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R. E. KENNEDY

SHOP SAFETY MANUAL

MAGNOLIA PETROLEUM COMPANY

REFINING DIVISION

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HOW TO USE THIS MANUAL

This manual gives safe working practices for specific shops and operations at Beaumont Refinery. It is put in this form so that it can be kept up to date easily.

On the next page is a list of all the shops and operations covered. By each name is that shop or operation's section number. To find safe practices for the Pipe Shop, for instance, you first find that its section number is 4. Then look for the fourth section in the book. There may be several pages in each section, so a page number is added after each section number. Thus, 4 - 2 means the second page in the fourth section.

Replacements will come to you with the numbers typed on each page. Simply tear out the old pages that have the same numbers and insert the new ones in their place. Additions will have new numbers.

Remember that these practices cover only those that apply to special groups. Those that apply to all or most employees are given in the general safety manual "You Bet Your Life."

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INDEX OF SHOPS AND OPERATIONS

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SECRET AND GREASE PLANT

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BARREL AND GREASE PLANT

1. When cars are being moved by car mover, do not hold to car. Use brake.
2. When moving one car of a group, be sure the remaining cars are firmly chocked.
3. Keep at least four feet from car-moving winch.
4. Always remove hook when you have finished moving a car.
5. Never allow any truck, drum, or other obstruction to remain near the railroad tracks. Do not report it - move it.
6. Use caution when opening box car doors. Keep clear of opening as contents may fall out when door is opened.
7. Watch for nails or other obstructions on floors or walls of cars.
8. Drums must be handled with caution when rolling them, stacking them or moving them in any other way. Don't permit familiarity with drums to deaden your common-sense in avoiding drum accidents.
9. If floor becomes oily or greasy, have it cleaned up immediately with sawdust or commercial absorbent.
10. Do not handle oily drums; clean them first.
11. When filling or dumping drums of inflammable materials such as ketone, naphtha, or gasoline, use plenty of care in handling drums to avoid sparks. Store such materials only in places designated by the supervisor.

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12. In filling drums at the wharf with inflammable materials, make sure loading lines are grounded and fire equipment is in place.
13. Always pull elevator gates completely down.
14. Lift trucks are to be operated only by persons authorized to do so. Do not fill their gasoline tanks with motors running. Do not lift forks while vehicle is moving.
15. All elevators, conveyors and lifts have definite operating instructions that must be followed. Know all emergency stops and measures to be taken.
16. Before letting anyone enter kettles or mixers, switches must be pulled and tagged and the supervisor's approval given.
17. Use rubber gloves and goggles when handling chemicals.
18. Do not climb over or walk on roller conveyors.
19. Do not wear gloves when handling cases on the power conveyors.
20. Keep hands clear while handling pails and drums to feed the air operated lid crimping machines.

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BOILER SHOP

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BOILER SHOP

1. When using mechanical hoists on heavy materials, take precautions to prevent overbalance of load.
2. Do not light any rivet heaters, furnaces, or torches outside of an approved job until a Hot Work Permit has been issued to cover that job.
3. Lights carried into tanks, stills, tank cars, around buildings or in areas where gas vapors could be present should be vapor-proof.
4. Cut no metal or rivets when men are working in front of you.
5. Be sure that scaffolding is well-built and provided with guard rails if necessary.
6. Get the approval of the operator in charge before beginning work on boilers, superheaters, economizers, or auxiliaries.
7. A rivet heater should keep a bucket of water by his forge at all times so he can quench his fire in case of emergency.
8. In moving scaffold buggies in tanks, use care to prevent foot injuries from wheels or rollers.
9. Never caulk, chip or drill under pressure in a processing area except with the approval of authorized processing personnel.

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BOILER SHOP

2 - 2

10. New equipment in service may be caulked tight at pressures and temperatures considered safe by the foreman.
11. See that all cables, ropes, chains, and blocks are of such size and condition that they will safely support all loads to be handled.
12. Cutting, punching and drilling on roofs or shells of tanks or other vessels should be done only after a Hot Work Permit has been obtained.
13. Make a thorough inspection of tank roof ring bolts and vents before using them to support men or scaffolds.
14. Inspect all stairways, tank tops and lines as you visit tanks. Report major defects. Keep off roofs if possible, particularly roofs showing signs of rusting.
15. Don't go on top of tanks during storms.
16. Avoid using mushroomed or defective tools.
17. Proper goggles must be worn while heating rivets, riveting, caulking and bucking-up. Other types of work requiring goggles are named in "Play It Safe."

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CAR SHOP

1. Here are correct practices in preparing tank cars for work to be done inside cars:
 - (a) Acid cars - Fill $3/4$ full of water and boil with steam for three hours. Run water out of car, add Sal-Soda to dome to neutralize and then steam three more hours.
 - (b) Gasoline cars - Steam four hours, cool, clean out rust and steam three hours.
 - (c) Butane cars - Fill with water.
 - (d) Crude or asphalt cars - Steam twice and clean once, alternately.
 - (e) Lube cars - Steam twice and clean once, alternately.
 - (f) Coil cars - Blow out steam coils with air before work.
 - (g) Caustic cars - Steam and wash.
2. Post a lookout on top of tanks when a welder is doing work inside of tank.
3. Do not enter any gaseous tank.
4. Leave dome and outlet caps on before pulling car into shop unless the car is gas-free.
5. Except inside the shop, place the "Men Working" sign in front of all cars being worked on. Post a lookout for all repair work done in the yard.
6. Electric welders should, where necessary, use screens while working in the shop.
7. In emptying acid cars with air, never use more than 30 pounds per square inch or more than that pressure marked on the

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CAR SHOP

3 - 2

car, whichever is lower. Have remote air valve so air can be shut off, when necessary, without going near the cars.

8. Proper goggles must be worn while heating rivets, riveting, caulking and bucking-up.

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CARPENTER SHOP

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CARPENTER SHOP

Scaffolds

1. In planning scaffolds, make sure there is a safe way of reaching them.
2. Scaffolds should be big enough for the working space.
3. Whenever possible, leave sufficient head-room.
4. Guard exposed edges with standard railings. Where necessary, add toe guards.
5. When erecting scaffolds close to electric wires or equipment - if there is any possible danger of contact with them by workmen - ask for necessary protection from the Electrical Shop.
6. When necessary, provide ample protection over doorways and passageways when work is being done on a scaffold above them.
7. Scaffolds cannot be closer than 7 feet 6 inches from the center line of a railroad track or less than 22 feet above them. If closer clearance must be had, get permission from the Carpenter Shop foreman, who will consult with the Switching and Loading Section.

Saws

8. Leave all guards in place while sawing; do not leave a saw running.
9. Wear goggles or face shields when using power saws.

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10. In machine sawing, push small pieces through with a stick.
11. Never reach over a moving saw to get material on the other side.
12. When necessary, use guards with circular rip-saws.
13. Examine each saw carefully for cracks or other defects before putting it on or taking it off a band-wheel. Use no drilled band-saw blades. All saws should be kept sharp.
14. Only experienced men may change saw blades.
15. Placing of wedges between the saw disc and the collar is highly dangerous. Instead, use dado blades.
16. Keep the rip fence parallel to the saw to prevent kick-backs.
17. Swing saws should not pass the outside edge of the table.
18. Adjust guide rolls on band saws so as to take care of the particular material being cut.

Other Practices

19. When wrecking old forms, scaffolds or other wood construction, bend down or remove nails from lumber. Do not leave any loose nails around a finished job.
20. Guard against splinters from slipping boards.

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CARPENTER SHOP

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21. Only authorized employees of the Carpenter Shop may operate Shop machinery.
22. Do not use shop for storage purposes or pile stock on the tables of machines.
23. Unused material should be properly stacked before leaving a job.

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CENTRAL SHOP

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CENTRAL SHOP

1. In handling material with power hoists, choose equipment and methods to avoid possible accidents.
2. Crane operator must not handle loads over workmen.
3. Only one man on the floor may give signals for a crane operation.
4. Safety face shields shall be worn when operating or helping operate friction saw.
5. Only experienced operators, or those under close supervision, shall operate Central Shop machinery.
6. Aisles shall be kept clear and material safely stacked.
7. Be constantly alert when operating equipment. Only experienced men should operate steam hammer.
8. When using mechanical hoists on heavy material, take precautions to prevent overbalance of load.
9. When quenching hollow forgings or pipe, do not stand in line with the barrel of the forging or pipe; it might spurt hot water or oil.
10. Clear furnaces of all gases by turning on steam in the furnace before lighting. This will help prevent explosions.

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11. When lighting a furnace, have the door open. Keep it open until the furnace is hot enough to insure good combustion.
12. When casehardening in liquid baths, take the following precautions:
 - (a) To prevent explosion from splashes of hot liquid, keep the floor around the bath dry.
 - (b) Shield a cold bath before heating. The material in the bottom of the pot often melts before the upper crust is softened; the liquid may spurt through the crust, causing serious burns.
 - (c) Be sure all tools or parts are dry and not too cold before putting them in the cold bath.
 - (d) Never eat near the "hardening area" as the bath may contain poisonous material.
 - (e) Avoid breathing the fumes from the hot bath.
 - (f) Be sure your eyes, face and hands are protected with the proper equipment.
 - (g) When charging pots with material, make sure the material is dry. If it has taken up moisture it could explode, throwing hot liquid out of the pot.
 - (h) Add material to the bath at a temperature of 1,000 degrees Fahrenheit or less.
13. Use tongs and bars to avoid putting hands under steam hammer.
14. Operator of the steam hammer should set the levers and take his hands off while material is being set in place or taken out from under the hammer. This is a precaution against his unknowingly putting pressure to levers.

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15. When using a steam hammer, guard against material flying out from between the face of the anvil and the hammer or from between the tools used.
16. Before giving the signal to strike a blow, be sure that the work and tools are safe, properly set, and that the hands of the helper are in the clear.
17. Test the die keys and drive them tight.
18. Goggles shall be worn when using the emery wheel and when welding two pieces of equipment together under the steam hammer, as well as under other conditions as necessary.
19. Mark materials "Hot" when they are to be handled while hot.
20. See that all cables, ropes, chains, and blocks are of such size and condition that they will safely support load to be handled.

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ELECTRICAL SHOP

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ELECTRICAL SHOP

1. Don't take unnecessary risks, even though voltage is low. In handling any "live" circuit, use protective equipment. Avoid even slight shocks when in high places.
2. It's possible to receive a fatal shock from 110-volt circuits under certain conditions; keep it in mind. Even telephone or signal wires can become crossed with light-tension wires, so becoming dangerous.
3. Stop any person handling electrical equipment who has no right to do so; report the matter to the foreman.
4. Never handle electric wires while standing or sitting in a wet place. Use care to obtain insulation from the ground.
5. Never work on equipment in operation except when necessary. Turn power off and, if the control is not within plain sight, be sure that a safety tag has been attached to it.
6. Never close a switch without knowing what circuit it controls and why the switch was open.
7. Don't place portable electrical apparatus capable of causing a spark in locations or areas where explosive materials are confined or likely to be present.
8. When working about "live" wires carrying 440 volts or more, rubber gloves must be worn. Wear them as necessary on lower voltages.

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9. When working on "live" voltages of over 550, two experienced men must be present except in emergency.
10. Place "High Voltage" signs on high voltage equipment.
11. Never bridge fuses by wire or other means.
12. Keep all fuse boxes closed.
13. When working "live" circuits, work on only one wire at a time. Insulate all parts of the body from the ground and other wires of the circuit. Be sure you are protected from falling from scaffolds, ladders, etc., in case of shock. Careless haste is the cause of most accidents on "live" circuits.
14. When working around electrical apparatus, keep sleeves rolled down so as not to expose the arms.
15. Before (1) opening the enclosure or dropping the oil tank of a disconnecting switch starter or other devices that normally carry current, or (2) otherwise exposing current-carrying parts, make sure the disconnecting switch next back on the line is open and properly locked or tagged out. This is necessary in all cases. An arc resulting from its neglect could cause a fire or explosion.
16. On enclosures such as metal-clad switchgear, be sure that mechanical and electrical interlocks are working properly before starting to remove the circuit breaker.

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17. Portable cords should not be tied on metal rods or nails or allowed to come in contact with water or oil.
18. Rules for safe grounding:
 - (a) Grounding should follow fire underwriters' rules.
 - (b) The neutral wire of three-wire 110 and 220 volt service should be grounded at the transformer and at all switches.
 - (c) Frames of all electric machines should be grounded.
 - (d) Ground all service switch boxes and conduit systems.
 - (e) When connecting ground wire clamps for portable electrical equipment, work the clamps back and forth at the point of connection. This will scrape rust and paint off and make a good connection.
19. All lighting panels of the three-wire 110 to 220 volt type should have two outside wires fused to the proper capacity while the neutral should be unfused and grounded.
20. In every case wires must be retaped and covers replaced on electrical fittings after repair or trouble shooting.

Line Work

21. Linemen should not wear hooks while working on ground, handling heavy materials, or while walking from one job to another.
22. When piking pole, support pike at shoulder, not at waist.

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ELECTRICAL SHOP

6 - 4

23. When serving linemen, groundmen should not stand at foot of pole but at one side.
24. Linemen should carry a line up pole; it's safer than carrying up wire or other material. Groundmen should not throw materials to linemen. Use the hand line, preferably with a bucket for small tools.
25. Climb the pole, not the fixtures; do not hold to any guys or braces except when necessary.
26. In opening box-type or other open cutouts, shield the eyes from the flash. In opening cutouts of any kind, wear rubber gloves. Use a disconnecting pole on high voltage cutouts and fuses.
27. Wear tested gloves and take full advantage of other rubber materials such as line hose, insulating hoods, rubber blankets, etc.
28. When you "kill" a line by opening a switch, lock the switch open, if possible, or tag it. If in a plant or unit under control of an operator, switch should be tagged with the name of the man ordering it opened. It shall not be closed except on order of the same man or, on a shift or overtime job, by his recognized relief.
29. Do not let wet hand lines or tackle lines come in contact with high voltage wires.
30. Place pike poles around a shaky pole before removing all wires from it.

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ELECTRICAL SHOP

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31. When working overhead where there could be danger to men walking underneath, rope off space.
32. When working at heights or standing on hooks or climbers, wear an approved safety belt - one you have inspected recently.

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INSTRUMENT SHOP

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INSTRUMENT SHOP

1. Mechanics should work at all times with plenty of light on the job, especially in precision work or field dismantling.
2. Get the operator's approval before cutting out any instrument or opening any line. Then satisfy yourself that it is safe before going ahead.
3. Before disconnecting power from instruments, make sure line is "dead." Power lines should not be worked "hot", if at all possible to kill circuits. Tag any open switches or remove fuses to prevent closing of circuit. Tape all bare leads and close all conduit openings before putting power back on.
4. In removing instruments from the line, bleed off all pressure and liquid possible before disconnecting piping. Tag all instruments going to the shop to show hazardous materials instruments may have contained.
5. Never release acids and caustics to open air except at ground level; install temporary drains as needed. A hose of running water should be readily available.
6. Never do any unnecessary lifting or carrying. Use fixed or portable lifting equipment and wheeled carrying equipment. Rig up special equipment, if necessary, to avoid heavy lifts.
7. Rotax connections on the Houdry Unit shall be drilled on the air cycle. Replace leaking valves. Before drilling out pressure connections of any kind, check with operator.

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INSTRUMENT SHOP

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8. Keep off furnaces of units that are on stream. In cases of extreme emergency, check with your foreman.
9. In dismantling or repairing instruments in the shop, be careful to avoid injury by materials in the instruments as well as mechanical accidents. Solvents for cleaning should be used outside the shop, in the area provided for that purpose. Avoid inhaling any fumes, or getting solvent on skin.
10. Before welding, brazing or painting, get plenty of ventilation.
11. Wear goggles when using solder pot or solder larger than 1/2" diameter.
12. Never use oil or grease on oxygen or hydrogen equipment or accessories of any kind. Use water seal when checking gauges.
13. Do not leave seal hose or line connected to meter that is put in service.
14. Get approval from Safety Division before using soldering iron or electric drill outside of shop.

Gagetron Procedure

15. Remove radium capsule and store in lead lined box during unit down periods, when clay hopper will be opened.
16. Trained instrument shop personnel only to handle this material.

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INSTRUMENT SHOP

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17. In event of transfer or change of radium salts, it must be handled with long handle forceps and exposure limited to as short a time as possible.
18. Spare radium capsule will be stored at Instrument Shop in designated location and properly labeled.
19. Direct contact or excessive exposure to radium can result in serious consequences. Exercise caution in handling this material.

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LABORATORY

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LABORATORY

1. Before proceeding with any work be sure you thoroughly understand the proper method of procedure and the safety precautions to be observed.
2. Always check the equipment for cracks, breaks, and leaks. Defective equipment should be repaired or discarded.
3. Be prepared for contingencies which might arise from failure of apparatus.
4. Cylinders containing gas under pressure, such as oxygen and carbon dioxide, should be properly supported when in use. Extra or empty cylinders should be stored away from heat and danger of upset.
5. Cleanliness and orderliness promote safety.
 - (a) Keep samples, reagents, and equipment in proper storage space.
 - (b) Wax, grease, and oil should be kept off the floor. Clean spills with Solvasol and clay after extinguishing all open flames in the vicinity.
 - (c) Plainly label all containers, whether holding chemicals or samples.
 - (d) Keep outside of containers clean. Chemicals on the outside of the container may injure the skin.
6. Do not exceed pressure or temperature limits which are set up for the equipment.
7. In setting up glass apparatus, tighten clamps only enough to hold it in place so that breakage will not occur due to heat expansion.

