PLAINTIFF'S
EXHIBIT
EXX-265

FOREWORD

The prevention of accidents requires a sound knowledge of why accidents occur. Our experience and power to anticipate result in a realization that certain situations are hazardous and produce accidents and injuries. Our realization then crystalizes in what we call safety policies, procedures, and practices. These are being brought together and will constitute this Accident Prevention Manual.

Since we are a new and growing organization and most of our experiences lie ahead, this will by necessity be a document that will undergo many changes, revisions, and expansions as we improve and expand our operation. We are fortunate to have at our disposal in the beginning the experience of trained personnel in both the petro-chemical and closely related oil refinery fields. Many of the safety rules contained in this manual are not from the experience of one plant or one industry, but are collected from the experience of all industry.

We are not in any way trying to be original in the development of this manual but are striving to assemble the best proven and tested safety practices that are available for the protection of our people and equipment. Therefore, it follows that the individual who mistakenly pits his own good experience against this collective experience is taking a definite risk of injury.

We recognize that no manual can cover all possible situations that may arise. However, a thorough knowledge and observance of these policies and procedures will develop an appreciation of what constitutes a hazardous situation and what can be done about it.

It is the policy of our company to provide safe equipment, good tools and all necessary protective devices. We expect every employee to use tools, equipment, and protective devices properly and maintain them in good condition. The practice of good maintenance and housekeeping is a vital part of any successful safety program. We expect each employee to be a safe worker.

There is no part of our job more important than safety.

E. H. Peters

E. H. PETERS

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MOBIL CHEMICAL COMPANY
BEAUMONT, TEXAS

ACCIDENT PREVENTION MANUAL

SECTION A. RESPONSIBILITIES OF SUPERVISORS

GENERAL

1. The supervisor (defined as anyone directing people or work regardless of ordinary title) is charged with personal responsibility for the prevention of accidents.

2. He must cooperate with other supervisors in preventing accidents.

   a. All Production Supervisors shall cooperate and coordinate fully with Mechanical Supervisors to the end of promoting safe operations of mechanical work in the vicinity of their equipment.

   b. All Mechanical Supervisors shall cooperate and coordinate fully with Production Supervisors in all cases where work is being done on or in the vicinity of Production equipment.

   c. No work shall be started on operating units until the Mechanical Supervisor knows definitely that the Production Supervisor has been notified what work is to be done and has received his approval to begin such work.

   d. When conditions arise either before starting a job or during the progress of any work, which in the opinion of a supervisor make it unsafe to proceed, the work shall be stopped and he shall notify his immediate superior at once.

3. He must know the safe methods of doing the work under his supervision.

4. He must know the Safety Rules and Safe Practices that apply and observe them himself by way of example.

5. He is responsible for the proper maintenance and correct use of all safety devices and protective equipment required for his work.

   a. The use of safety devices and protective equipment shall be required by supervisors at all times when needed. When in doubt as to the necessity of using safety devices and protective equipment, their use shall be required.

6. He must instruct in the correct methods of doing the job.

a. He shall satisfy himself that the men working under him are competent to perform their work with safety.

b. When receiving a new man, whether newly employed by the Company or transferred from another department, attention shall be given to his mental and physical fitness for the work he is to perform.

c. The supervisor shall explain in detail to a new employee the safety rules and safe practices which apply to his craft or occupation. It must not be taken for granted that a new man knows his work just because he says so.

d. The supervisor shall explain in detail the particular hazards of the department in which the employee is working and the precautions to be taken to insure his safety.

7. He is required to follow-up on his instructions and make certain that they are understood and carried out.

a. Supervisors are held responsible for taking all possible and reasonable precautions within their power to prevent accidents. They shall satisfy themselves by observance and checkup that all safety rules and safe practices are being observed.

b. Supervisors shall not permit the use of improper or unsafe tools or equipment.

8. Supervisors are responsible for the general housekeeping conditions on or around the work of which they are in charge.

9. No set of written rules, however complete, can provide for all situations, contingencies, or emergencies which are constantly arising. Supervisors are expected to see that intelligence is employed in the selections of methods in performing the tasks at hand.

