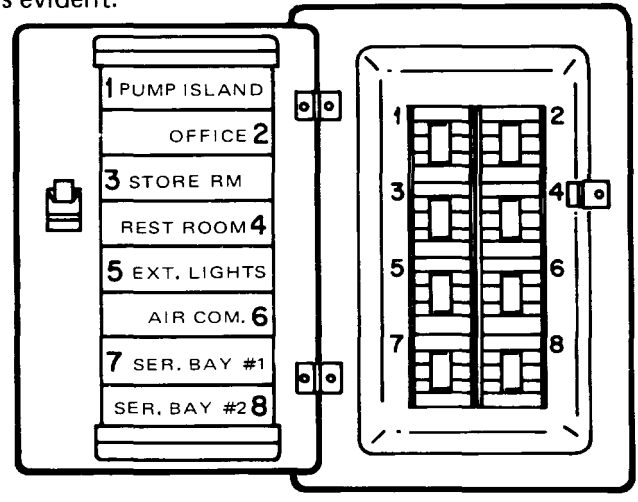
The purpose of the National Electrical Code is the practical safeguarding of any persons and of buildings and their contents from hazards arising from the use of electricity.

The National Electrical Code contains basic minimum provisions considered necessary for safety. MORE FIRES ARE CAUSED BY ELECTRICAL MALFUNCTION THAN ANY OTHER CAUSE.

All new electrical equipment and all replacement, repair or modification of existing electrical equipment must be in accordance with the revisions of the NEC, NFPA 70-1971. The electrician should be familiar with these requirements.

Standards pertaining to electrical requirements have been cited as violations more frequently than any other sub-part. It is required that:

- Each disconnecting means (i.e., circuit breakers; fuse box) must be legibly marked to indicate its purpose unless its purpose is evident.

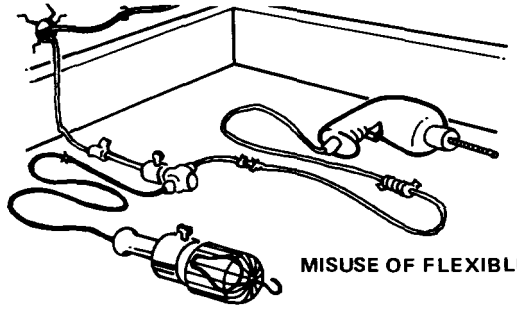


Proper labelling of circuit breakers.

FREQUENTLY VIOLATED REGULATIONS

ELECTRICAL REQUIREMENTS (Cont.)

- Exposed noncurrent-carrying metal parts of fixed equipment that may become energized under abnormal conditions must be grounded:
  a. In wet or damp locations.
  b. When in electrical contact with metal.
  c. When operated in excess of 150 volts to ground.
- Exposed noncurrent-carrying metal parts of cord and plug-connected equipment, which are liable to become energized, must be grounded.
- Wherever wires are joined, such as at outlets, switches, junction boxes, etc., they must be covered.
- Parts of electrical equipment which in ordinary operation produce arcs, sparks, etc. must be enclosed unless they are separated and isolated from all combustible material.



MISUSE OF FLEXIBLE CORDS

- Flexible cords may not be used:
  a. As a substitute for fixed wiring.
  b. Where run through holes in walls, ceilings, or floors.
  c. Where attached to building surfaces.
- Flexible cords must be:
  a. Continuous lengths without splices or taps.
  b. Fastened so that there is no pull on joints or screws.
  c. Replaced when frayed or insulation deteriorated.
  d. Equipment connected by flexible cords must be grounded either by a 3 wire cord or by a separate groundwire.

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RECORDKEEPING REQUIREMENTS

Recordkeeping requirements under the OSHA law have the purpose of storing factual information about accidents that have happened. These records provide the employer with a measure for evaluating the success of his safety and health activities, and of identifying those high risk areas of the business to which his attention should be directed. Federal regulations require that employers with eleven or more employees at any time during the calendar year are required to complete OSHA Forms 100, 101, and 102 (or their equivalent). These records must be maintained for five years (excluding the year to which they apply) and kept current to within six days.