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8. When putting glass tubing or thermometers through stoppers or rubber tubing, a lubricant such as water or glycerine should be used. A heavy rag should be used to protect the hand from cuts if the glass breaks and the glass should be held as short as possible. Fire polish or otherwise smooth sharp edges of glassware and tubing.
9. In submitting glass equipment for repairs, be sure that the apparatus is clean and dry.
10. Assume that all dyed gasolines contain lead and avoid unnecessary contact with the skin.
11. All volatile toxic materials should be handled either under a hood or in the open air.
12. Keep vapors in the Laboratory at a minimum by:
 - (a) Use of the hood;
 - (b) Proper ventilation;
 - (c) Keep chemicals and samples stoppered;
 - (d) Using caution in opening sample bombs in the Laboratory;
 - (e) Minimum use of wash gasoline.
13. Do not make or break electrical connections where inflammable vapors are present.
14. Cool hot equipment, such as flash cups, melting point pans, etc., before washing with naphtha.
15. Do not vent gas bombs or high vapor pressure bombs in room or out of windows. Use equipment provided for emptying bombs.

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16. Remove leaking bombs from building at once.
17. Purge bombs with air before repairing nipples or valves.
18. Engine Maintenance
 - (a) Shut engines down before wiping dust or oil from any part.
 - (b) Stay at a safe distance from running belts and pulleys at all times.
 - (c) Open all electrical source switches before doing any maintenance work.
 - (d) Use box wrenches when possible.

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LABOR SECTION

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LABOR SECTION

1. Wear rubber boots when tank cleaning.
2. If you have handled Houdry salts or lime, take a bath immediately afterward. Change clothes and rinse them out, then return to work.
3. In case of emergency, major fire or disaster, report to your immediate supervisor.
4. Before cutting into colored concrete, get approval from the Safety Division.
5. Before working in a ditch more than three feet deep, get it shored.
6. Rope off all excavations and put up "OPEN HOLE" signs.
7. Don't wipe or clean any machines in motion. Don't clean switch-rooms in units except when the unit is down or except under the supervision of electricians.
8. Before cutting into masonry around motor-driven machines or equipment, find out the location of underground power lines and be careful not to cut them.
9. When concrete rods are exposed during cutting, put either hose or other covering over them, or remove them entirely.
10. When changing tools and when connecting or disconnecting tools and air hose be sure the air hose is turned off and the air pressure in the hose is released before breaking the connection. Do not kink the hose to make connections.

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LABOR SECTION

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11. Proper goggles must be worn at work requiring use of a pick or mattock and on other types of work named in "Play It Safe."

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LEAD BURNING

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LEAD BURNING

1. In a closed-in place where there is danger of a burner breathing lead fumes, an approved-type respirator should be worn.
2. Wear gloves when handling lead.
3. Woolen clothing offers better protection from acid than cotton - a fact that might be taken into account when lining out your work clothing.
4. Hot Work Permits should be obtained from the Safety Division for work involving flame. These should be endorsed and carried by the lead burner doing the work.
5. When working in acid concentrators, a Work Permit should be obtained from the Safety Division stating that the vessel is safe to work in.

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LOADING RACKS

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LOADING RACKS

1. Before loading or unloading tank cars at racks, "Stop-Tank Car Connected" or "Stop-Men At Work" signs should be placed on track one car length from rack. If track is open at both ends, two signs are necessary, one at each end.
2. Bonding cables and static lines must be connected to tank cars before loading inflammable products.
3. Tank cars shall not be entered until a Work Permit has been issued.
4. Use only non-sparking tools on Loading Rack No. 5 where propane and butane are loaded.
5. Fasten safety chains on spout before loading inflammables.
6. Loading or unloading of tank cars shall be stopped during electrical storms. On gasoline cars, close manholes and put outlet caps on discharge chambers.
7. Replace dome covers and bottom cap before moving any car.
8. Do not let tank cars stand with connections on after loading has been finished.
9. Spills in the loading rack areas should be cleaned by flushing with water or by the use of fuller's earth.
10. When men are cleaning inside cars, a standby should be posted at the manhole opening to assist him.

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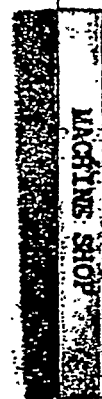
LOADING RACKS

11 - 2

11. When cleaning lube oil tank cars, one man should be on rack to check with cleaner in car at short intervals. When necessary for cleaner to change to another car he should notify the man on rack that change is to be made so that rack man will know at all times exact location and conditions under which cleaner is working.
12. Never jump from loading rack to tank or from car to car.
13. Do not leave tools on top of tank cars; they are a falling hazard.
14. Sample bottles should be carried in a case to prevent breakage.
15. Avoid striking manhole cover against dome and making a spark.
16. If tank cars are not spotted properly for safe loading, supervisor of rack shall be notified before any loading is started.
17. Hold cars with the hand brake, and, if on a grade or incline where there is a possible chance for the car to roll, the wheels should be blocked.
18. Car inspectors shall check stenciling on all cars to see if tank and safety valves are due for test. If they are, notify Car Shop.

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MACHINE SHOP

1. Only authorized personnel may handle shop machinery.
2. Keep hands and fingers in the clear when operating machinery.
3. Use a brush for removing chips. Do not use fingers. Do not use compressed air except where absolutely necessary.
4. Never use rags close to moving machinery because of the danger of catching them in revolving or moving parts.
5. Wear proper clothing. Rings or loose clothing are dangerous while operating or working around machinery. Loose shoe laces, ragged sleeves or rolled up pants are equally dangerous.
6. In machining material, make certain it is properly secured so that it does not slip. Don't drill or machine light gauge material on drill press except with clamps or when it is held so as not to cause injury should it slip.
7. Inspect all abrasive wheels for cracks or defects before placing on spindles.
8. Do not use emery wheels out of round. On portable grinders and similar tools, make sure wheels are equipped with guards whenever possible.
9. Keep tool rest close to the face of abrasive wheels and above center whenever possible.

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MACHINE SHOP

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10. Do not attempt to operate a machine until you have acquainted yourself with operating switches.
11. Do not use file without a handle, and use it left-handed when filing work in the lathe.
12. Take the following steps when necessary to work on equipment where there is a possibility of gas being present in high concentration:
 - (a) Obtain permission from operator responsible for the equipment before starting work.
 - (b) Have proper safety equipment on hand.
 - (c) The process and mechanical foreman should personally supervise the work when it is known that a definite hazard exists.
13. In making chemical pump repairs, obtain permission from operator in charge and make sure lines are properly drained and blinded. Wear necessary protective equipment, goggles, rubber gloves, etc.
14. Stand at the side of hydraulic press when pressing off tapers.
15. When starting steam turbines, stand at the outer end of the turbine axis if possible.
16. Before working on steam-driven machinery, the machinist should see that the process operator or engineer has closed the inlet steam block valve and the steam exhaust block valves, and opened the steam cylinder drain valves.

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17. On motor-driven machinery, the service switch should be locked open and a suitable tag placed on the switch to see that the starting equipment is at the "off" position.
18. When work is done on compressor cylinder, block the flywheel or crank shaft to keep the weight of counterbalance from moving the cross head.
19. Before removing covers on compressor cylinder valves, pump valve cover plates, or pump heads, slack all cover hold-down nuts and break gasket seals to release pressure.
20. When work is to be done on any machine which has been in gas(hydrocarbon, ammonia, etc.) or light oil service, take care to keep from placing the face directly over the open parts; there may be a possibility of pocketed gases.
21. If valve repairs are necessary, valve bonnets and valves should be removed from the machine and repaired. At no time shall anyone place his hands through valve ports into the cylinder.
22. Keep aisles clear and clean in shop and material off the floor.
23. Always file off burrs left on tin after cutting.
24. Keep air hoists in good condition. Never use defective cables. Take care that cables are wound on drum in proper manner and that they do not become kinked.



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MASON SHOP

1. Do not work under any other workmen without solid covering on or over your head.
2. When necessary to cut out brick work or concrete in any processing or gaseous area, get permission from the Safety Division. Take every care to prevent striking a spark. If it seems necessary, use a stream of water on the end of the chisel, or use non-sparking hammers and non-sparking chisels.
3. Before tearing down walls or columns, see that all needed shoring is in place.
4. Cutting brick or concrete with an air hammer at a high level should be done from scaffold or platform ladder only. Use a ladder or step-ladder only when another man is present to hold it.
5. Since scaffolds used by masons must hold up heavy loads, make sure yours is substantially built and has hand rails and toe-boards if they are necessary.
6. See that all scaffold horses are well made from good material, strongly braced and resting on firm foundation - not on piles of brick or tile.
7. See that material is piled on scaffolds so that it cannot easily be knocked over.
8. When cleaning up after work is finished, rope off area where material will be dropped or thrown.

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MASON SHOP

13 - 2

9. If assigned to work in a hot flue, never take a water hose into the flue and release water. Vapors coming off hot soot can cause serious burns.
10. Wear goggles when using brick saw and when chipping bricks, tile or cement - at other times, when necessary.
11. Always lower swinging scaffolds to the ground when they are not in use.
12. Chains or wire line rather than fall ropes should be used over sharp corners.

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PAINT SHOP

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PAINT SHOP

1. Guard against poisoning from paint ingredients. Use gloves if you have an open wound or sore, even though it has been bandaged.
2. When putting up a swinging scaffold, test it by raising the platform one foot from the ground. Always inspect the tie-off rope and tie-off ring on top of the tank.
3. Swinging scaffolds must be lowered to the ground when not in use.
4. Beware of "live" wires. Don't paint on switchboards or near electrical equipment until it is approved by the Electrical Shop.
5. Do not paint hot surfaces except with an approved type of paint and upon instructions from your supervisor.
6. Spray painters shall equip themselves with approved type respirators when spray painting. Proper goggles must be worn while scraping and painting.
7. Scraping should not be carried out on any tank while pumping in or out.
8. A safety permit will be secured for all tank scraping and other preparatory work and for tank painting unless the Paint Shop foreman authorizes going ahead without it.
9. Inspect ropes, hooks and blocks before putting them into service.

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PAINT SHOP

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10. Never leave oil or paint-soaked rags in pockets of overalls or wadded up. Place all such rags in covered metal cans.

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PIPE SHOP

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PIPE SHOP

1. Men should not stand on hand rails, small lines or instrument line racks to reach elevated work unless it's necessary. Get scaffolds or necessary staging.
2. See that blocks have enough capacity to handle the load and that blocks and chain are in good condition.
3. When hoisting material or working around electric wires or equipment, call an electrician. He will advise on and place necessary protection around wires and equipment.
4. In lifting, lowering and carrying pipe, one man alone will give the signals. Keep in time with the others. Accidents happen when one man lifts or lowers a load before the others are ready. Broken toes have resulted from pipe falling due to the use of boards or other makeshifts.
5. Keep feet and hands from underneath pipe when it is lowered.
6. When stabbing, keep hands out of pipe and make sure threads are caught before letting go. In supporting pipe for make-up, keep hands clear of threads. All pipe too heavy to handle by hand should be securely blocked up.
7. Use good tongs. See that the key is sharp and the rivet tight. Tongs with defective keyways should be turned in for repairs.

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8. Make sure tongs are properly adjusted to pipe before starting the stroke. A small board pump block placed near the butts of tong handles and parallel to pipe will prevent broken toes and mashed fingers if tongs are dropped or slip.
9. Line up holes in flanges with spuds or drift pins. Keep fingers out of flange holes.
10. Use a wire brush to clean pipe threads.
11. In holding a drive wrench, stand clear of the man using the sledge hammer. Hold the drive wrench tightly, not loosely, hold the wrench at its top, pressing it down hard against the bolt.
12. Hold flange spreaders while driving. Flying spreaders are highly dangerous.
13. Do not remove blinds or break lines until operator in charge has inspected lines and approved the work. Try bleeder yourself where possible.
14. In all cases, the process foreman or someone appointed by him must be present when a line is opened.
15. An underground line whose service is not known shall not be opened until a process representative and a mechanical supervisor have approved.
16. Water lines shall not be connected to pressure vessels unless there is a check valve.

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17. Use special care when opening hot lines or chemical lines.
18. In repairing caustic or acid lines, pumps, etc., make sure that equipment has been blown out and drained. Goggles, rubber gloves, rubber aprons or suits, and, where necessary, rubber boots should be worn.
19. The man doing the upbolting shall keep himself in the clear in case the line may not be entirely empty.
20. After work is finished on acid or alkali lines, place all hoods back in position over the valves, cocks, flanges, or pumps before leaving the job.
21. Whenever it is necessary to steam out any pipe line or equipment that may be plugged - such as an asphalt or wax line - the open ends should be amply protected to eliminate any chance of a man being burned when the contents are melted out. If there is an "L" or swing on the open end, the line should be secured; backlash of steam in the pipe can cause dangerous movement.

Insulating

22. Goggles must be worn while removing, cutting or lacing up insulation, and during the handling of granulated insulation and all close inspection work. Other types of work in which goggles are necessary are named in "Play It Safe."
23. Do not stand on handrails or stand or walk on elevated pipe lines.

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PIPE SHOP

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24. Bend all wire lacing and reinforcement to prevent scratches, tearing clothing, or injury from exposed ends.
25. When working on hot lines or equipment take precautions against burns caused by accidentally touching hot surfaces.
26. Be sure all bolts are in place and tight and all test holes welded before covering any equipment.
27. Avoid tying or pulling wires overhead that might make tools slip and so injure face and hands.
28. Use care when working over condenser boxes filled with hot water. Get lumber for proper footing in all such cases.
29. Exercise extreme caution when working near electric wires or electrical equipment. Get electricians to cover lines that are dangerously close.
30. Rock wool, glass wool, or mineral wool insulation should not be handled without the following precautions:
 - (a) Wear face shield or goggles, respirator and gloves.
 - (b) Arms should not be extended too far into places where insulation is thick.
 - (c) When some of these materials get in eyes, report to the medical staff.
 - (d) If possible, start job on the windy side and work around, with the wind.

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Tube Cleaning

31. Do not remove the first plug in a still until the foreman has checked to see that the still is properly blinded.
32. The foreman and operator should be present when the first plug is pulled.
33. In mechanical cleaning, insert tube-cleaning motors in the tube end before starting, and do not withdraw from the tube until stopped.
34. In decoking, it is vital that the furnace be completely isolated from the rest of the unit through proper blinding or disconnecting of lines and use of vents. This must be checked thoroughly.
35. In decoking, the exhaust line from the furnace must be located a safe distance from the unit since carbon monoxide and sulfur dioxide fumes sometimes produced can be highly dangerous.

PROCESS CONTROL
LABORATORIES

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PROCESS CONTROL LABORATORIES

General

1. In addition to the instructions below the Process Control Laboratories' personnel should be familiar with safety regulations pertaining to the Laboratory and other refinery divisions when doing some specific work not covered by the practices below.
2. All samples and materials must be clearly labeled, initialed by the person to whom they belong and securely stoppered. Containers without labels or initials will be discarded.
3. Materials and equipment not in use must be returned to storage to avoid delay in locating them when need arises and to insure maximum working space in the laboratory.
4. Spillage should be removed immediately. Cleaning should be done with Sovasol or water depending on the type of materials involved.
5. Cylinders containing compressed gases and other equipment liable to fall and cause injury must be supported from stationary objects.
6. Keep inflammable materials at a safe distance from flames and remove them from the laboratory as soon as the work is completed. Volatile materials such as light gasoline fractions must be kept in cold storage and not close to electric equipment which is not explosion proof.

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7. Do not clean hot equipment with volatile solvents.
8. Do not pour materials which easily solidify in laboratory sinks. Acid can be disposed of in this manner only if diluted with very large volumes of water.
9. Keep the laboratory atmosphere free of fumes by proper ventilation and by using hoods as much as possible.
10. Never exceed pressure and temperature limits for which equipment is designed.
11. All leaded (dyed) gasolines must be handled by observing precautions outlined in Motor Laboratory instructions.
12. Oily rags must be placed in waste cans provided with covers.
13. Do not use rubber in contact with oil. In exceptional cases synthetic rubber (Neoprene) might be employed but connections must be as short as possible. Oil swells and dissolves rubber (and sulfur) weakening joints.
14. In diluting sulfuric acid with water, always add acid to the water and preferably use crushed ice in place of water.
15. Use face shield and protective clothing in handling strong acids, alkalies, glacial acetic acid and other hazardous chemicals.

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16. Persons working in cold rooms must wear clothing provided for that purpose and notify some other person who is under obligation to inspect every 15 minutes.
17. Persons entering hot room must leave the door open while within.
18. Use red tags for identification of all hazardous chemicals.
19. First aid cabinet may be used only when Medical Department is closed. Always report after the cabinet has been opened.
20. Do not pour any petroleum products in the laboratory sinks. Special "slop oil" drums are provided for this purpose. Solids must be put in the "skips" outside the laboratory.
21. A fresh air mask must be worn when working with fuming sulfuric acid, sulfur dioxide, or sulfur trioxide.
22. No one is permitted to work in the cold rooms when he is the only person present in the Process Control Laboratories.

Starting New Investigations

23. Every person should understand the problem on which he is working and must be familiar with the steps and precautions that might need to be taken in handling dangerous substances. Equipment should be inspected for leaks and provisions made for meeting possible emergencies.