THE FOLLOWING RULES ARE PRIMARILY SUPERVISORY IN NATURE AND ARE TO BE OBSERVED AND ENFORCED BY THE SUPERVISOR:

1. All excavations shall be adequately covered or properly guarded when left before the work has been completed.

2. Makeshifts of any kind shall not be used.

3. When work is completed, all leftover material, junk, tools and equipment are to be removed to the proper places.

4. All conditions which may affect the safety of men or equipment must be reported at once. When correction is within the authority of the individual, it must be done immediately.

5. All portable hand lights must be of the explosion-proof type, except in those places where the vapor-proof type has been specifically approved. No portable hand light is to be used unless the outside globe and metal guard is in place.

6. Electric extension cords and lights should be inspected constantly while in use. They must be returned to the tool room for inspection at least once each week.

7. No work shall be started on acid, caustic, or hot oil lines or equipment before receiving the personal approval of the operating supervisor in charge.

8. Supervisors in charge of operating equipment must make certain, by personal inspection, that pressure is off, lines and equipment are drained where necessary, vessels and lines are blanked off where needed, valves are locked or tagged if necessary and that it is safe to perform the work before authorizing Mechanical Supervisors to proceed. Particular checking should be made on all chemical, acid, caustic, and hot oil equipment. When necessary, adjacent or connected lines or equipment should be protected against their being broken.

9. Arrangements shall be made to contact at regular intervals, all men working alone in isolated locations, by telephone or otherwise. These contacts shall be made at least twice a shift, at equal intervals, in addition to the contact at the beginning and end of the shift. More frequent contacts shall be made if the conditions are such as to justify it.

10. When work is completed, all guards, handrails, etc., must be replaced.

11. All installations requiring the placing of electric circuits or conduit underground are to be protected by a layer of concrete to which red coloring matter has been added.

12. Gas tests must be made before entering an open top vessel or excavation where a man's head will be below the top of the vessel or excavation. Such gas tests must be repeated at frequent intervals in recognized gaseous areas. Care must be exercised to see that all possible sources of gas accumulations are found and cared for. When it is impractical to prevent possible gas accumulations, the necessary precautions must be taken. These may be the use of adequate ventilation or the use of proper personal protective equipment.

13. No connections into or alterations to the domestic water systems shall be made without the knowledge and written approval of the Utility Engineer.

14. The number of employees working on or around a Process Unit must be kept to an absolute minimum when that unit is being taken out of operation or being put into operation. The Production Supervisors are responsible for advising the proper Mechanical Supervisors when such operations are in progress. Mechanical Supervisors must notify the operating personnel when they are starting work on any part of an operating unit.

SECTION B. FOR ALL EMPLOYEES

PERSONAL CONDUCT

1. All injuries, no matter how slight, must be reported to the Medical Department immediately.

2. An employee getting his clothing saturated with oil or chemicals must wash the parts of his body affected with water, change his clothing, and report at once to First Aid.

3. Before starting any work on lines or equipment, request specific instructions from the operator of the equipment involved and obtain his O.K. before proceeding with the work.

4. Loitering around operating units is prohibited at all times.

5. Place tools or material on scaffolds, tank buggies, top of towers, platforms, or other elevations in such a manner that they will not create a tripping hazard or become dislodged and fall.

6. Before throwing or dropping material from above, the area below must be properly blocked off and guarded to prevent anyone from passing underneath.

7. All loose objects must be removed from the top of tank buggies or scaffolds before they are moved.

8. Conduct which may be termed "fooling" or "horseplay" is strictly forbidden.

9. Climbing over railroad cars, crawling or sitting under such cars or attempting to pass between cars that are standing close together on the same track, except at loading racks, is forbidden.

10. Employees must never use compressed air to clean their clothing or their person, and the air hose must not be pointed toward anyone.

11. Do not use short cuts or make pathways through process equipment areas.

12. Where walkways are provided, employees shall use them. When necessary to use the roads, employees shall keep on the left side in order to face any approaching vehicles, unless otherwise directed by traffic signs.