Four important steps in the recordkeeping procedure are:

1. The employer obtains a report of every work-related injury or illness requiring medical treatment.
2. He records each injury on OSHA Form 100 (or its equivalent).
3. He prepares a supplementary record of occupational injuries and illnesses of recordable cases on OSHA Form 101 (or equivalent).
4. Finally, he prepares an annual Summary, OSHA Form 102 (or its equivalent) and posts it from February 1 to March 1 of each year.

The types of work-related injuries and illnesses which must be recorded are those involving fatalities, lost workdays, or those which are non-fatal and do not cause lost workdays for the employee, but do require medical treatment, job transfer or termination, or resulted in loss of consciousness or loss of motion. Employers are also required to report within 48 hours to OSHA any **occurrence of a work-related fatal accident, or an accident requiring the hospitalization of five or more employees.**

Employers may be required to maintain accurate records of potentially toxic or harmful physical agents which must be monitored or measured, and to promptly advise any employee of any excessive exposure and the corrective action undertaken.

For more detailed information the booklet **Recordkeeping Requirements Under the Williams-Steiger Occupational Safety and Health Act of 1970** is available from OSHA.

RECORD KEEPING REQUIREMENTS (Cont.)

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 jobsite 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.

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.

NIOSH

CHECKLISTS

Since safe conditions depend on vigilance for possible hazards and immediate remedial action, 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, of help in performing a self-inspection of its facility. Because businesses vary, it is best that each business develop its own tailor-made list from the information in this booklet and a walk-through inspection of the operation.

Then, using this checklist, the manager, supervisor, or employee representative makes periodic inspections (preferably at least once each month) to correct problem areas that have "NO" checked.

Reference made in the CHECKLIST subtitles refers to appropriate sections of Title 29 of the Code of Federal Regulations (CFR), commonly called the "1910 Occupational Health and Safety Standards".

CHECKLISTS (Cont.)

WALKING AND WORKING SURFACES

AISLES AND FLOORS (29CFR 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 of oil or grease cleaned up immediately?	☐	☐
Are floor holes, such as drains, covered?	☐	☐
Are permanent aisles appropriately marked?	☐	☐
Are all working surfaces, such as aisles and service bays free from clutter or obstructions?	☐	☐

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

Are signs showing floor-load capacity present?	☐	☐
Are racks and platforms always loaded within the limits of their capacity?	☐	☐
Are storage lofts, balconies, etc., that are more than 4 feet above the floor protected with standard guardrails?	☐	☐
Are all lofts and balconies where people or machinery could be exposed to falling objects guarded with standard 4 inch toeboards?	☐	☐
Is the safety leg or hoist safety pin always positioned when using lifts?	☐	☐
When using a lift, is each vehicle checked for proper positioning just after wheels have left the floor?	☐	☐

CHECKLISTS (Cont.)

STAIRS (29CFR 1910.24)

	Yes	No
Are there standard stair rails (34") on all stairways of more than 4 stairs?	☐	☐
Are there standard stair rails (34") on all stairways having open sides?	☐	☐
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° (preferred angle)?	☐	☐
Are stairs and rack surfaces maintained free of tripping and slipping hazards?	☐	☐

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

Have defective ladders (e.g. broken rungs, side rails, etc.) been removed from service for repair or destruction and tagged as "Dangerous Do Not Use"?	☐	☐
Is it prohibited to use the top of an ordinary step ladder as a step?	☐	☐
Do fixed ladders have at least 3½ feet extensions at the top of the landing?	☐	☐
Do portable rung ladders have non-slip bases?	☐	☐

CHECKLISTS (Cont.)