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24. In setting up glass and other fragile equipment avoid excessive tightening of clamps to prevent breakage caused by heat expansion. In cutting glass tubing, make one mark with the file and break the tubing by protecting hands with rags, placing the file mark opposite the thumbs and pulling the tubing outward and backward. Smooth the sharp ends of the broken tubing by holding them over a hot flame.
25. Glass equipment sent for repairs must be clean and dry.
26. Apply as little pressure as possible in forcing glass tubing or thermometers. Moisten the glass tubing with water or glycerine when connecting it with rubber to provide lubrication. Carefully push tubing through the stopper until enough of it appears on the other end to start pulling. Always protect hands with rags.

Distillation

27. With glass equipment use shields and trays which may be filled with sand, to avoid injury in case of breakage.

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PROCESSING

1. Operators and pumpers must give their approval before their equipment is released for maintenance work.
2. Open valves on pressure gauges just enough to let needle register.
3. Stop leaks as soon as they are discovered. In cases where this cannot be done at once, a steam jet should be played on the leak until repairs can be made.
4. Keep oil spills washed up with water.
5. Operators and pumpers finding a large spill of inflammable liquid or gas in quantity should notify maintenance personnel in that area and ask that they stop work until the condition has cleared.
6. The operator or pumper responsible for drawing of water from tanks and vessels, drawing of samples, or venting of pumps should stand by until all valves are closed.
7. Operators will not approve connecting water lines to pressure vessels or oil lines unless there is a check valve.
8. Steam out fireboxes thoroughly before lighting gas burners.
9. Do not vent gas or light gasoline vapors to atmosphere without permission from the supervisor.

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PROCESSING

17 - 2

10. When repairs are being made to leaking lines or fitting on units in operation, a member of the Process Division should stand by until repairs are completed.
11. Do not draw oil into the sewer or on the ground from any vessel or line unless there is no other way to pump out or empty.
12. Do not have blinds removed or lines broken until lines have been inspected and approved. Try bleeder yourself where possible.
13. If, in an emergency, anyone enters a vessel or tank where lines have not been blinded, inlet and outlet valves should be protected by locking in position or by a guard.
14. Operator should check to see that the still is empty and blinded before removing the first plug from any oil tube.
15. Blind gas lines on furnaces as soon as fires are cut out. Steam furnace before removing blind on gas line and be ready to light fires as soon as blind is removed.
16. Use insulated stools or mats, where they are provided, in starting electrically driven pumps.
17. Gas compressors must be blinded off before any repairs may be made on compressor end of equipment.
18. Before blowing any agitator, the treater should notify any men repairing other agitators close by.

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PROCESSING

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19. Before opening hatches for gauging, thiefing or sampling, stand to windward so that fumes will be blown away from you.
20. Nitric and other acids should be handled with rubber protective clothing and other goggles.
21. Processing men will not go on top of tanks during electrical storms.
22. Inspect all stairways, tank tops and lines constantly for defects, and report any found. Keep off defective tank tops.
23. No one is to enter any vessel that has held oil or gases until that vessel has been properly steamed, vented and blinded and until a gas analysis shows it is safe for entry.
24. Operators must have steam hoses for fire protection at units in place at all times.
25. Men sampling or gauging sour crude or distillate tanks and any others displaying the "Poison Gas" sign must wear gas masks. A standby with a gas mask must be in the immediate vicinity.
26. When tanks are changed from sweet to sour service or vice versa, Process Division men must notify Safety Division so danger signs can be changed.
27. Pump out or displace out with water all lines and vessels before opening for repairs unless the general foreman approves otherwise.

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PROCESSING

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28. Before putting steam or hot oil through the tubes of any condenser, exchanger, or re-boiler, make sure shell side is properly vented.
29. Operators will not close or permit to be closed any tagged electrical switch without the approval of the electricians whose name is on the tag, or, in case of a shift or overtime job, by his authorized relief.
30. When starting steam turbines, stand at the outer end of the turbine axis if possible.
31. Operators should be familiar with the location of main steam valves and power switches, so that if a gasket is blown and is dangerous to approach the pump, it can be shut down. Use care, though, to choose valves that do not shut down vital operating equipment.
32. Make sure that pump bleeders are closed and discharge lines are open before starting pump handling chemicals.
33. Do not gauge acid or caustic tanks when tank cars of these materials are being unloaded into the tank.
34. Tag and identify fittings in chemical service sent to the shops so proper precautions can be taken.

Handling of Houdry Salt

35. Extreme care must be exercised at all times in the handling of the molten salt.

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36. The principal hazards involved in handling the salt are as follows:
 - (a) Personal injury, due to bodily contact with the molten salt.
 - (b) Poisonous effects and asphyxiation resulting from nitrogen peroxide gas evolved during burning of any organic matter such as wood, rags, or oil in contact with the salt.
 - (c) Fire hazards due to contact of molten salt with organic matter.
37. Goggles shall be worn whenever handling salt in a loose or crystalline form.
38. Asbestos or fireproof gloves must be worn in all cases when it is necessary to handle any equipment containing or covered with molten salt.
39. In any case where cold salt, either in loose or solid form, contacts the skin, wash the affected parts immediately with water.
40. If molten salt should contact the skin or clothing, wash the affected parts with large quantities of water. Remove any salt saturated clothing immediately and wash it with water.
41. In case salt gets into the eyes, submerge the face in water (water tub or in stream from drinking fountain) and blink the eyes rapidly.
42. The presence of nitrogen peroxide gas may be detected by a rather sweet odor or by a LIGHT YELLOW OR ORANGE COLOR OF FUMES WHEN

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IN LOW CONCENTRATIONS AND PROGRESSING TO A REDDISH BROWN WHEN IN HIGH CONCENTRATIONS.

43. Fumes evolved from the burning of any organic material in contact with the salt may contain nitrogen peroxide gas in concentrations sufficient to cause asphyxiation if inhaled.
44. Leakage of oil into the salt system in the catalyst cases will produce nitrogen peroxide which will appear in the exhaust from the salt system evacuation ejector. Any evidence of such fumes should be reported to the Plant Foreman at once.
45. The salt is a very rapid oxidizing agent, hence any organic materials may be ignited immediately upon contact with it and rags or clothing may spontaneously ignite if they are rolled or wadded up in a tight bundle after having been contacted with the salt, either in molten or crystalline form. Keep any such material separate and see that the salt is thoroughly washed off before disposal.
46. Use all precautions possible to prevent the molten salt from contacting any organic materials.
47. Never use rags for wiping any equipment which has been in salt service, but wash the equipment thoroughly with water.
48. Wash all salt spills immediately with water.

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PROCESSING

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49. Icicles of salt should not be allowed to hang from the case structure. They should be broken off frequently to prevent their falling and causing any injury upon striking a person.
50. All pieces of salt should be placed in a separate container located in the case area. No other refuse, such as oily rags, should be placed in this container.

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NOTES SECTION

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RIGGING SECTION

1. All equipment - and especially guy lines and load lines - should be checked by the rigger on the job before operations start.
2. Keep a look-out available to warn employees from walking under suspended loads. Rope off working areas when near processing equipment.
3. When riggers call for transportation equipment, operators of that equipment will take signals from the rigger in charge.
4. Rope should be protected with pads or blocks when taken around sharp edges.
5. Hand lines must be fastened to the load itself so its movements can be fully controlled.
6. Rope guy lines and gin poles should be left in safe condition when leaving the job.
7. Gin poles should be equipped with cables instead of ropes where fires are likely to occur or where they are exposed to acid spills or fumes.
8. Rope that has been contaminated by acid or alkali or has been highly heated should be tagged before it is returned to the rigging loft.
9. When using rope for snubbing lines, do not snub against sharp edges or points.
10. Do not use chains on loads.

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RIGGING SECTION

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11. When using chain blocks, check their capacity before lifting loads. Do not overload.
12. When using jacks, keep your head away from the lever.
13. Never fasten snatch blocks to a live line, or let loads rest on a live line, or put any stress on equipment in operation. If in doubt, check with the operator.
14. Air hoist operators must avoid putting hands on cable feeding to drum. Use a stick or have someone stand in front to guide the cable if cable piles up.
15. Be sure that air tuggers and snatch blocks are fully lubricated before using them on the job. Never run a dry cable on an air hoist.
16. Check permanent rigging equipment on units carefully. Lubricate cables to avoid abrasion before operating equipment.
17. Check with the Electrical Shop before placing guy lines over hot wires.
18. Only one man will give signals on a job-the rigger in charge. Don't relay signals unless it's necessary.
19. Make a thorough inspection of tank roof ring bolts and vents before using them to support men or equipment.

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STANDARD

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STOREHOUSE

1. Only authorized personnel are permitted to operate lift trucks.
2. Due to the storage of chemicals in the east section of the Storehouse, special attention to the problems of fighting fires in that area is necessary. Fires in this portion should be regarded as potentially hazardous because (1) fumes from some of the chemicals, when burned, are highly irritating and toxic, and (2) there are chemicals present which - when mixed under certain conditions - could produce an explosive fire. Fires in the chemical warehouse should be put out as quickly as possible. If a hand extinguisher is not enough, use a fog nozzle with a fine spray.

Here is the procedure to follow:

- (1) Enter south door No. 1. Gas masks are located close to the material counter.
- (2) Enter chemical warehouse through the 10' door in the fireproof wall dividing the two storerooms.
- (3) Switchboard for lights is at the southwest door (inside) of the chemical warehouse.
- (4) Fog nozzles with 150' of $1\frac{1}{2}$ " hose are located at each of the two east doors (outside on platform).
- (5) All outside doors and windows of chemical storeroom should be kept closed except that the south doors may be partly opened when fumes are slowing down fire fighting.

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STOREHOUSE

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- (6) Inflammable gasoline inhibitors are located in the center section of the east aisle. Watch these closely. Move them out the south end of the building if it seems necessary.
 - (7) The northwest corner of the chemical storeroom contains Houdry Sovac salts - surrounded by inert material. Keep away from this section as much as possible in a bad fire.
 - (8) A fine spray with fog nozzle is recommended for all chemicals.
3. Good housekeeping is essential in all sections of the Storehouse. Packaging materials must not be allowed to cause unnecessary clutter.

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TRANSFORMER

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TRANSPORTATION SECTION

Shop Safety

1. Flat-based stationary jacks should be used on all repairs when the car must be hoisted. Don't use wood blocks or other substitute material.
2. Use the special equipment provided for hoisting equipment from vehicles. Don't use knotted chains or ropes.
3. When motors are being lowered into vehicles, no one should be under the engine section.
4. In raising a car by means of a hydraulic jack, have no one under the car.
5. Do no welding on gas tanks with the tank in place. Remove it. Be sure fuel pump and carburetor are drained before removal.
6. Necessary protective equipment must be worn when welding or burning.
7. Carbon monoxide is deadly. Make sure working area is well ventilated in the cold months.
8. Motors should be cut off before making repairs except when necessary to locate or fix trouble. Cut engines when greasing.
9. In cranking vehicles, retard spark and make sure gears are in neutral and emergency brake is on. Use the safety grip. Pull up on the crank.

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TRANSPORTATION SECTION

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10. Before changing tires, always let all air out. When inflating a tire on a split-rim, don't stand directly in front; hold the hose with one hand with the body being protected by the truck or car.
11. Before putting gasoline in vehicles, be sure motor is shut off. When filling storage tank for service stand, the filling must be supervised by shop or section foreman.
12. Don't use gasoline or naphtha for cleaning.
13. Oil or grease spills should be cleaned up at once because of danger from drivers stepping out and slipping on it.
14. See that trailer is properly blocked before coupling and uncoupling with vehicle. The driver should supervise.

Yard Operations

15. When loading heavy equipment, turn motor off, set the hand brake and put the gear in reverse.
16. Drivers will not permit any riders on tail-gate trucks.
17. When operator leaves bull-dozer, he should lower the blade to the ground.
18. When working with lines on cranes, see that tension is off the boom at all times. Before doing any excavating, check with either the engineer in charge or the job's supervisor on the location of underground lines.

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19. All blocks should be laid flat when changing lines or blocks.
20. When operating equipment near electric lines, operate boom no closer than 10 feet except with permission of the Transportation Section's foreman.
21. Equipment for tying down draglines and bulldozers on low-boy should be inspected by the operator after each use. Such equipment should be used only for this purpose.
22. Traveling blocks, slings and all other equipment used on cranes should be checked by the operator at least once every 30 days.
23. Signals to lifting equipment operators shall be given by the hooker except when equipment is ordered by the Rigging Section, in which case the rigger in charge will give signals.

Traffic Regulations

24. Yard speed limit is 15 miles per hour, except where otherwise designated.
25. Drive slowly when passing units that are down for repairs, at all intersections, and during shift hours when pedestrian and vehicular traffic are heavy.
26. All traffic signs and signals must be observed.
27. Sound horn at blind corners and when passing pedestrians, bicycle riders and automotive vehicles.

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TRANSPORTATION SECTION

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28. Keep safe distances behind vehicles, at least two-car lengths.
29. Do not drive with defective equipment; lights, brakes, steering apparatus and horn must be in good condition. Report for repairs immediately any defective equipment.
30. Guard against hauling overhanging material on truck beds. When in doubt, check with supervisor so that material can be rearranged or flagman used while hauling overhanging material.
31. Do not park or stop on roads if vehicle interferes with traffic. Whenever possible, park in designated areas.
32. Do not enter restricted limits of units if in operation unless permission is granted from operator.
33. Do not remove road blocks or detour signs.
34. Stop before crossing railroad tracks where locomotive cannot be observed at safe distances.
35. All persons must be seated while riding in trucks. Feet and legs must not hang over truck side or back ledge.
36. Maximum number of passengers will be specified on each truck. Do not overload.
37. Only one person besides driver will be allowed in cab of truck.

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TRANSPORTATION SECTION

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38. Drivers are responsible for designated number of men to ride on each class of truck.
39. Truck driver helper will ride on rear of truck and notify driver of excess riders or any infringement of rules.
40. Temporary seats are to be removed from trucks while delivering material.
41. Do not pass trucks that are taking on or discharging passengers.
42. Each driver must be familiar with all posted rules and regulations covering traffic in refinery.
43. Report immediately any infractions of rules to Safety Division and Transportation Section.
44. All employees should assist in the enforcement of the rules and regulations laid down for traffic inside the Beaumont Refinery.
45. Be safe, exercise caution at all times. Distraction while driving may cause an accident.

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WELDING SHOP

1. Burners and welders shall wear goggles, helmets or shields with an approved type of dark lens to protect themselves against harmful light rays and sparks.
2. Only experienced men should operate acetylene generator. Keep open flames away from it. Make certain that the generator is filled with water at all times.

Acetylene or Propane Burning and Welding

3. Oxygen cylinders should not be stored near combustible material. Acetylene, oxygen and propane cylinders should not be stored near stoves, radiators or furnaces. Heat will increase the pressure; it can melt or blow the safety plug with which all cylinders are provided.
4. Do not store oxygen cylinders in a closed place with acetylene or propane cylinders.
5. Store cylinders away from working areas. Keep only enough near the work to insure an adequate supply of gases for the job at hand.
6. Cylinders should be kept far enough away from the actual welding or cutting operation so that sparks or flame will not reach them.
7. Cylinders should not be left near furnaces or other hot equipment overnight. Move them a safe distance away.
8. Secure cylinders so they cannot be knocked over.

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9. Place cylinders so their valves can be reached quickly.
10. Close cylinder valves during noon hour, at the end of the shift and when the job is finished.
11. Close cylinder valves tightly when bottle is empty.
12. Do not move cylinders without first removing the regulators, unless they are to be carried on an approved carrier. Place caps back on cylinders after removing regulators.
13. When lifting either acetylene, oxygen or propane cylinders with a crane or derrick, use a cradle. Never use slings.
14. Stand acetylene or propane cylinders on end.

Oxygen-Acetylene Operators

15. Keep equipment and valves in good order; leaking gas is a fire hazard.
16. Close defective valves on oxygen, acetylene and propane drums, then tell supervisor of defective valve so cylinder can be repaired. When cylinders are not in use, replace caps.
17. Do not hammer on any kind of drum valve to open or close.
18. Open cylinder valves slowly; be sure that pressure adjusting handle on regulators is fully released.

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19. Leave acetylene gauge wrench in place on the cylinder at all times while in service.
20. Do not try to thaw out frozen acetylene or propane tank valves with a flame or hot iron. The safest method is to use steam or hot water.
21. Make sure that torches, regulators and hose are in good condition and that all connections are tight.
22. Do not force on connections which do not fit.
23. When a new cylinder is connected to the apparatus, always open the blow-pipe valve long enough to expel any air from both hoses before lighting.
24. Blow out drum connection before attaching regulator.
25. Keep hose clear of falling hazards; do not allow hose to become a tripping hazard on stairs or sidewalks.
26. Allow no material to be put on top of a hose while it is in service. In crossing walkways, carry hose overhead or supply protection for the hose.
27. Do not use matches to light the gas blow-pipe. Use approved lighters.
28. Shut off valves on torch immediately after a backfire - first, the oxygen, then the acetylene. Check valves to see that gases are shut off when torch is not in use.

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29. Keep oxygen away from oil or grease. Oil or grease in the presence of oxygen under pressure will burn violently. Oily or greasy materials should be kept away from cylinder valves, couplings, regulators, hose and apparatus. Do not handle oxygen cylinders and apparatus with oily hands or gloves. Oxygen cylinders should never be placed in a position where oil or grease is likely to fall on them. A jet of oxygen should never strike an oily surface, greasy clothes, or be allowed to enter any vessel containing oil or gas.
30. Never use oxygen as a substitute for compressed air.