13. Major work should not be done while standing on lines or fittings.

14. Avoid walking on pipe lines, asbestos or transite roofs, or defective roofs.

15. Exercise every effort to prevent anyone from walking in the vicinity of lines holding a strain.

16. All men should keep clear of suspended loads wherever practical.

17. Employees should be on the watch for leaks, defective ladders, railings, cables and all unsafe conditions or absence of safeguards. Report such defects to your supervisor or to the Safety Department.

18. Do not use defective equipment of any kind.

19. Use the proper method when lifting, keep the back as nearly upright as possible, using the leg muscles. Do not attempt to lift more than can be safely handled. See that there are sufficient men for the load. Use a hoist to move large heavy objects.

20. In cases of serious injuries and injuries which might be serious even though not apparently so, call the ambulance; give specific information as to the exact location where the ambulance should go. If possible, state the extent of the injuries. Give your name and number.

21. First Aid in emergencies is the only occasion when anyone should render aid to an injury. Even then, be certain you know what to do. When an individual is not breathing due to drowning, electrical shock, or being overcome by gas fumes, start artificial respiration immediately. Have someone call a doctor as soon as possible.

22. Every employee is urged to secure knowledge of correct emergency first aid. This can be done by taking one of the standard First-Aid courses.

23. Every effort should be made to avoid passing under scaffolds or other elevations from which work is being performed.

24. Exercise care in walking and in moving about your work in order to avoid slipping, tripping, or falling. Particular care should be taken while walking on fire walls or going up or down stairs.

25. Falling objects have caused many serious injuries. Handle material with care. Keep feet in the clear.

26. Every employee should consider it a part of his duties to take an active part in all safety work and should insist on the observance of safe practices by fellow workers.

27. Avoid eating lunches in places where a possible hazard exists; for example, production equipment in operation.

CLOTHING

28. Wear protective hats when working in places where any hazard exists from falling objects.

29. When working on equipment in acid, caustic, or other chemical services, wear clothing covering the body. Wear goggles, protective gloves, and where necessary, rubber aprons and boots.

30. All employees working with or where there is a probability of exposure to acid, caustic, chemicals, hot oil, steam or fires must wear clothing covering the body, including some type of head covering; particularly, they must wear shirts with sleeves down. Any employee, who in the course of his work may become exposed to the hazard, must wear shirts with sleeves which can be rolled down. When additional protective clothing is necessary, it must be secured and worn.

31. The wearing of hobnailed shoes or shoes with protruding nails or metal taps is prohibited. (Men should avail themselves to the privilege of purchasing safety shoes through the Company and should wear them at work.)

32. Employees must not wear neckties, dangling sleeves, or other loose clothing while operating or working close to moving machinery. Gloves must not be worn while using abrasive or buffing wheels.

33. Do not tie or attach a rag to your person in such a manner that it cannot be removed with one quick movement.

34. Long-cuffed gloves should be used in drawing hot oil samples.

35. No rings, bracelets, necklaces, wrist watches, etc., should be worn when one is working around moving machinery or when exposed to chemicals.

36. Do not work in oily clothing as a flash might prove fatal. Have work clothes washed frequently.

ELECTRIC EQUIPMENT

37. Only authorized employees shall start electrically-driven equipment. In the event that it does not start or run properly they must not tamper with it. The Utilities Engineer must be notified.

38. In cases of emergencies, duly authorized and instructed individuals are permitted to change cartridge-type fuses up to and including 440 volts. Under all other circumstances, an electrician must be called.

39. Vapor-proof globes are not to be removed for any purpose, except for cleaning or by those authorized to replace burned out light globes. They must be replaced. This does not apply to explosion-proof fixtures which can be opened only by authorized persons.

40. All electrical equipment must be properly grounded.

41. On portable electric equipment with an outside ground wire, the ground connection must be made before making the electrical connection. Work the ground clamp back and forth at the point of connection, so that rust, paint, etc., will be scraped off, thus insuring a good connection.

42. The use of an unapproved flashlight is prohibited.

43. All repairs to Company flashlights must be made by authorized persons only.

44. An electric extension cord should not be used if it is in bad condition. Check each cord before using it for bad insulation, broken grounds, or cracked or broken protecting globes. Avoid wrapping the cord around the arms or any part of the body. Avoid standing in water while using the cord.