	Yes	No
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"?	☐	☐
Do all fixed ladders have a preferred angle of 75°-90°?	☐	☐

EGRESS (29CFR 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-inch wide?	☐	☐
Is the direction of 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 exits always kept free of obstructions?	☐	☐

CHECKLISTS (Cont.)

OCCUPATIONAL HEALTH AND ENVIRONMENTAL CONTROL (29CFR 1910.93, .94, .95)

	Yes	No
Are the tail-pipe exhaust systems in good working order (not plugged, no broken hoses, etc.)?	☐	☐
Are engines turned off except when using the tail pipe exhaust system?	☐	☐
Are the gas space heaters properly vented?	☐	☐
Are employees properly protected during dusty and noisy work processes?	☐	☐
Is dust vacuumed wherever possible, rather than blown or swept?	☐	☐
Are solvent soaked, greasy, or oily rags and combustible materials disposed of in covered metal containers and emptied daily?	☐	☐
Is the battery charging area ventilated and designated as a NO SMOKING area?	☐	☐

HAZARDOUS MATERIALS (29CFR 1910.101) FLAMMABLE AND COMBUSTIBLE LIQUIDS

	Yes	No
Is paint stored in approved metal or wood cabinets or storage rooms?	☐	☐
Do storage rooms have explosion proof lights?	☐	☐
Is non-flammable solvent used in the parts cleaner?	☐	☐

CHECKLISTS (Cont.)

	Yes	No
Do storage rooms have mechanical or gravity ventilation (at least 6 air changes per hour)?	☐	☐
Are bulk drums of flammable liquids grounded and bonded to containers during dispensing?	☐	☐
Is there never more than 1 days supply of paint outside of approved storage cabinet or room?	☐	☐
Are all spills of flammable or combustible liquids cleaned up promptly?	☐	☐

PAINT SPRAY OPERATIONS (29CFR 1910.107)

GENERAL

	Yes	No
Are portable lamps removed during spray operations?	☐	☐
Do solvents used for cleaning have high flash points? (Spray equipment may be cleaned with low flash point thinners if done in properly ventilated area.)	☐	☐
Are fire control sprinkler heads kept clean?	☐	☐
Are No Smoking signs posted in the spray area, paint room, paint booth and paint storage area?	☐	☐

CHECKLISTS (Cont.)

	Yes	No
Is the spray area at least 20 feet from flame, sparks, electric motors or other ignition sources?	☐	☐
Is the spray area free of hot surfaces?	☐	☐
Are electric lamps in spray area enclosed and guarded?	☐	☐
Is the spray area kept clean of combustible residue?	☐	☐
Are spray booths constructed of metal, masonry or substantial non-combustible material?	☐	☐
Are spray booth floors and baffles non-combustible and easily cleaned? Comments	☐	☐
Do spray booths have explosion proof lights or are lighted through sealed clear panels?	☐	☐
Is mechanical ventilation on during spray operations?	☐	☐
Do booths have independent exhaust system?	☐	☐
Do exhaust rates meet minimum requirements?	☐	☐

CHECKLISTS (Cont.)

	Yes	No
Is the electric motor for exhaust fan placed outside booth or ducts?	☐	☐
Are belts and pulleys inside booth fully enclosed?	☐	☐
Is air exhausted from spray operation removed from the ventilation system?	☐	☐
Do ducts have access doors to allow cleaning?	☐	☐
Is intake air free of contaminents?	☐	☐
In low temperatures (below 55°) is make-up air heated to at least 65°?	☐	☐
Is make-up air heater located outside the spray booth?	☐	☐
Do overspray filters have pressure gages to indicate need for filter replacement?	☐	☐
Do all drying spaces have adequate ventilation?	☐	☐
Is the spray area used for drying with portable heaters or heat lamps kept clean of overspray deposits?	☐	☐

CHECKLISTS (Cont.)