Burning, Welding, Cutting and Hot Work

31. Cover sewer catch basins or openings if your hot work job is near or above them.
32. Articles placed on welding table or jacks should be well braced and laid out to prevent falling from table.
33. When cutting with acetylene or propane flame, protect legs and shoes from hot metal.
34. Keep flames, sparks, molten slag, and hot metals from coming in contact with materials that burn or explode.
35. Vent and gas-free all hollow objects before applying heat.
36. Do no cutting or welding using an improvised work bench - such as a barrel or drum.

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37. Wear a fume respirator if objectionable fumes are produced from welding or burning on brass or other metals.
38. When welding galvanized or monel metals, control fumes so they will not be inhaled by the operator - or use approved safety equipment provided.
39. Whenever possible, when working at a height, weld from scaffolding.
40. If welding or cutting is to be done in a hot still or tower or where there is any likelihood of the hose being cut or burned, insulate with another material to protect it.
41. When working in a closed space, see that no compressed gas or oxygen escapes into that space. Leakage of compressed gas can mean an explosion. Free oxygen easily absorbed by clothing, and later contact of a spark with clothing may result in serious burns.
42. When working in a closed space, always have someone present who knows how to close the cylinder valves and can render help in case of emergency.
43. Never take cylinders inside of towers or vessels in which work is being done.
44. When work is being done on the inside of a closed vessel and operator leaves the vessel for noon hour, end of shift, or end of work, he should first shut off torch valves and then remove torch and hose from inside vessel.

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Electric Welding

45. Temporary power lines to portable arc welding machines must be carried overhead.
46. Arc welding sets shall be located in places free from vapors. When placed within the battery limits of operating equipment, the location shall be approved by the process operator in charge of the equipment.
47. Before plugging in or removing the 440-volt connection, open the power line switch to prevent a flash. Take care to see that the 440-volt plugs are dry and that all cable sections are properly joined and dry. When operations are stopped during the shift or at the end of a work day, turn power line switch off and disconnect power line switch at pole. During noon hour and temporary shut-downs, stop the motor on the welding machine. Do not handle the 440-volt lines without a safety stool.
48. Electric welding units (not gasoline-driven units) must be grounded through the frame of a rod driven in the ground. This connection need not run to the object being welded, as it is for the 440-volt side of the welding unit.
49. When using gasoline-engine driven generators, check with the Safety Division before locating them.
50. Portable welding units should not be moved until the power is shut off at pole.

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51. Machine grounds should not be made to hand rails, steps, or to projections from receiving houses, pump houses, or any active gas, oil, steam, air, or chemical line. Grounds should be made the shortest distance from the job. Work grounds should be made to the object being worked on when within the battery limits of operating equipment in service.
52. When dragging cables, take care that insulation is not cut by sharp objects.
53. Keep welding cables as dry as possible at all times.
54. Wear gloves to protect the hands from burns caused by the splatter of metal.
55. Use protective devices to avoid burns from hot scale.
56. In electric welding, all parts of the body should be covered to prevent skin burns from ultra-violet rays.
57. Where electric arc welding is done in the vicinity of other employees or in the path of traffic, the operation should be surrounded by approved shields to avoid eye injury to possible onlookers.
58. When cutting or welding in high places - and falling sparks and metal endanger men or equipment - provide a method of catching sparks and metal.

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WART

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WHARF

1. All vessels shall be grounded. Ground shall be maintained until after cargo hose is removed.

A. The following is the exact procedure for connecting and disconnecting the static wire:

(1) When connecting hose:

- a. See that switch is open.
- b. Connect static wire to ship.
- c. Close switch .
- d. Connect cargo hose.

(2) When disconnecting cargo hose:

- a. Disconnect and remove cargo hose from ship.
- b. Open switch.
- c. Remove static wire from ship.

2. During loading and discharging warning signs shall be displayed:

A. Warning sign at gangway

DANGER
THIS VESSEL HANDLING PETROLEUM
NO FIRES
NO SMOKING
NO VISITORS

B. Red warning signals

A red flag shall be displayed by day; an all-around red light shall be displayed at night.

3. Scuppers should be properly plugged before

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vessel is ready for loading and should remain so during the entire time that cargo is being loaded or discharged.

4. When loading, discharging, ballasting, or cleaning tanks, all main deck doors and ports to quarters shall be kept closed. Upper deck doors and ports facing the main deck also should be kept closed when possible.
5. Tank covers should not be opened except under the supervision of the officer in charge. At all other times tank covers should be closed while transferring cargo.
6. No ullage holes should be opened or remain open without flame screen arrestors, except under the supervision of the officer in charge. At all other times these openings should remain closed.
7. At all times when vessel is at wharf it should be moored so as not to endanger either wharf, hose or vessel.
8. A representative of the wharf should be in constant attendance on the dock at all times when a vessel is transferring cargo.
9. When proper connections have been made and the ship's officer has notified wharf representative that valves are checked and the vessel is ready for cargo, the wharf valves shall be partly opened. Loading should start slowly and one grade at a time. When it is seen that loading is going correctly, then the wharf representative should be notified to load at maximum safe speed. When pressure is being built up on hose, all joints should be watched for leaks. Pumping pressure

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should not exceed 100 pounds pressure on hose.

10. Transfer of cargo and ballast at the same time is prohibited except in an emergency or with the full knowledge of the wharf representative, master of the vessel and the Safety Department.
11. Loading or discharging bulk petroleum products or ballasting after carrying Grades A, B, or C products is prohibited during severe electrical storms.
12. Over-all loading of Grades A, B, or C cargoes is prohibited. All other grades, including lube stocks, must be with the full knowledge and consent of the wharf representative, master of the vessel and the Safety Department.
13. All loading hose which has carried kerosine or lighter products shall be displaced with carbon dioxide.
14. Package freight shall not be loaded or discharged during the transfer of Grades A, B, or C products except with the full knowledge and consent of the wharf representative, master of the vessel and the Safety Department.
15. All repairs to be done with strict adherence to the United States Coast Guard laws, and in conjunction with the wharf safety rules and regulations, and then only with the full knowledge of the wharf representative, master of the vessel and the Safety Department.
16. Every effort shall be exercised to prevent tugs or other craft from coming alongside or within 50 feet of a vessel which is transferring inflammable or combustible products. Should this be necessary, all loading in the vicinity will stop.

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MAGNOLIA PETROLEUM COMPANY

A SOCONY-VACUUM COMPANY

REFINING DIVISION

BEAUMONT TEXAS

U.S. PATENT OFFICE

YOU BET YOUR LIFE

AN OPEN LETTER TO YOU:

This booklet is free, but quite likely it's among the most valuable you will ever have. It contains the cream of the safety knowledge at the refinery, skimed off and served with a little humor to flavor it. Always Magnolia has felt a moral responsibility to see that its work is carried on as safely as possible, and this manual is evidence of that desire. In asking that you thoroughly acquaint yourself with its contents, Magnolia feels that it is doing no more than discharging its duty, both to you and to your fellow workers.

Sincerely yours,



A Manual of Safe Practices
MAGNOLIA PETROLEUM COMPANY
BEAUMONT REFINERY
BEAUMONT, TEXAS

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COESL

LIKE A LOT OF OTHER THINGS.....

.....SAFETY IS INTERESTING



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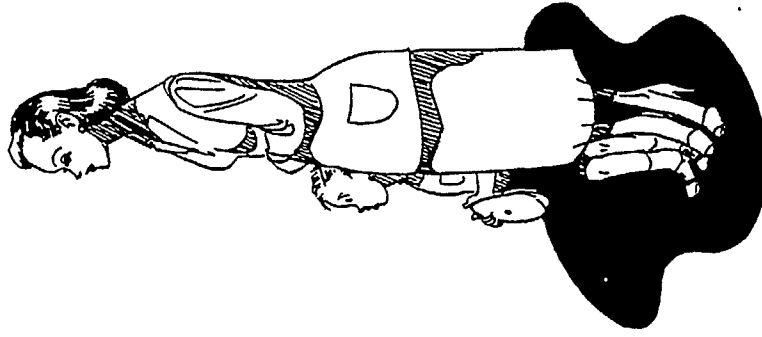
Safety Interesting?

HERE'S WHY!

Safety is interesting because it's *your* safety!

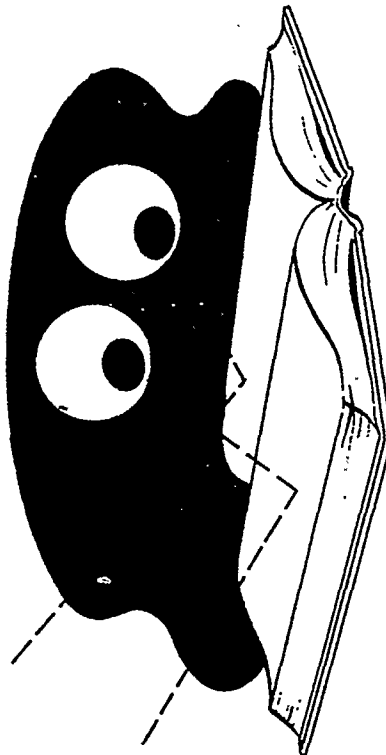
•
Your wife and kids, if you have them, are interested in your safety too. Your ability to care for them in the future is determined by how well you take care of yourself now.

•
And Magnolia wants you to be safe. Purely as a matter of dollars and cents, which it isn't, your ability to work without frequent or serious accidents or ill health is important to the Company.



io, among other things, it:
 Provides protective equipment;
 Investigates the causes of accidents, and
 Eliminates them if it can, or
 Tells you about them so you can be alert.

BUT THE GUY THAT REALLY SAYS
 WHETHER YOU'LL BE SAFE IS THE GUY
 WHOSE EYES ARE SKIPPING OVER THIS
 NOW.



Accidents cause flat pocketbooks and worse.
 So, though we may joke a bit, we're serious—dead serious—when
 e say

IF YOU DON'T KNOW WHAT'S IN THIS BOOK, YOU BET
 OUR LIFE.

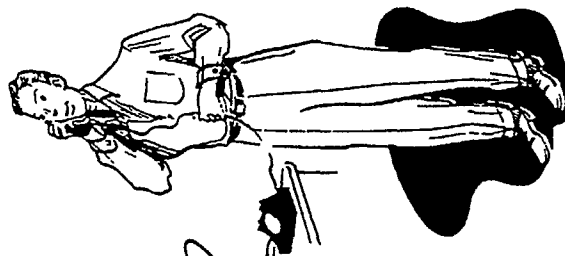
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SAFE CONDUCT

What To Do In An Accident Emergency

If you're hurt at the plant, no matter how slightly. . . .
 Go to the Medical Department for treatment.
 (If you can, tell your supervisor where you're going or leave word
 with someone working near.)
 If anyone near you is hurt. . . .



Have some person call the Medical Department and render first aid at once. (See Page 52 for a brief discussion of first aid.) At night, call the telephone operator, ask for the night superintendent and tell him of the accident, meanwhile beginning first aid treatment.

If you feel sick. . . .
 Tell your supervisor and ask permission to go to the Medical Department.

Defective Tools and Equipment

Skill is quite frequently just knowing the short-cuts that help you do a job better and more easily. But there's one short-cut that brands the unskilled—deliberate use of defective tools and equipment. There are thousands upon thousands of equipment items of all types and sizes at the refinery. Some are bound to go bad.

Magnolia stands ready to replace defective equipment, but it must first know about it. That's your job.

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Railroad Cars and Tracks

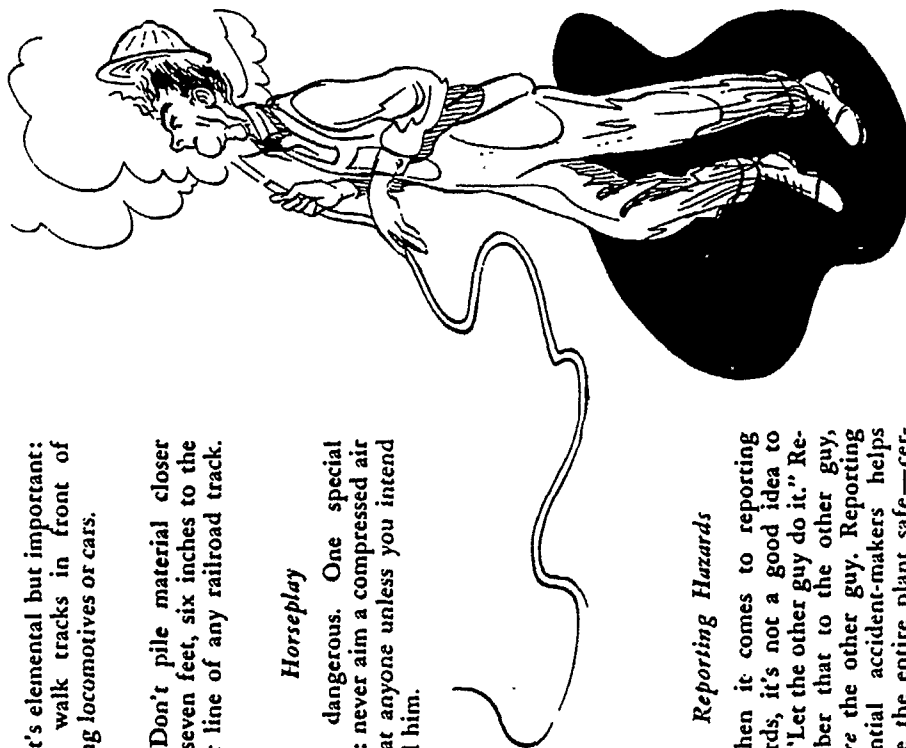
1. Never climb over them, crawl or sit under them, or, except at the loading racks, pass between them when they are standing close together on the same track.

2. It's elemental but important: Don't walk tracks in front of moving locomotives or cars.

3. Don't pile material closer than seven feet, six inches to the center line of any railroad track.

Horseplay

It's dangerous. One special point: never aim a compressed air hose at anyone unless you intend to kill him.



Reporting Hazards

When it comes to reporting hazards, it's not a good idea to say, "Let the other guy do it." Remember that to the other guy, you're the other guy. Reporting potential accident-makers helps make the entire plant safe—certainly, to your advantage.

—5—

If you can remember this one rule, and will follow it, you will have done your share in making the plant safe:

DON'T USE DEFECTIVE TOOLS OR EQUIPMENT. INSPECT ALL WORKING EQUIPMENT THOROUGHLY AND REPORT DEFECTS TO YOUR SUPERVISOR.

Don't try to "get by" or short-cut by using material you know to be defective. It never has and never will pay out.

Falling Objects

1. Be constantly alert for overhead work. That's your best defense. But in any case, don't stand under suspended loads.

2. Wear your hard hat as a habit, whether you think you need it or not.

3. For the other guy's sake, don't leave tools or material on scaffolds or other places where they can be knocked off. And stop others from dropping or throwing objects from such places.

Pipe Lines

Before starting work on lines, find out if they have been in acid, caustic or hot oil service. If they have, get specific instructions from the supervisor of the equipment involved.

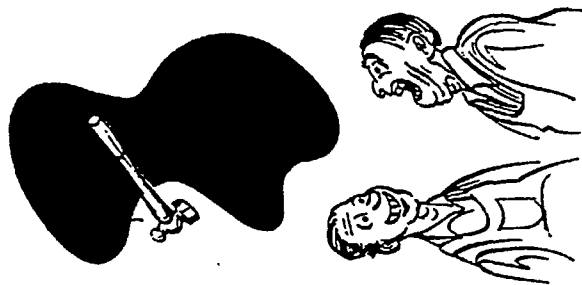
Guy Lines

Warn everyone against walking near guy lines you know are holding a strain.

Venting of Hollow Objects

Before heating any hollow object, provide for the free escape of air and gas.

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Lifting Heavy Material

There is a wrong way and there is a right way to lift. This is the long way.

Note that the strain of lifting is being put on the back and stomach muscles, which are strong but can't take that kind of treatment. Lifting is way can and does cause hernia and injured backs.

Here's the right way to lift. The full weight is being borne by the leg muscles, while the back is very nearly straight.

TO LIFT PROPERLY, STRAIGHTEN THE LEGS AND NOT THE BACK.

Of course, if the load is too big or too heavy, don't lift it. Get help from somebody else or use a hoist.



WRONG

RIGHT

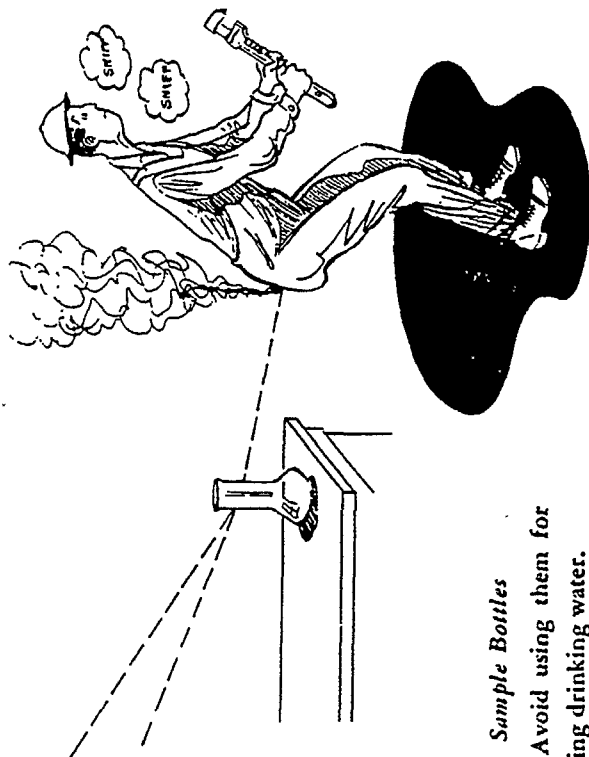


It happened here: Working inside a tower, an employee lifted an iron plate in the wrong manner. Result: a wrenched back and 17 days off.