45. Employees should regard all wires as live and dangerous and are warned against permitting any object being handled to come in contact with electric lines. The insulation on the wire is no guarantee that it will not cause instant death. Any wire found dangling from a post or any other electrical equipment should be reported immediately to the Utilities Engineer. If he is not available, the Plant Protection Department should be called in order that a guard may be furnished until an electrician can be secured.

46. Any defective electrical equipment should be reported to your supervisor or to the electrician assigned to the unit.

47. Insulated platforms should be used when starting and stopping electric motors.

EYE PROTECTION

48. No attempt shall be made by any employee to remove a chip or foreign substance of any kind from the eye, other than the use of an emergency eye fountain in case of chemicals.

49. Employees must wear the correct type of goggles on all operations where a hazard to the eyes exists. Consult your supervisor or the Safety Department as to the correct type of goggles to use.

50. The following work requires the use of goggles, in addition, supervisors may require their use on other work not specified:

(1) Anyone working near other persons where work requires them to wear goggles must also wear them.

(2) Working where rust, dust, sand, coke, or other foreign objects are blowing about.

(3) Handling or moving junk, coke, brick, cinders, garbage or trash.

(4) Working in or going in and out of fireboxes.

(5) Handling material in powder and semi-powder forms and where a dust hazard exists.

(6) Mixing, pouring, melting or working where there is a probability of exposure to molten metals, asphalt, pitch or chemicals.

(7) Handling chemicals or opening containers in which such material is received.

(8) Cleaning, making repairs or adjustments on lines or equipment which contain or have contained chemicals or hot oil.

(9) Opening or closing or adjusting packing on all chemical or light hydrocarbon valves.

(10) Opening, bleeding, venting or draining lines, pumps, vessels and other equipment, which have contained chemicals or pressure, either by opening drain valves or flanges.

(11) Using air, steam, or other agents to open any plugged line or vessel or when exposed to the discharge of such agents being used to purge equipment to the atmosphere.

(12) Adjusting packing glands on compressors, pumps, engines, etc., while in operation.

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

(14) Investigating or working on or around oil, gas steam, or chemical leaks.

(15) Opening lines and dismantling equipment such as safety valves, pressure gauges, manhole covers, etc.

(16) Internal inspection of towers, safety valves and tanks.

(17) Chipping, cutting, breaking, reaming or drilling any material where a flying chip hazard exists.

(18) Grinding, filing and buffing of all kinds.

(19) All scraping and cleaning on metal surfaces.

(20) Cleaning, removing, or tightening gauge glasses.

(21) Performing overhead work which requires looking upward.

(22) Using air, steam or water hose for cleaning.

(23) All operations where there is a hammering of metal against metal, except carpenters driving nails.

(24) When working in the vicinity of electric welding, wear goggles with special lenses.

(25) Paint scraping and paint spraying.

(26) Shearing scrap metal.

(27) All welding and burning operations.

(28) Working under rolling or stationary mechanical machinery or equipment.

(29) Removing asbestos insulation, cutting insulation, lacing up insulation, handling granulated insulation and on all close insulation work.

(30) Using pick or mattock.

(31) Operating concrete mixer, cement gun, sandblasting, mixing, pouring, and puddling mortar or concrete.

(32) Machine operations where a flying chip hazard exists.

(33) Cutting and cleaning brick.

(34) Drilling into pipe lines.

(35) Heating and inspecting heated materials and equipment.

(36) Working with or replacing glass.

(37) Handling rusty cables and materials.

(38) Using portable pneumatic tools.

(39) Using metal brush.

(40) When pulling with pliers, when cutting wire under tension, or when handling wire where a hazard exists of loose ends flying.

(41) Drawing hot samples of oil.

(42) Drawing samples of light hydrocarbons, gas or chemicals from lines, vessels or other equipment.

(43) Starting fires in furnaces and inspecting fires and fireboxes.

(44) Gauging any tank containing chemicals.

(45) Drawing water when units are coming on.

51. No employee shall leave the plant when he knows that his eye is giving him trouble as the result of circumstances connected with his work, without reporting to the Medical Department. This must be done even though the employee thinks that there is a foreign substance in his eye.