	Yes	No
Is the infra-red apparatus kept out of spray area during spraying operations?	☐	☐
Is the spray area completely ventilated before using drying apparatus?	☐	☐
Is spray booth ventilation system operated during drying process?	☐	☐
Is the electrical drying apparatus properly grounded?	☐	☐

PERSONAL PROTECTIVE EQUIPMENT (29CFR 1910.132-137)

	Yes	No
Is eye protection provided and used when using bench grinders, right angle grinders, etc?	☐	☐
Are rubber gloves provided and worn when cleaning parts, handling body fillers, paint thinners, etc.?	☐	☐
Are respirators provided and worn during dusty operations, paint spraying, etc.?	☐	☐
Is there a minimal respirator program when respirators are used?	☐	☐
Are ear plugs or muffs provided and worn during noisy conditions?	☐	☐

CHECKLISTS (Cont.)

	Yes	No
SANITATION (29 CFR 1910.141-149)		
Are restrooms and wash rooms kept in clean and sanitary condition?	☐	☐
Are covered receptacles for waste food kept in a clean and sanitary condition?	☐	☐
Are covered receptacles provided in the women's rest room for sanitary napkins?	☐	☐

	Yes	No
MEDICAL AND FIRST AID (29CFR 1910.151)		
In the absence of a nearby clinic or hospital, is at least one employee on each shift currently qualified to render first aid? (Some states require first aid trained persons regardless of nearby clinics or hospitals.)	☐	☐
Are approved first aid supplies readily available, inspected and replenished?	☐	☐

CHECKLISTS (Cont.)

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

	Yes	No
Are extinguishers selected for type of materials in areas where they are to be used? Class A. Ordinary combustible-material fires Class B. Flammable liquid, gas or grease fires Class C. Energized electrical-equipment fires	☐	☐
Are extinguishers fully charged and mounted in designated places?	☐	☐
Are extinguishers located along normal paths of travel?	☐	☐
Are extinguishers free from obstruction or blockage?	☐	☐
Are extinguishers not mounted too high? If less than 40 lbs., the top must be below 5 ft. above floor—greater than 40 lbs., the top must be below 3½ ft. above floor.	☐	☐
Have all extinguishers been serviced, maintained and tagged at intervals not to exceed 1 year?	☐	☐
Are all extinguishers checked (by management or designated employee) monthly to see if they are in place or if they have been activated, etc.?	☐	☐
Have all extinguishers been hydrostatically tested according to schedules set for the type of extinguisher?	☐	☐

CHECKLISTS (Cont.)

COMPRESSED AIR EQUIPMENT (29CFR 1910.169)

	Yes	No
Is compressed air which is used for cleaning reduced to 30 psi when dead ended? (Can be accomplished by using special nozzles or air pressure reducing valves).	☐	☐
Are compressed air tanks drained regularly?	☐	☐
Do the reiief valves operate properly?	☐	☐

MACHINE AND MACHINE GUARDING (29CFR 1910.212)

Are all points of power transmission properly guarded? (e.g. belts and pulleys on motors, compressors, rotating shafts, sprockets and gears, etc.)	☐	☐
Are all pieces of equipment with an electric motor or any electrical connection effectively grounded?	☐	☐
Are all fan blades seven feet or less from the floor guarded in such a manner that there exist no openings greater than ½ inch?	☐	☐
Is all fixed machinery securely anchored to prevent movement?	☐	☐
Are sprockets and V-belt drives within reach of platforms and passageways or less than 7 feet from the floor completely enclosed?	☐	☐

CHECKLISTS (Cont.)

	Yes	No
Is the adjustable tongue on top side of grinder used and kept adjusted to within ¼" of wheel?	☐	☐
Are spindle guards being used?	☐	☐
Are bench and pedestal grinders permanently mounted?	☐	☐
Are goggles or face shields always worn when grinding?	☐	☐

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

Have mushroomed heads on chisels, punches, etc. been replaced?	☐	☐
Have broken hammer handles been replaced?	☐	☐
Have worn or bent wrenches been replaced?	☐	☐
Have deteriorated air hoses been replaced?	☐	☐
Are portable abrasive wheels appropriately guarded (eg. right angle grinders)?	☐	☐

CHECKLISTS (Cont.)