Talking At The Wrong Times

There are jobs at the refinery that demand every last bit of concentration on the part of the doer. Electricians, for instance, in working around switchboards, motors and generators, sometimes need quiet and rest of it.

When distraction is dangerous, keep quiet.



Sample Bottles

1. Avoid using them for carrying drinking water.
2. Don't place sample bottles, either empty or containing light products, where they might act as burning glasses and focus the sun's rays on something burnable.

Gasoline Dumping

Never empty gasoline in sewers or on the ground.

Gas Cylinders

Keep caps on compressed gas cylinders at all times when the cylinders are not actually connected to equipment.

Electrical Storms

Don't go on top of tanks during storms. Stop all loading or unloading of tank cars and tankers while the storm is displaying lightning.

SPEAKING OF CHEMICALS

The main rule of safety in working with chemicals is to know what you're dealing with, how to handle it and what protective equipment to wear. Take time to get this information *in advance*.

It happened here: The employee didn't know there was pressure on the line when he loosened the band union. There was. Acid sprayed on his legs and caused him to lose 15 days.

1. If it's acid, ammonia, caustic soda, litharge, tetraethyl lead, hydrogen sulfide, cresylic acid, phenol or a similar chemical always get specific instructions from your foreman or supervisor.

2. Always wash your hands before handling food or tobacco if you have been working with lead or lead compounds.



3. Know where the antidotes for chemical burns are placed. You'll find acetic acid at all units employing caustic, a solution of sodium bicarbonate where there is a chance of acid burns, and alcohol for phenol and fural contact. And this is highly important: DON'T USE ALCOHOL IN THE EYES FOR ANY KIND OF BURN.

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4. If you get cresylic acid-phenol on your skin, wash it off immediately with alcohol. If there is a lot of it, use a safety shower, removing your clothes while under the shower and washing yourself thoroughly.

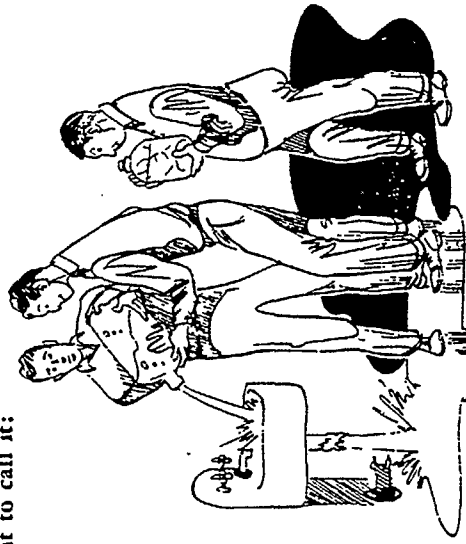
5. Place red tags on all samples of sulfuric acid, caustic, cresylic acid and all other causers of chemical burns. Handle such containers with care.

6. Tag and identify equipment in chemical service sent to shops so repairmen can take proper precautions.

7. If you're dealing with mercury, remember it can be harmful. Don't handle it with bare hands or heat it in open containers. And be careful not to pour it into drains; it does things to brass fittings.

8. Never place caustic or acid solutions in galvanized iron drums. They attack the drums and weaken them so that they may come apart.

And this last and highly important advice, suggestion, rule or whatever you want to call it:



NEVER WORK ON ANY EQUIPMENT CONTAINING CHEMICALS UNTIL THE OPERATOR IN CHARGE OF IT HAS GIVEN APPROVAL.

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HANDLING ELECTRICITY

The refinery has a skilled corps of electricians. No matter how good you are at rigging up extension cords for Aunt Susie's waffle iron, you can't be safe if you attempt to repair or adjust plant electric lines and equipment. Always call the Electrical Shop. That's so important it's worth saying again. Always call the Electric Shop.

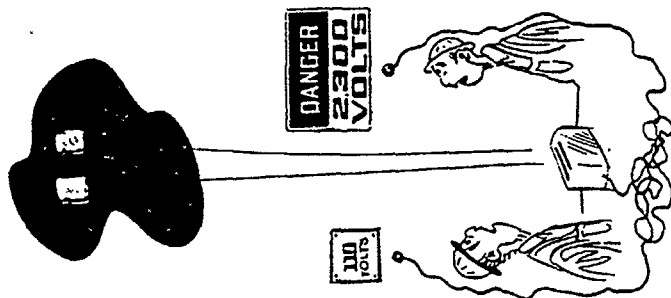
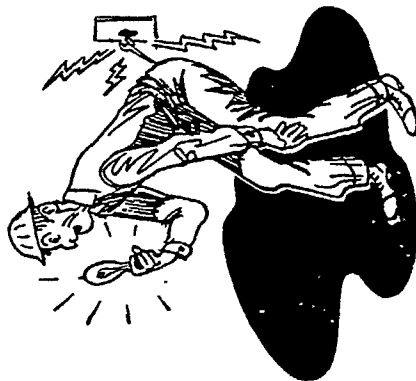
This must be emphasized, too:

If you're not an electrician, *don't attempt to find out whether a line is live or dead*. Consider it live and you'll stay that way. Remember that insulation on a wire is no guarantee it will not cause death.

And these special points:

1. If you are near when someone comes in contact with live wires or cables and he is unable to get free, don't attempt to pull him away with your bare hands. Shut off the current, if possible, and protect your hands with rubber gloves. If they aren't available, put thick folds of dry cloth over your hands before trying to get the victim free. If the wires are directly on top of him, use a dry stick to lift them off.

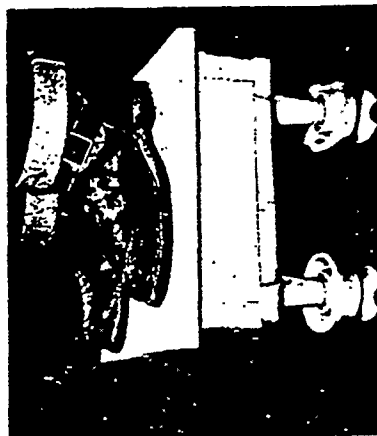
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2. Report defective wiring or electrical equipment to your supervisor at once. The next guy's eyes may not be as good as yours.

3. You're not permitted to change fuses unless you're authorized to do so and have been shown how. In case of emergency—but only after you are authorized and instructed—you can change cartridge-type fuses up to and including 440 volts. In any other case, call an electrician.

4. Vapor-proof globes aren't to be removed for any purpose except for cleaning, or by those authorized to replace them. But get burned-out globes replaced at the first opportunity.



5. Don't open explosion-proof fixtures without authorization.

6. Use a safety platform or rubber mat when starting and stopping electric motors not equipped with push-button starters.

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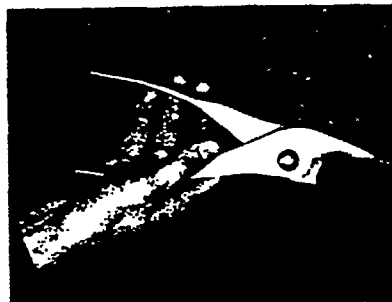
TOOLS

You can get hurt with tools in two ways: by using defective tools and by using tools the wrong way. Let's talk about the first first.

The refinery supplies you with all the small tools you need to carry on your work. Should any of these be defective from either wear or breakage it's easy to get them replaced. Just go to your supervisor and fill out with him a small form reporting the tool's condition. He will give you a slip that you can take to the Central Toolroom, which will issue you a replacement.

It happened here: The wrench was defective and should have been repaired properly or replaced. But the employee took it into a shop to dress it himself on an electric grinder. Inexperienced, he caught his finger between the wrench and guard on the machine. Result: amputation.

If you lose a tool, go to the general foreman and go through the same procedure. You may be required to pay for the tool depending on the circumstances.



The point is, having good tools and the right tool for the job can save you far more effort—and grief—than the time needed to turn in broken or worn tools or in getting a replacement for a lost tool.

It's a fact that a number of injuries occur at the plant each year because men have postponed getting good tools of the right kind. Trying to "get by" is dangerous—and also doubles the work.

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Experience with tools shows that the following rules, if followed, would have prevented a number of pretty painful and sometimes serious accidents:

1. Don't use any open-end wrench in any place where a box wrench can be used. Light wrenches of any kind shouldn't be struck with a maul or hammer.
2. Never place the jaws of an open-end wrench into the jaws of another to secure leverage.
3. Chain tong jaws should be sharp; keep 'em that way.

It happened here: An employee was tightening the nuts on a flange with an open-end pin wrench. A slip made the wrench hit his left eye—off 11 days.

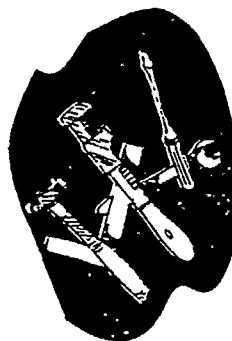
4. Keep all cutting tools in good condition so there's no chance of slipping.
5. Avoid overloading of chain blocks and hoists.
6. Electric and air tools should be disconnected from their source of power when not in use.

7. Take a good look at the couplings and hose connections of pneumatic tools to see that they are properly attached and in good order.

8. Never forget to stand clear if you're holding anything on which a sledge-hammer is being used. Check in advance which way the head of the hammer would go should it fly off, and stay out of that path.

9. Don't use gloves when operating power drills.

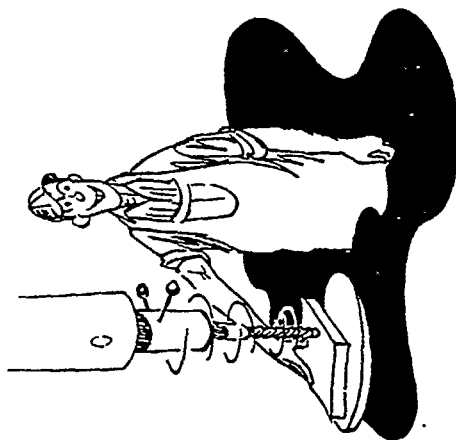
10. If you must drill light gauge metal with a power drill, hold it in such a way that when the hole is completed the edge of the metal will not be spun into your hand.



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11. Be careful of clothing around power tools. Rolled-up sleeves are especially dangerous. So are loose or frayed cuffs, either on shirts or trousers.

12. Use non-sparking tools where inflammable gases may be present. Examples: excavating gasoline leaks, repairing lines or equipment containing gasoline or gas

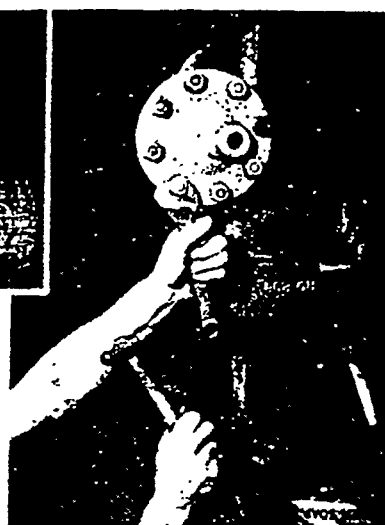


"Boy I'd give my right arm to meet that new nurse."

vapors, working around gas plant and light oil loading racks. Tools available include wrenches, hammers, chisels, diamond points, shovels, scoops and wedges. If they aren't available, and if it's absolutely necessary to use the other type, play a water hose on the tool while it is being used.



"He isn't kidding!"



WRONG USE OF TOOLS

1. Using box wrench or piece of pipe as "extra man" is always good for a few laughs from the hospital bed.

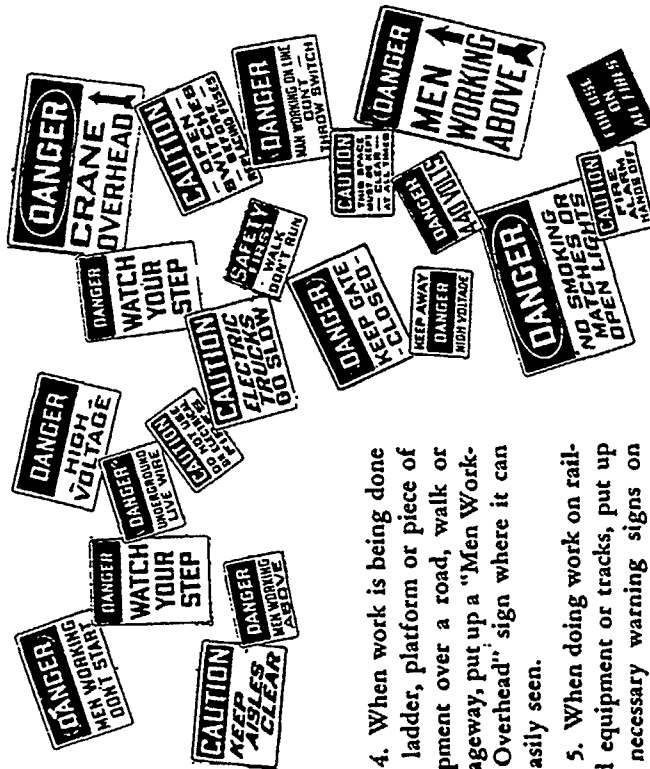
2. Banging on mushroomed chisel head can be fun. A strong man can drive a chip into his arm in one lick.

3. Using screwdriver like this is always gay. fun here is in pushing the screwdriver through your hand.

4. A peach of a way to break a wrench, bust your knuckles and stick the jagged end in your arm is to use a hammer on an adjustable wrench.

GUARD RAILS AND WARNING SIGNS

1. Either guard all excavations or cover them with planks so as to prevent anyone from stepping into them. Use the proper warning signs.
2. If you must make an opening in a handrail, don't leave it unguarded. A tight rope should be made fast across the opening. Replace permanent handrails and guard rails as soon as the need for the opening is past.
3. If you remove a cover from a manhole or floor pit, see that it is replaced or properly guarded if it has to be left open.



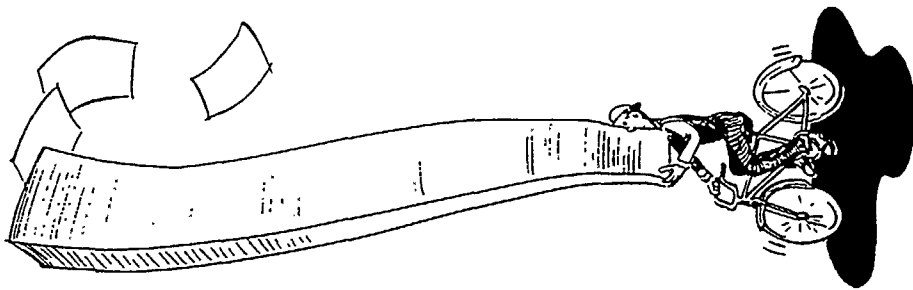
4. When work is being done on a ladder, platform or piece of equipment over a road, walk or passageway, put up a "Men Working Overhead" sign where it can be easily seen.
5. When doing work on railroad equipment or tracks, put up the necessary warning signs on the open end of the track.

BICYCLES

1. Drive on the right side of the road.
2. Avoid carrying heavy or awkward-sized bundles or fragile material in your hand.



3. Don't ride double on a bicycle any time any place. (Granmar's bad, but the idea's good!)
4. Park your bicycle out of traffic lanes. Use bicycle stands where they are provided.
5. Give the right-of-way to the pedestrian. Get off and walk rather than force a walker off his path.
6. Riders must avoid traveling two or more abreast.



LADDERS

Ladders can be highly treacherous but they need not be. Use good sense with them and you'll probably never regret using one.

Here are the plant's rules for the safe use of ladders:

1. Ladders other than step-ladders should be securely fastened whenever used. Lash them at the top and at the bottom if there is a possibility of slippage.
2. Check the condition of your ladder before using it. Stay away from patched-up ladders unless the workmanship and materials look good to you. Test the rungs thoroughly. Incidentally, it's a good idea to put a weight of twice your own on the rungs every now and then.

It happened here: An employee was putting steam in a salt drain under a case structure. Not secured, the ladder slipped. A broken heel took him home for 174 days.

3. In going down a ladder, face it and keep a firm hold.



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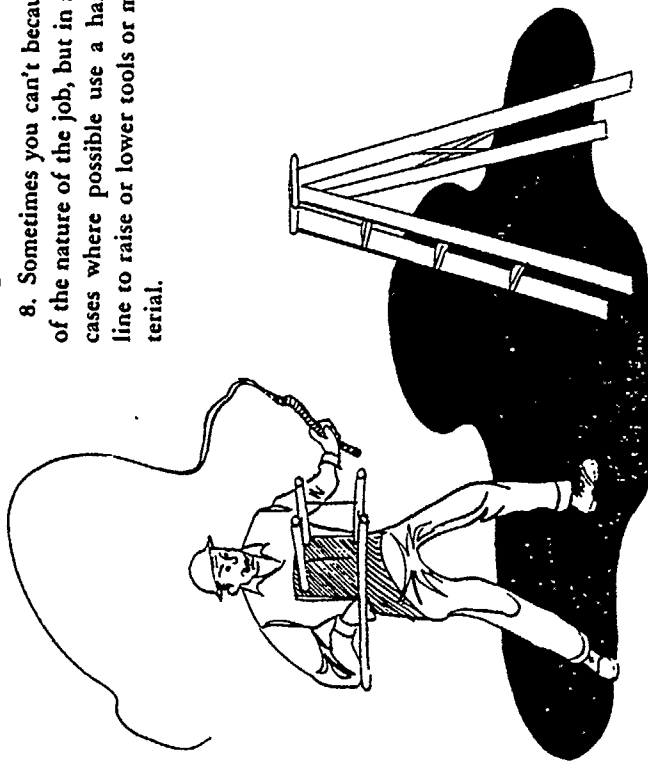
4. Don't load up your hands with tools or material when either going up or down a ladder. You know best whether you are dangerously insecure.

5. Ladders shouldn't be placed in front of a door that opens toward the ladder unless the door is locked.

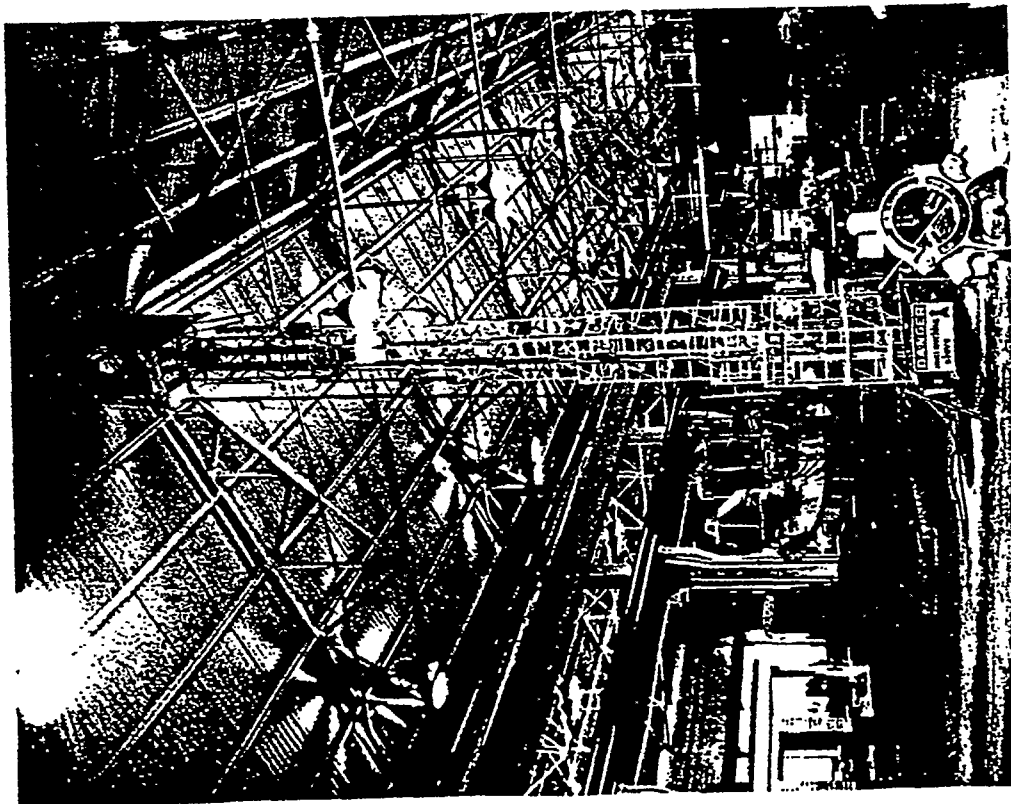
6. It's much better to get down and move a ladder than trying to lean far out from it to work. Much more likely to leave your insurance uncollected, too.

7. Take a look at your shoes before doing any ladder climbing. If they're oily or muddy it's worth taking the time to clean 'em off.

8. Sometimes you can't because of the nature of the job, but in all cases where possible use a hand line to raise or lower tools or material.



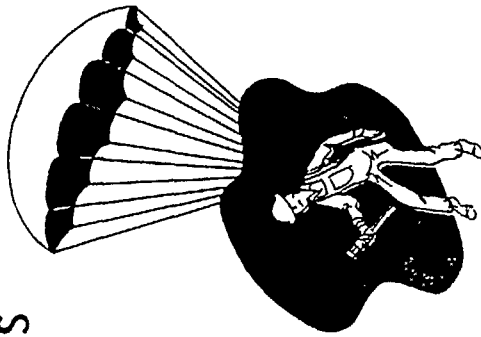
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Correct use of scaffolds is as important as their proper construction. Even the most modern equipment, such as these mobile scaffolds, require observance of good safe practices.

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SCAFFOLDS



It happened here: Bad lumber in a scaffold broke while an employee was working under an agitator. The score: 201 days with a broken heel.

1. If your job is scaffold building or erecting, don't release it for work unless you are personally satisfied with it.
2. Always lower swinging scaffolds to the ground when not in use.
3. Chains or wire line—not fall ropes—should be used over sharp corners.



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LIFE BELTS

These devices are supplied as protection against the hazards of working in high places.

Here's the rule for use of life belts:



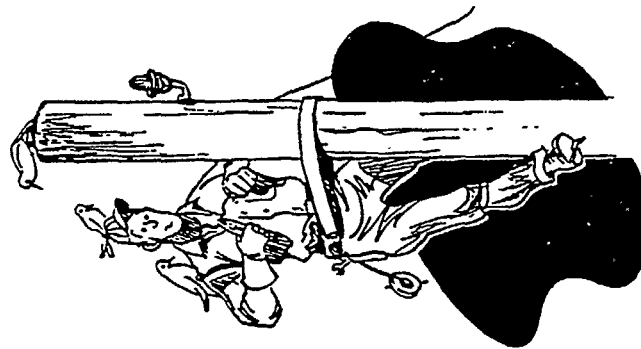
You are required to wear a life belt when working from any kind of scaffold, platform or high equipment that doesn't provide enough protection against your accidentally falling off.

That's pretty clear. To put it another way, if you don't feel safe get a life belt. It's your life and nobody else's.

There are exceptions to the rule. Here they are:

1. Work from approved, properly safeguarded scaffolds.
2. Work on approved carriages.
3. Work on roofs with less than $\frac{1}{4}$ pitch. (On all other roofs wear a life belt. The same thing goes for any roof when working within six feet of the edge.)
4. Riggers are excepted from the rule because of their experience in working from heights.
5. Carpenters are excepted when they are erecting scaffolding or other timber framing.
6. Structural iron workers are excepted when they are erecting structural iron.

When a life belt is worn, don't support it from the scaffold, carriage or platform from which you're working. And here, again, is a need for you to thoroughly inspect your equipment before using it. A look at a life belt doesn't take long, and, brother, when you need one you need a good one!



GOOD HOUSEKEEPING

There are some good, hard-headed, common-sense reasons for keeping our working place clean and neat. One of the best is this:

You can't be safe in a cluttered up and dirty place.

Every year a number of painful accidents happen because some people don't keep the same standards of cleanliness at work that they insist on and work for at home.

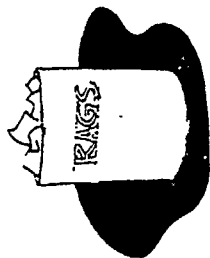
It happened here: An employee got entangled in a coil of steel shavings on the floor. He kicked at it to free himself, cut his right heel and was off 20 days.



Follow these practices and your work will be much safer and a lot more pleasant:

1. Don't leave a job without cleaning up. See that waste material is taken to collection points for hauling off, and get all gear and equipment taken to its storage place.
2. Keep all aisles, passageways, stairs, platforms and ladders clear of obstructions.
3. If you work at a bench or a machine, keep its top as clear as you can and tools in order.

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4. Don't let oily waste, rags or clothes lie around. Put waste and rags in the metal containers provided for them.

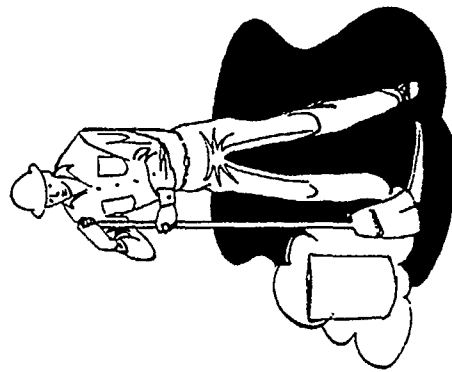
5. Keep floors in your working-place clean.

6. Locker-rooms and toilets are a tough problem when hundreds of men are using them. It takes cooperation. You know what the score is—but remember especially to ask the others not to spit on the floor or let soft-drink bottles stay around. Clean up lunch trash.

7. Should oil be spilled on stairs, platforms or walkways, clean it up immediately. It can cause bad falls. And again, don't wait for the next guy.

8. Pile material straight and not so high that a blow could make it fall.

9. If you see nails sticking up from any material, bend 'em down—but not with your shoe. Nails in the heads of wood barrels or kegs should be removed when they are opened.



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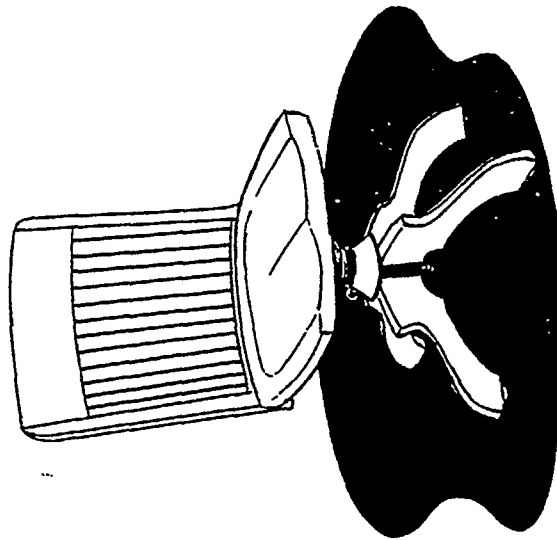
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OFFICE SAFETY

Offices are relatively safe places in which to work. That means that carelessness exists much more than in places where some definite hazard as to be guarded against. Medical Department records show that accidents do occur in offices, some of which could have been serious.

Dangerous weapon



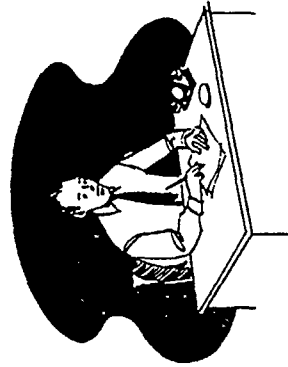
To help you make your working area as safe as it might be, here are plant's safe practices for offices:

1. Misuse of swivel chairs is probably the biggest causer of office injuries. Don't slump back in them without first testing your weight

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gradually; have one of the legs directly in back of the center of the chair. And, unless you want to qualify for a tilting bed, don't use them for ladders.

2. Close all file drawers that are not in use when they are near an aisle or passageway.
3. Telephone or electrical cords should not be permitted to cause a tripping hazard.
4. Don't stand on shelves to reach supplies or other materials.
5. Get sticking file drawers or doors repaired since these can give way suddenly under pressure.
6. Women employees should not lift typewriters or other heavy equipment. In addition to being unsafe, you won't be letting the males show off.
7. Check your office furniture occasionally for sharp edges or splinters. Report them to your supervisor.



8. Don't put loose broken glass in wastebaskets. Wrap it up safely.

9. Keep razor blades, thumb tacks or other sharp-edged or pointed objects where your fingers can't encounter them while rummaging through drawers.

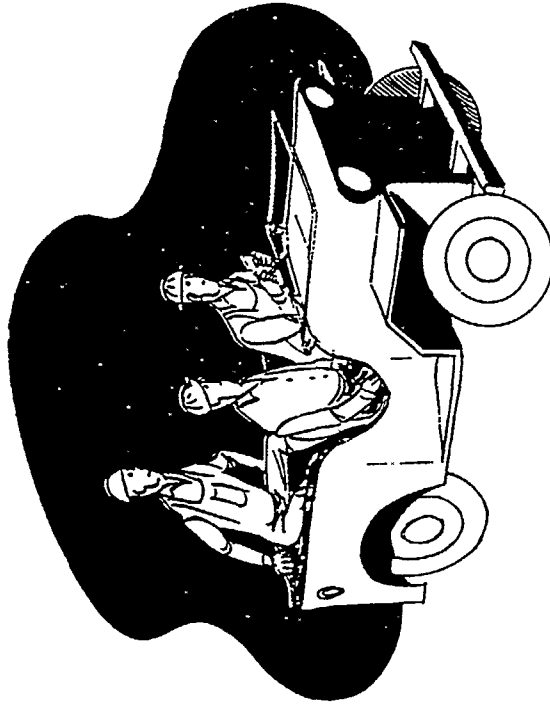
10. Don't throw match or cigarette stubs in waste baskets without making sure the fire is out. Keeping loose matches in drawers is also unsafe.

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TRAFFIC

Traffic on refinery roads is heavy and requires the same watchfulness you show on downtown streets. Whether you're walking or driving any kind of vehicle, it's very important that you observe the refinery's traffic code—it forms protection for everyone. Here it is:



1. All traffic in or on any kind of vehicle is to the right. Pedestrians walk on the left of the road.
2. The yard speed limit is 15 miles per hour except where signs specifically say otherwise.

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3. Warning signs and signals must be observed.
4. Sound your horn at blind corners and when passing pedestrians, bicycle riders and automobile vehicles.
5. Keep at least two-car lengths behind the vehicle in front of you.
6. Don't drive with defective equipment. Report the need for repairs to the Transportation Section.
7. Don't park or stop on roads if it interferes with traffic. Use designated parking areas when possible.

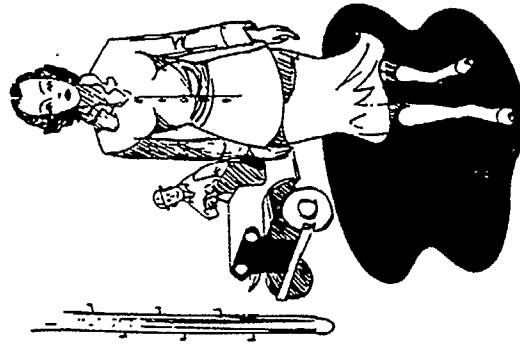
DIVIDING YOUR ATTENTION
Can
MULTIPLY YOUR TROUBLES

8. Don't remove road blocks or detour signs.

9. Stop before crossing railroad tracks if the locomotive can't be seen at a safe distance.

10. Don't pass trucks that are taking on or discharging passengers.

11. Report infractions of the code to the Safety Division or Transportation Section.



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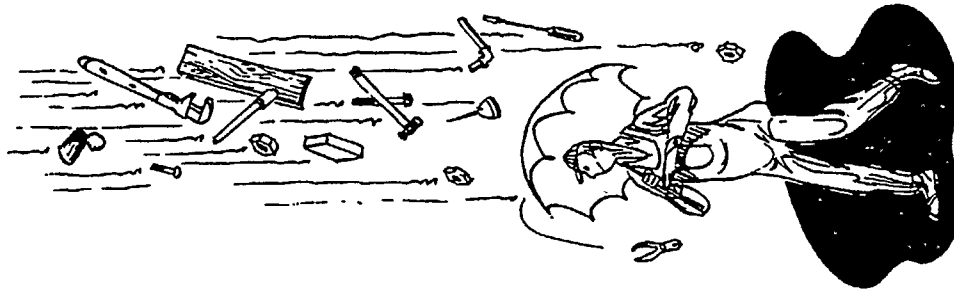
PROTECTIVE EQUIPMENT

Magnolia provides a great deal of protective equipment and clothing, all of which is engineered to provide you with maximum protection. Every year accidents occur that would have been prevented or made less serious had the right equipment been used. It's well worth the trouble to find out what to wear and wear it.

Head Protection

Protective hats, usually called "hardhats," should be worn whenever there is the slightest chance of injury from overhead. It is required that they be worn when working near a process unit under repair.

It happened here: Disregarding guard ropes, an employee short-cut through a dangerous area. A cast-iron block fell on his head. Only his hard-hat saved his life.



Foot Protection

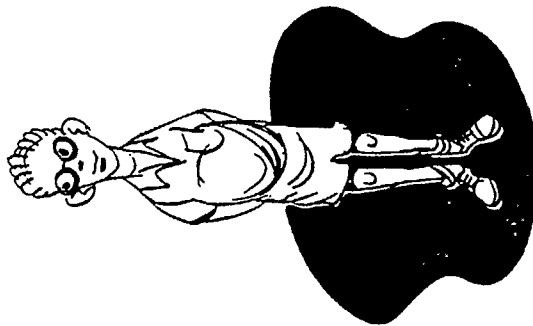
1. Wear wooden-soled shoes when working on hot surfaces.
2. As a service to you, the Company sells steel-toed safety shoes at cost. They're comfortable, good-looking and definitely reduce the chance of foot injury. Call the Safety Office for information about their purchase.

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Eye and Face Protection

Eye injuries are among the easiest kinds to prevent. Practically all can be halted by the wearing of the right type of goggle or face shield.



There are several types of goggles for protection against flying particles; your supervisor can tell you which is correct for the job at hand. Gas-tight goggles are available for work where chemicals or gases may irritate or injure the eyes.

And for protection against dangerous liquids—such as hot asphalt or chemicals—and dust, a rubber goggle or face shield that protects eyes and the upper face should be worn.