JACKS	Yes	No
Are jacks checked periodically to see if they are in good condition?	☐	☐
Are cars on jacks cribbed, blocked or secured at once?	☐	☐
Are support stands always used after the vehicle has been raised with a hydraulic jack?	☐	☐

SUBPART Q
WELDING, CUTTING, BRAZING (29CFR 1910.252)

Are cylinders stored away from heat?	☐	☐
Are gas cylinders and oxygen cylinders separated by 20 feet or a barrier 5 feet high?	☐	☐
Are cylinders secured and stored where they cannot be knocked over?	☐	☐
Are cylinder protective caps in place when not in use?	☐	☐
Are the valves shut off when not in use?	☐	☐
Are flash shields provided to protect nearby workers from the welding flash?	☐	☐
Is ventilation or are respirators provided when welding or cutting in confined spaces?	☐	☐
Is welding always conducted at a safe distance from flammable liquids?	☐	☐

CHECKLISTS (Cont.)

NATIONAL ELECTRICAL CODE

ELECTRICAL WIRING

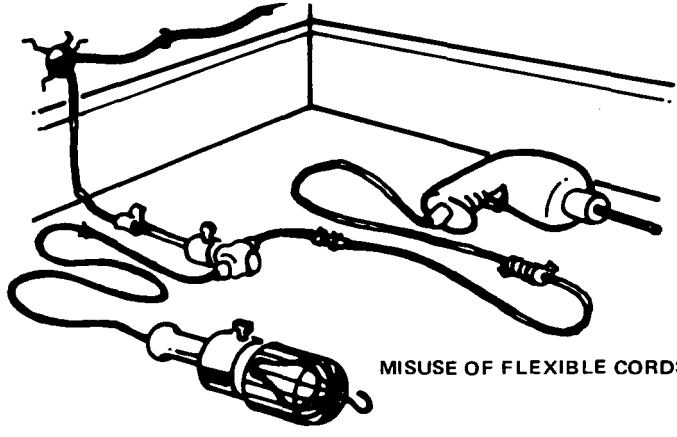
	Yes	No
Is electrical equipment accessible, in good repair and approved for the location?	☐	☐
Have exposed wires, frayed cords, deteriorated insulation been repaired or replaced?	☐	☐
Are junction boxes, outlets, switches, etc. covered?	☐	☐
Are breaker switches identified as to their use?	☐	☐

GROUNDING

Is all metal, fixed equipment grounded?	☐	☐
Does all equipment connected by cord and plug have grounded connections?	☐	☐
Are appliances such as vacuums, polishers, vending machines, etc. grounded?	☐	☐
Do all hand and power tools have double insulation or are they grounded?	☐	☐
Do all extension cords being used have a ground wire?	☐	☐
Are all plugs equipped with ground pins?	☐	☐

CHECKLISTS (Cont.)

FLEXIBLE CORDS AND CABLES	Yes	No
Do flexible cords and cables **not** run through holes in wall or ceiling?	☐	☐
Are flexible cords and cables free from splices or tap?	☐	☐
Are flexible cords and cables fastened so that there is no direct pull on joints or terminal screws?	☐	☐
Are flexible cords and cables never substituted for fixed wiring?	☐	☐
Are flexible cords and cables not attached to building surfaces?	☐	☐



MISUSE OF FLEXIBLE CORDS

CHECKLISTS (Cont.)

RECORDKEEPING (29CFR 1904.2-.8)

	Yes	No
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 No. 100 and 101, or equivalent?	☐	☐
Have you compiled a summary of all occupational injuries and illnesses at the conclusion of each calendar year and recorded on OSHA Form No. 102, or equivalent and posted by February 1 for a period of 30 calendar days?	☐	☐
Have all OSHA records been retained for a period of five years, excluding the year to which they relate?	☐	☐

NIOSH

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
- ☐ C1 National Electric Code
- ☐ Z4.1 Sanitation in Places of Employment
- ☐ Z87.1 Eye and Face Protection

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)
60 Batterymarch Street
Boston, Mass. 02110

- ☐ NFPA-10-1970
- ☐ NFPA-101-1970

NATIONAL SAFETY COUNCIL
425 North Michigan Avenue
Chicago, Illinois 60611

NIOSH AND OSHA REGIONAL OFFICES
(See List)

Your trade associations and your insurance carrier can also provide you with useful information. The Small Business Administration will provide information concerning procedures for securing economic assistance in compliance with the OSHA Standards (if needed).

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

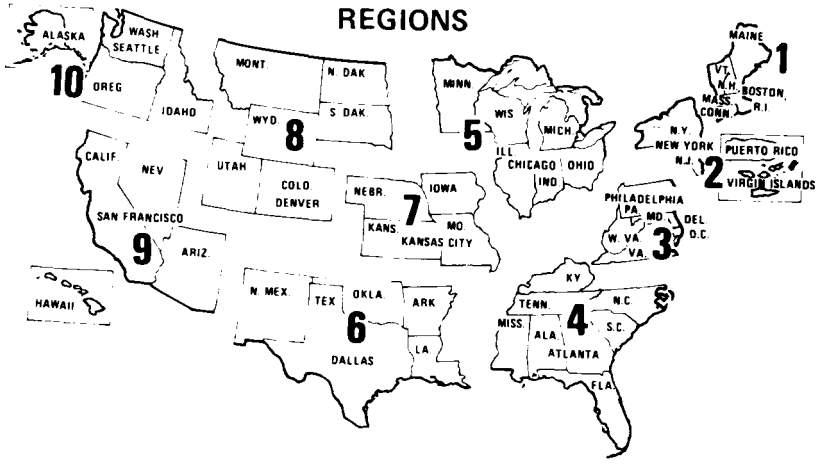
IMPORTANT! USING THE WRONG TYPE EXTINGUISHER FOR THE CLASS OF FIRE MAY BE DANGEROUS!

TABLE I

NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH

NIOSH AND OSHA REGIONAL OFFICES

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



NIOSH REGIONAL OFFICES

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

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

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

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

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

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

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

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

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

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

OSHA REGIONAL OFFICES

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

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

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

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

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

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

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

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

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

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

HOW TO LIFT SAFELY

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

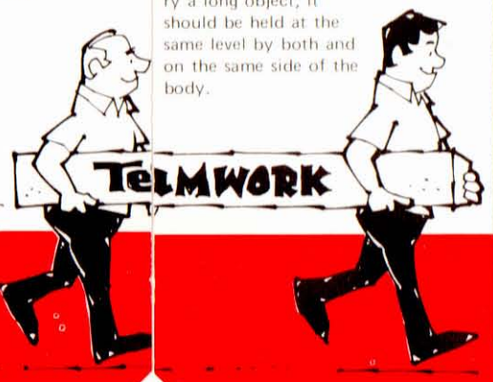
The factors that contribute to safe lifting are...

DETERMINE IF OBJECTS CAN BE LIFTED AND CARRIED SAFELY.

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 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.



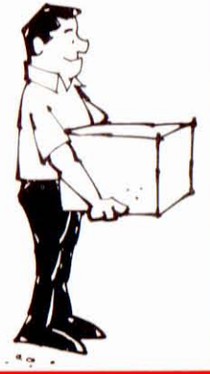
1. Approach the load and size it up (weight, size and shape.) Consider your physcial ability to handle the load.

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.

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.