It happened here: Helping clean acid coke from a tank, an employee struck an acid pocket with a spud bar and acid splashed in his eye. No goggles and no work for 25 days.

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If you are working near a welder, use goggles with an approved type of dark lens.

If you wear glasses and do work where goggles should be worn, you can get special glasses made of high quality optical safety glass ground to your own special prescription. Since Magnolia pays a portion of the cost, they are inexpensive. The Safety Office can provide details of their purchase.

Also, the Company provides a goggle which fits over your regular glasses.

Goggles are issued from the Safety Storeroom in the Fire Station. Don't attempt to repair your goggles yourself; return them to the Storeroom.

If your goggles fog badly, ask for Anti-Fog at the Storeroom.



Long Time No See



Because of the extreme importance of goggle-wearing to prevent accidents to eyes, the Company requires that you wear goggles when doing any of the following kinds of work. Your supervisor may add to this list. Make sure you know them!

1. Work done near a person whose job requires goggles.
2. Work where rust, dust, sand, coke or other objects are blowing about.
3. Handling or moving of junk, coke, brick, cinders, material in powder or semi-powder form, garbage or trash.
4. Going in and out of fireboxes.
5. Cleaning and blowing of tubes in boilers, stills, exchangers, economizers and flues.
6. Drilling of coke.
7. Work where there are irritating gases or fumes.
8. Mixing, pouring, or melting of molten metals—*asphalt*, pitch, or chemicals—or work close by.
9. Using a solder pot or a solder iron larger than one-half inch diameter.
10. Handling of chemicals, opening of containers or gauging of tanks containing these chemicals.
11. Opening, closing or adjusting of all packing on all chemical or light hydrocarbon valves.
12. Using air or steam in cleaning or opening any plugged line or vessel.

13. Cleaning or lubricating stopcocks, valves, pumps, or other equipment where grease plugs, pressure screws or grease guns are used.

14. Chipping, cutting, breaking, reaming or drilling of any material by hand or machine where there is danger from flying chips.

15. All kinds of buffing, grinding or filing.

16. Hammering metal against metal, except in the case of carpenters driving nails.

17. Work near electric welding, where goggles with special lenses should be worn.

18. Operating of a concrete mixer or cement gun, and sandblasting, mixing, pouring and puddling of mortar or concrete.



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19. Work done under rolling or stationary mechanical equipment.

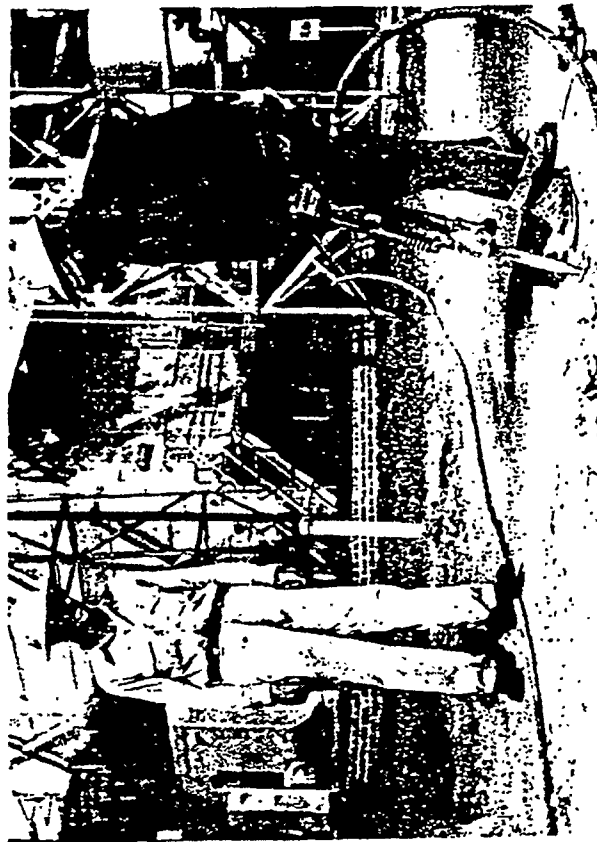
20. Heating and inspecting heated materials and equipment.

21. Work involving use of an air motor and bolting machines.

22. Work involving the use of a metal wire brush.

23. Handling of wire where hazard of loose ends flying exists.

24. Work at or near a forge.



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LUNG PROTECTION

Take a good look at these pictures of the various kinds of equipment provided to protect you against breathing dangerous fumes or material. Make sure you know each one well enough to recognize it.

Each of these devices has a special use. If you're not absolutely sure which one to use and how to use it, ask your supervisor or telephone the Safety Storeroom for instructions.



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A variety of equipment provides lung protection at the refinery. The Safety Storeroom can answer questions on its correct use.

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CANISTER-TYPE GAS MASKS

When To Use Them

A canister-type gas mask merely purifies the air, taking out gas as it passes through the canister. Consequently, plenty of oxygen must be present to permit its use. Employ it, therefore, only in the open and never in any kind of closed-in place.

Special Instructions

1. In wearing, tighten the straps so that the facepiece fits closely over the temples and cheekbones. Then kink the hose to prevent any air from coming through the canister. If the facepiece collapses and presses tight against the face, it's safe to use. Do this each time it is worn.
2. Report your use of a gas mask to your supervisor or the Safety Storerom so it can be inspected and sterilized.

3. Certain colors on the canister identify what each mask is made to protect you against. Here is the code:

- Black—tetraethyl lead vapors
- White—chlorine
- Yellow—petroleum vapors and gases
- Green—ammonia
- Red—an all-purpose mask (but note that it has a life of only two hours)



4. Don't use gas masks in excavations, manholes, or other places below ground level, or if you are working directly over such excavations. Don't use them either where there is heavy smoke. If there is any question on whether to use a gas mask, don't—use a fresh air mask instead.

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FRESH AIR MASKS

When and Where To Use

Use a fresh air mask (or Chemox respirator, which is discussed below):

1. When you must enter a closed space where tests show hydrogen sulfide gas to be present in even the smallest degree;
2. When you must enter a closed space which hasn't been prepared for entering in accordance with the rules for such preparation;
3. When you enter areas where there is heavy smoke.

Special Instructions

1. Test the facepiece as on canister masks.
2. Place the blower where there is plenty of fresh, uncontaminated air. Check to make sure lines aren't tangled.
3. Turn the blower continually from the time the man puts on the face piece until he removes it. Attach life line to hose mask harness.



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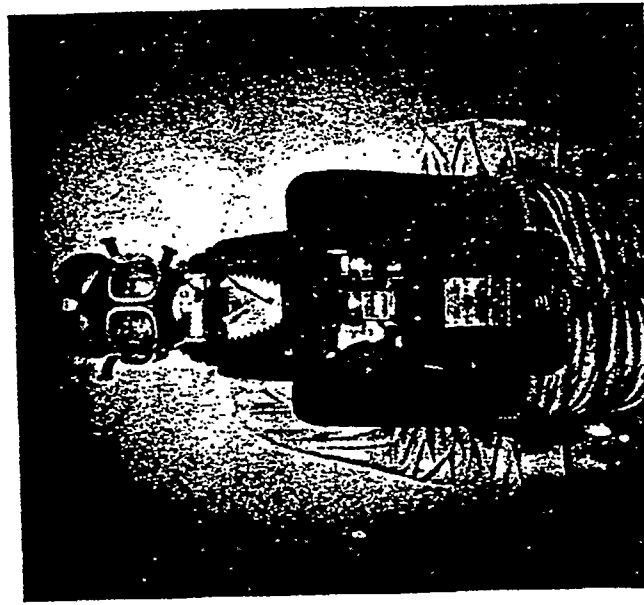
CHEMOX RESPIRATORS

When and Where To Use

Chemox respirators are used interchangeably with fresh air masks, for the same purposes. The only difference is that the oxygen supply is carried on the back of the user, rather than being pumped through lines. Consequently, it is especially good for places where there is a possibility of lines becoming tangled.

Special Instructions

Always obtain special help from the Safety Storeroom before using.



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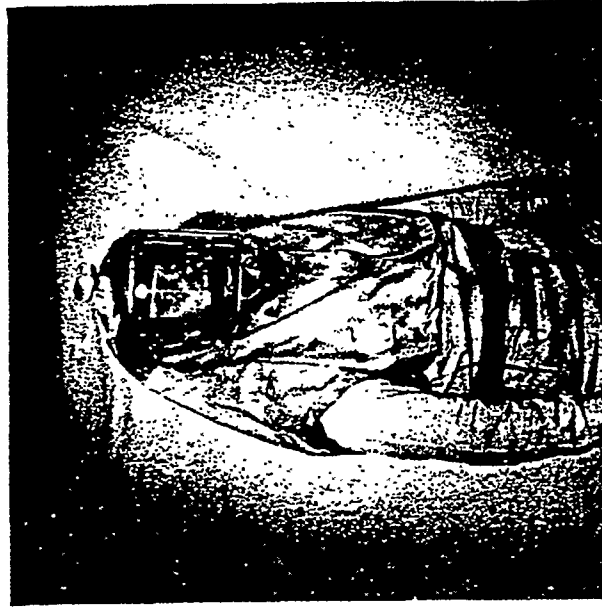
AIR LINE RESPIRATORS AND HOODS

When and Where To Use

Use when sandblasting, gunniting, metalizing or spray painting in closed in places. Air is taken from the yard's air lines and fed to the wearer, so use only for protection against flying particles that could enter the lungs.

Special Instructions

1. Check the equipment thoroughly before using. Make sure that valves have the inspection tag on them. Have the valves tested at least once a week. Drain filters each day.
2. Don't attempt to repair or tamper with this equipment. Should it need attention return it to the Safety Storeroom.



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FUME RESPIRATORS

When and Where To Use

These can be used where gases or fumes are present in such small amounts that regular gas mask canisters aren't needed. Examples: some kinds of spray painting, brazing, soldering and welding when done in the open air. They can be used during long exposure to gases not ordinarily harmful or not present in large amounts.



Special Instructions

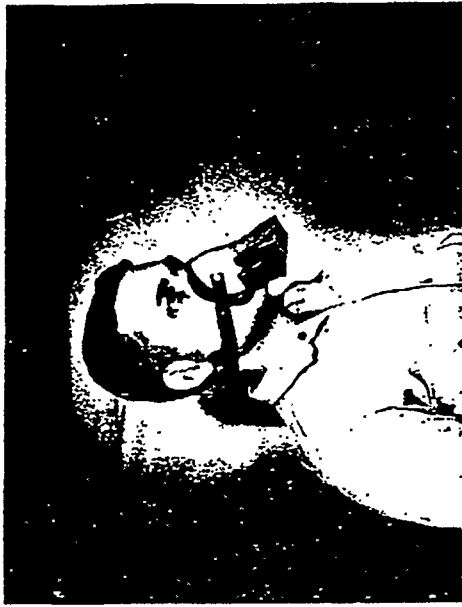
1. Don't use fume respirators in closed-in places, or as substitutes for canister-type masks.
2. If you smell gases or fumes through the canister, change it.

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DUST RESPIRATORS

When and Where To Use

Use where there is a great deal of dust in the air, such as in handling powdered chemicals, lime, soda ash, sulphur, litharge, filter clays, sand and so on.



Special Instructions

1. Adjust respirator so that it fits tightly around the nose and mouth.
2. Change filter papers as often as is necessary to keep breathing easy.
3. Don't use as protection against gases, fumes or smoke.

Hand and Body Protection

Rubber gloves are provided for use where chemicals are handled. Rubber aprons are available where equipment containing chemicals is opened, and so are rubber hoods for places where adjustments are made on equipment containing chemicals.

Special Instructions

When any of this equipment is touched by harmful chemicals, wash it with soap and water before re-use.

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FIRE PROTECTION

What's your job in event you see a fire?

That's an easy one. Unless you're assigned to fire-fighting duty, all you have to do is:

1. Decide if the fire is small and easily reached. If it is, head for the nearest fire extinguisher and let 'er go.

2. If the fire looks too big for a fire extinguisher or is hard to get to, run to the nearest telephone, dial the plant operator and tell her:

"I'm reporting a fire. My name is John Q. Doe, and my work number blank-blank. The fire is located at such-and-such a place." Then hang

3. Warn everyone nearby of the fire.

Plant fire extinguishers are spotted all over the yard. When you go to a new area, look for the nearest extinguishers and also for fire-alarmers and safety showers. Make sure you can get to these in a hurry.

Every yard extinguisher has one of two labels encircled on it in big letters. It will read either "ALL FIRES" or "NO LEC." If the first is on the extinguisher, you can use it anywhere on any kind of fire. If "NO LECTRIC" is stenciled on it, you can use it on



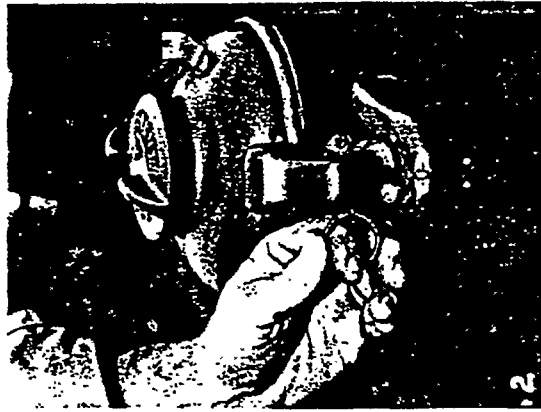
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1. First step in extinguisher operation is looking for the label that marks its suitability for the fire.

2. Most extinguishers have seals showing them to be in working order. Break such seals before operating.



3. On Du-Gas extinguishers, punch the plunger that pierces the cartridge and puts pressure behind the extinguishing agent.

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4. Lift the extinguisher by the grip, point nozzle at fire and push the release lever.



6. Foamite-type hand extinguishers operate automatically when inverted. Wheel-types have a T-valve that must be released.

5. Puncturing of Du-Gas cartridge is necessary; carbon dioxide extinguishers do not require such piercing.



any kind of fire except on electric motors or equipment. These kinds of extinguishers contain water, which is a conductor of electricity and which makes them unsafe to use on electrical fires.

Make it your business to learn how to operate fire extinguishers. Ask your supervisor to show you how, or get information from one of the safety inspectors. In an emergency you won't have time to ask. But—don't tamper or play with extinguisher equipment. And—be sure to report any use of them to your supervisor so they can be recharged.

The best thing to do with a fire is prevent it. It's much easier and safer than fighting it. To that end, the refinery has some simple, easy to follow rules. Here they are:

1. Get a hot work permit if you are burning or welding, or using rivet heaters, forges, tar pots, portable emery wheels, gasoline torches, soldering equipment, non-explosion-proof flood lights or any other possible spark-causing equipment in any location except those approved for hot work.
2. Don't drag or draw material across sewer manholes; it can create a spark.
3. Don't use light distillates for cleaning anything. It's highly dangerous and strictly forbidden.
4. Smoking, except where and when approved, is absolutely forbidden.

NO SMOKING

You can be fired promptly for violating this rule. A still better reason for not violating it is that you are endangering your own life and those of others. The other guy may want to live a while even if you don't.

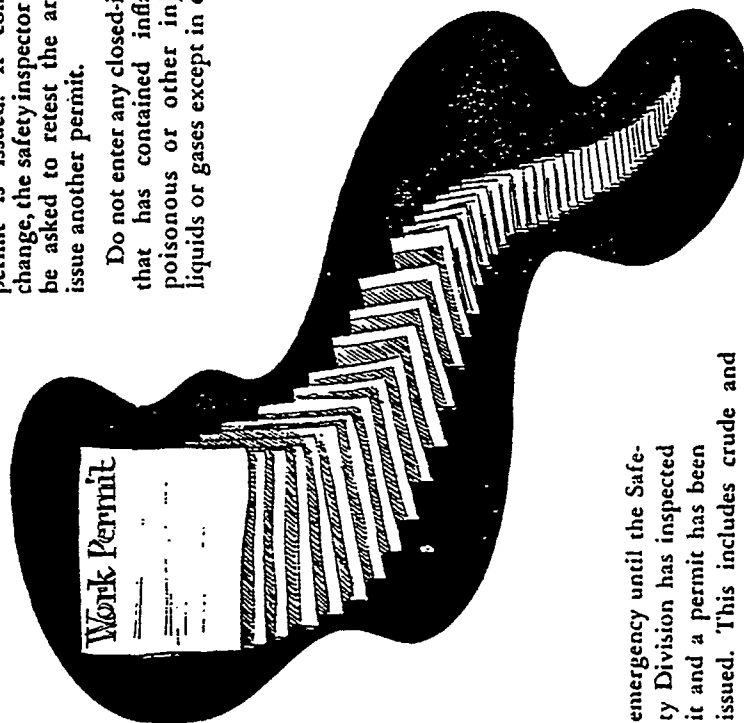
Likewise highly dangerous are cigarette lighters unprotected against sparking by a sharp blow and carrying "strike-anywhere" matches.

WORK PERMITS

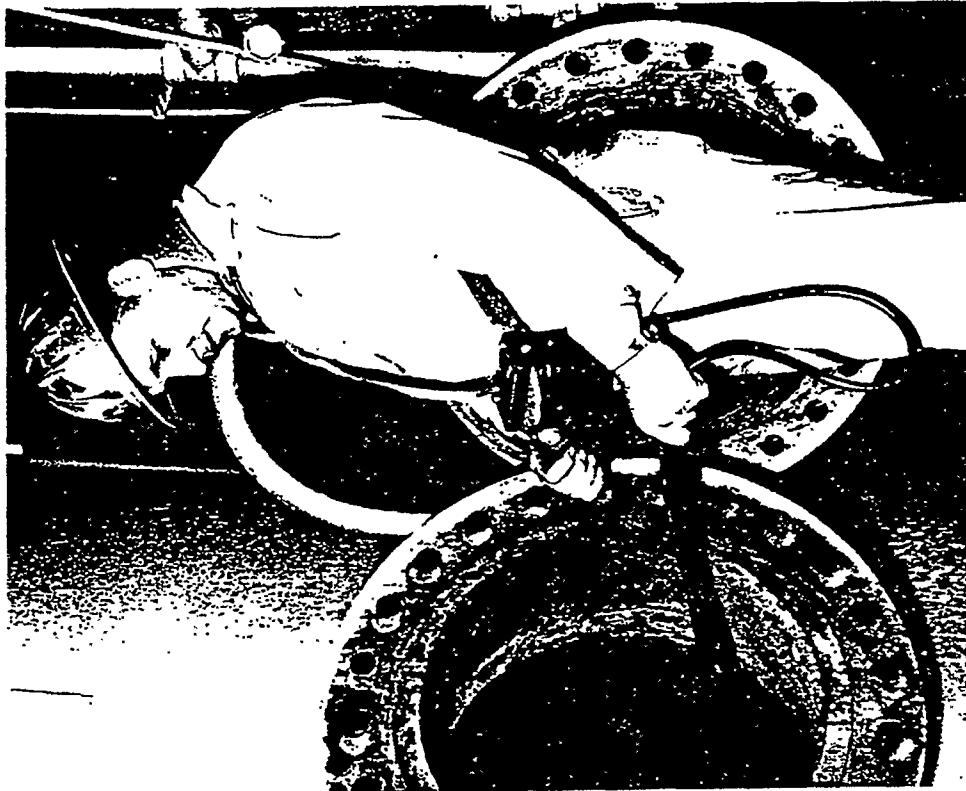
Before any work is started in a place that has contained inflammable, poisonous or other liquids or gases likely to cause injury, the area must be inspected and a permit obtained from the safety inspector.

Such permits are good only on the date issued, and work must be started within one hour after the permit is issued. If conditions change, the safety inspector should be asked to retest the area and issue another permit.

Do not enter any closed-in place that has contained inflammable, poisonous or other injurious liquids or gases except in extreme



emergency until the Safety Division has inspected it and a permit has been issued. This includes crude and product storage tanks, working tanks, stills, towers, agitators, tank cars, separators, and accumulators.



Gas tests form safety insurance and should be requested when any doubt exists as to presence of gases.

HOT WORK PERMITS

"Hot work" is welding or burning, using rivet heaters, forges, tar pots, portable emery wheels, gasoline torches, soldering equipment, on-explosion-proof floodlights or any other possible spark-causing equipment.

There's a hard-and-fast rule regarding hot work at the refinery. It goes like this:

Before hot work is performed in any area except those specifically designated, the area shall be tested and a written permit obtained from safety inspector. Such a permit is good only on the day issued and work must be started within one hour after the permit is issued. If conditions change, another test should be made and another permit issued.

If you are doing hot work, be alert for the unexpected development of any source of danger. If you think a dangerous condition has arisen, stop all machines and leave. Don't start work again until the dangerous condition has been eliminated.



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And these other points:

1. When hot work is to be done in a closed container located near an operating unit, a man having no other duty should watch for trouble from both inside and outside, and give warning or help in any emergency.

2. Hot work permits will not be issued on any tank car while the car is spotted at a loading rack.

3. Hot work permits will not be issued until a thorough inspection of all catch basins or sewer manholes has been made and, if necessary, they have been flushed out with water. Cover the tops of such basins or manholes so as to prevent the possible escape of gases and entrance of sparks.



4. If you are getting ready to do hot work, make sure that fireextinguishing equipment of a type and size designated by the hot work inspector is available.

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FIRST AID

Nearly all refinery employees have already received instruction in first aid through the courses given at the plant. But most people find themselves needing reminders now and then as to what to do in that unexpected minute when something has to be done to save a life or health.

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This section, then, is a reminder. It contains the major things you need to know but it can't, for space reasons, be a full discussion with all the fine points that are sometimes helpful.

Chances are that if you find yourself the guy who must either do right or wrong in an emergency you won't have the time or opportunity to dig this booklet out. That's why it's so important that you study as well as read this section.

What To Do When An Accident Happens

The first thing to do is call the telephone operator. Tell her your name and work number and give the location of the patient. She'll do the rest. Start first aid if it seems necessary.

The First First Aid

1. No employee should attempt to remove a chip or foreign substance of any kind from an eye. Get medical help.
2. Keep the injured person lying down in a comfortable position, his head level with his body, until you know what is wrong and how serious it is.
3. Clean the mouth of dirt or anything liable to cause stoppage of breathing.
4. Keep the injured person warm with whatever is at hand. Blankets are available at first aid stations. Reassure him as best you can; don't let him see his own injury.

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5. Keep calm. Don't be hurried into moving an injured person unless it's absolutely necessary.

6. Never give water or any other kind of liquid to an unconscious person.

Treat For Shock

Practically every seriously injured person suffers from shock; it's more severe in some cases than others but should be treated no matter whether you think shock is present or not. Treatment may prevent shock from developing. Here's what to do:

1. *Apply heat.* You can get it from such things as paper, rags, coats and the blankets at first aid stations. Cover under the injured person as well as over.

2. *Position of the injured.* Keep him lying down with head level with the body except for chest injuries when breathing is hard. In that case, prop up the head and raise feet and legs from 12 to 18 inches to force blood to the head.



3. *If conscious, give fluids.* Tea, coffee, milk or broth may be given—but have it as hot as possible.

Do Something About the Injuries

Look for hemorrhage, stoppage of breathing, poisons, wounds, burns, broken bones and bones out of place. Take care of them in the order named.

Hemorrhage

Serious bleeding must be controlled as quickly as possible since a person can bleed to death in a very short time.

1. Get as clean a handkerchief or rag as possible that's large enough to cover the wound. Apply it directly over the bleeding with firm pressure, holding it until bleeding has stopped or you have gotten the injured person to the Medical Department.

2. Don't use a tourniquet unless it's absolutely necessary. If you must, release it every fifteen minutes. Treat for shock (see above).

Stoppage of Breathing

This is nearly always caused by drowning, breathing gases or electric shock. The treatment is to apply artificial respiration at once, as follows:

1. Lay the victim on his belly, one arm extended directly overhead, the other bent at the elbow and with the face turned outward and resting on the back of the hand or forearm so that the nose is free for breathing.



ARTIFICIAL RESPIRATION

2. Kneel, straddling the victim's thighs with your knees placed at such a distance from the hip bone as will allow you to sit on your heels and place the palms of your hands on the small of his back. Let the fingers rest on the ribs with the little finger touching the lowest rib and the tips of the fingers just out of sight.

3. With arms held straight, swing forward slowly so that the weight of your body is gradually brought to bear upon the victim. The shoulders should be directly over the heel of the hand at the end of the forward swing. Don't bend your elbows.

4. Then immediately swing backwards so as to remove the pressure completely, resuming your first position.

5. Swing forward again. Continue this at the rate of 12 to 15 times per minute.

6. Continue artificial respiration without stopping until natural breathing is restored or until a doctor pronounces the victim dead.

7. As soon as artificial respiration has been started, have an assistant see that everything is out of the mouth and tongue is forward—also loosen tight clothing at the neck and waist. Keep victim warm.

Resuscitation should be carried out at the nearest possible point to where the victim had his accident; he should not be moved until he is breathing normally, and then only on a stretcher.

Don't quit too soon. Artificial respiration may have to be carried on from six to eight hours.

Wounds

There are two possible dangers from wounds—from bleeding and infection.

Wounds with serious bleeding should be controlled by direct pressure (see the section on hemorrhage above) and victims should be taken to the Medical Department at once.

Remember that all wounds, including very small ones, are in danger of infection and should be treated.

Burns

There are three kinds of burns: (1) dry burns, caused by fire or electricity; (2) moist burns, caused by steam, boiling oil or water; (3) chemical burns, caused by chemicals or acids.

The object of first aid with burns is to relieve pain, prevent infection and treat shock.

In the case of chemical burns, wash off the acid or chemical with plenty of water. If the burn occurs over a large part of the body, get victim under safety shower or in a tub, and flood the body with water, meanwhile removing the clothing.

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Major burns of the dry or moist type should be treated on the spot by applying burn dressing furnished at the first aid stations. Then wrap the victim in a sheet, then in a blanket and take him to the Medical Building. Don't remove his clothing—that's for the doctor to do.

Chemical burns of the eye should be washed out at once; then take the victim to the Medical Department.

Broken Bones

Broken bones, or "fractures," are of two kinds—simple fractures, in which a bone is broken without any wound, and compound fractures, in which there is a wound connected with the break.

Simple fractures can become compound with improper handling. It's important, then, that all fracture cases be handled carefully. Don't move them without first putting some type of support under the fracture to keep it from moving, unless it's absolutely necessary to get the victim out of a dangerous area immediately.

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Here's what to do:

1. Have someone call the Medical Department or, at night, the night superintendent.
2. Make victim as comfortable as possible while treating for shock.
3. Have someone get a board to be used to keep the broken bones from moving. For arms, get one long enough to reach from the tips of the fingers to the armpit or longer. For legs, have one long enough to reach from the bottom of the heel to the crotch or longer.



4. Apply board, slipping it under the body or limb with as little movement as possible and tie the board on with anything — except wire — that you have at hand. Then transport the injured person to the Medical Department on a stretcher.

5. In the case of a compound fracture, control bleeding first.

Snake Bite

There are four native poisonous snakes in the United States—the rattlesnake, the cottonmouth moccasin, the copperhead moccasin and the coral snake. All are found in the Beaumont area.

Poisonous snakes inject their poison through fangs. When they bite they leave fang prints in the skin; these look like places that have been stuck with a hypodermic needle. A non-poisonous snake does not have fangs.

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Here's what to do for snake-bite.

1. First, put a constricting band—made out of a handkerchief, rubber band, shoe string, tie, belt or whatever is at hand—around the limb about four inches above the bite. Make it just tight enough to stop the flow of blood in the vein between the bite and the heart.
2. Make the victim lie down and keep quiet.
3. Sterilize a sharp knife or razor blade over a match flame or in iodine or alcohol and make cross-cuts through each fang point deep enough to go through the skin. This will be about one-eighth of an inch deep and about one-half inch long.
4. Then apply suction immediately, either by mouth or suction bulb until medical attention can be obtained.

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Heat Exhaustion

It's caused by exposure to heat. Symptoms are a pale face, very great perspiration, dizziness. Get the victim to a cool place and have him lay down with the head lower than the body. Give salt tablets, coffee or tea. Keep him warm.

Sunstroke

This is caused by the direct rays of the sun. Symptoms are a red face, dry skin and unconsciousness. Take the victim into the shade and lay him down with his head elevated. Apply cold water on cloths to the body but don't give stimulants.

Unconsciousness

Various things can cause people to become unconscious. The first aider, in giving treatment, can classify them in three ways—red, white and blue. The patriotic theme may help you to remember what to do in each case.

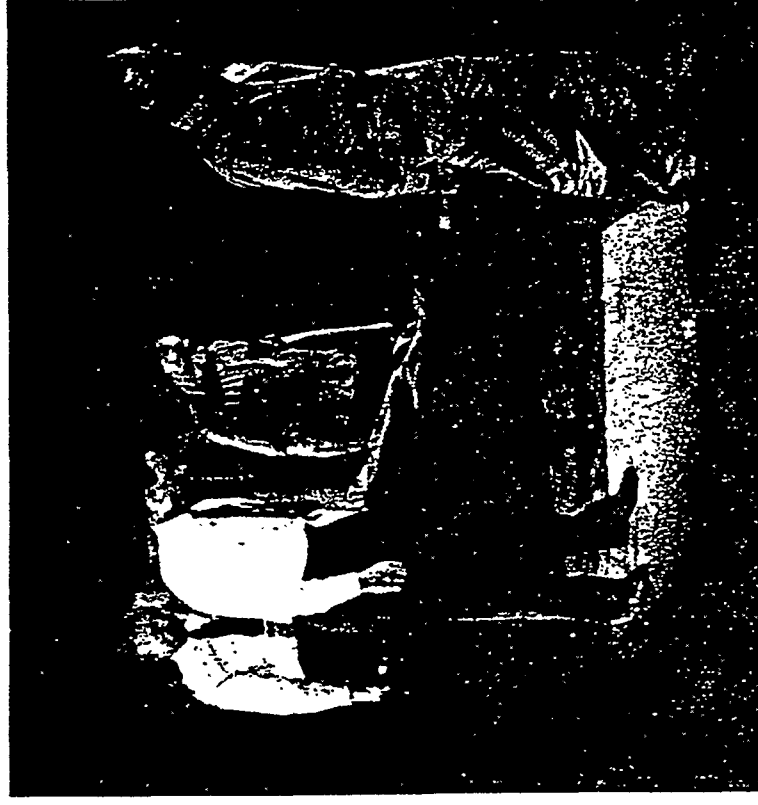
1. "Red unconsciousness"—The person has a red or flushed face with a strong pulse. Treatment includes putting him in a lying position with the head and shoulders slightly raised. Keep him quiet and apply cold cloths to the head—no stimulants and just enough heat to keep him warm.
2. "White unconsciousness"—A pale face with a weak pulse are characteristic of this type. To treat, keep the victim lying down, head level with body, and with heat applied to the body.

3. "Blue unconsciousness"—This includes persons needing artificial respiration. Start it at once.

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Transporting the Injured

1. Except when you think a back may be broken, transport all injured persons on stretchers. They are located at many points in the plant. Spot the nearest one when you go into a new area.



2. Don't run with a stretcher. Walk your natural step. Let the men at sides and front keep step and the man at the rear walk out of step.
3. Keep stretcher as level as possible.

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HEALTH AND SANITATION

Working in a big plant of this kind is actually healthier than jobs done in many other places. The Medical Department is top-ranking, and the Company works with it in making positive efforts toward keeping health at a high level.

But the job is a twin one, with you exercising your common-sense in carrying out the suggestions made by the Medical Department.

Here are some of the most important:

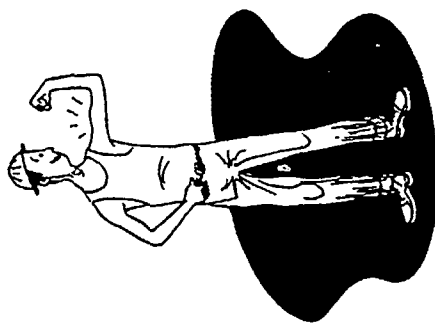
1. The salt tablets found at drinking fountains should be taken if you sweat heavily. Generally, three a day is about right for heavy work in summer months. Call the Department if you think you should take more.

2. Regular physical examinations are a good idea. In so far as equipment permits, the Department will give you a full—and free—check-up when you want it. This is a trouble-pre-venter.

3. If you get dizzy for any reason go to the Department. This is especially important if you work on heights of any kind.

4. Watch your fatigue. It's been found that men not getting enough rest pass a point beyond which they aren't able to think clearly or act speedily. That means chances of accident increase. Also, prolonged fatigue actually destroys the health. Get plenty of rest, and if you still feel tired consult a doctor.

5. Poor posture creates fatigue and a numerous crowd of assorted aches and pains particularly in the back and hips. Don't slump in chairs or stand with your weight thrown on one foot.

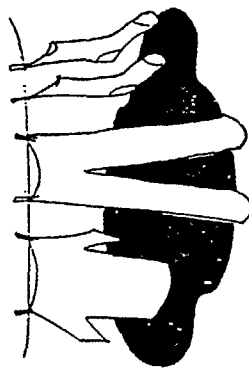


6. That lunch you carried from home should contain the stuff to get you through the day feeling good. Use whole grain bread, plenty of fruit, and raw vegetables such as lettuce or tomatoes. You need the vitamins these foods provide. A chocolate bar carried in your pocket for a mid-afternoon snack will jack up energy. But even then . . .

7. The Medical Department recommends your eating a hot lunch, particularly in cold or rainy weather. Carried lunches frequently get monotonous and unappetizing as well as unbalanced in food value. Hot lunches "eat" better and provide a needed lift.

8. Put on clean work clothing at least twice a week. Excessively dirty or greasy clothing can sometimes cause skin rash. And,

in addition to being unhealthy, clothing saturated with oil definitely puts you up near the top of the list of people to whom accidents can happen. You'll find that the plant laundry does a good job at very reasonable rates.



9. Athlete's foot can give plenty of trouble, and it's worth while going out of your way to prevent it. Use the disinfectant pads at the entrance to the showers. Keep a bottle of alcohol in your locker to bathe your feet with after showering, and then dry the feet thoroughly, especially between the toes.

10. It's much easier to prevent a cold than cure one. In the winter, take the ordinary precautions as to wearing warm clothing and avoiding sudden changes in temperature. If your feet become cold and damp, bathe them in hot water at the first opportunity, then put on dry socks. The Medical Department also will administer the standard cold vaccine to any employee upon payment only of the cost of vaccine. This vaccine helps some; others it doesn't. If you've been helped by taking it, continue.



11. It ought not to be necessary to mention it but there are a few people who touch their mouths to water fountain spouts and sometimes even wash their mouths out and spit back into the fountain. This is a filthy and dangerous practice, so if you see someone doing it, how about telling him he's not likely to be the most popular guy in the place if he keeps it up?

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