52. All repairs to goggles should be made by the Safety Department.

FIRE PROTECTION

53. The use of burning or welding equipment, rivit heaters, forges, tar pots, portable emery wheels, gasoline torches, soldering equipment, nonexplosion-proof floodlights, string lights (which must be installed, moved or removed by an electrician only) or any other such equipment, in locations outside of those areas approved for hot work, requires a "Hot Work" permit.

54. All portable cleaned equipment such as steel drums, barrels, shell and tube heat exchangers, etc., which can be readily moved from place to place with the possibility of becoming confused with a like piece of equipment which has not been cleaned, must be prominently marked as cleaned or gas free, together with the date of such preparation.

55. The use of light distillates for cleaning purposes is strictly forbidden.

56. Smoking, except at approved locations, and carrying matches other than safety matches anywhere within the plants, are absolutely forbidden.

57. Fire fighting equipment should be used for fires only.

58. Do not block access to fire fighting equipment with equipment or materials.

59. Water should not be used to extinguish a fire on or about electric apparatus as it is a conductor of electricity. Use dry chemical extinguisher, CO_2 extinguisher, blankets, or sand.

60. Avoid working close to sewer manholes whenever possible. Do not drag or drop material on them as such action might create a spark.

61. Familiarize yourself with the location of fire extinguishers, fire blankets, and safety showers in the area in which you are working.

GLASS CONTAINERS

62. Sample bottles are to be used only for those purposes for which they are furnished. They are not to be used for carrying drinking water, etc.

A Samples having Reid vapor pressures of less than 15 lbs. require no special protection or marking.

B. Samples having Reid vapor pressures of 15 to 25 lbs. may be taken in the approved glass bottles provided they are kept during storage or transportation in metal containers. The metal containers may be closed or left open as desired.

C. Samples having Reid vapor pressures between 25 and 35 lbs. may be taken in the approved glass bottles provided they are kept during storage or transportation in an ice water bath or in a metal container in a refrigerated storage room at a temperature not to exceed 45°F.

D. Samples having Reid vapor pressures of 15 lbs. or higher in glass containers must have a red tag attached solely for the purpose of indicating the vapor pressure. A separate tag should be used for sample identification.

E. Samples having Reid vapor pressures of 35 lbs. or higher must be taken in approved metal bombs, except under the following circumstances:

Personnel conducting experimental laboratory work may place samples up to one quart in size in glass containers and store in wet or dry ice baths or in suitable refrigerated storage under their own custody. If the samples are to be transferred from one laboratory section to another, the conventional procedure must be used, except under special agreement with the receiving section head or his authorized representative.

63. Glass bottles three-gallon or larger, regardless of contents, or one-gallon or larger containing corrosive chemical solutions, shall be transported and handled only in a protective container.

64. Empty bottles and bottles containing clear products should not be placed where they might act as a burning glass and direct the sun's rays on flammable material.

GOOD HOUSEKEEPING

65. Remove or bend down all nails wherever they may be, using a hammer or other suitable implement, as protruding nails are a serious hazard. Do not bend down nails by stepping on them. All nails in the heads of kegs or wooden barrels shall be removed when the containers are opened.

66. Do not place material or equipment closer than six feet from the outside rail of any railroad track.

67. Keep all aisles, passageways, stairs, platforms, and ladders clear of all obstructions. Material should not be placed where it will offer a stumbling hazard and should be piled with due regard to safety.

68. Never allow oily waste, rags, or clothes to lie around. They should be placed in closed metal containers. Oily or chemically damaged boards should not be used to build scaffolds.

69. Any oil, catalyst, or chemical spilled on stairs, platforms, walkways or any other walking areas should be cleaned up immediately; it may cause a fall.

70. Waste material should not be allowed to accumulate but should be cleaned up and hauled away.

71. Floors should be kept clean and in good repair.

GUARDS

72. All excavations must be adequately guarded or covered with planks to prevent anyone from falling or stepping into them. Planks of adequate strength and length must be used. Covers and guardrails must be replaced before leaving a job where the work is not continuous.

73. Openings in handrails made to facilitate the handling of material must be adequately guarded. Permanent handrails and guardrails must be replaced immediately after the need for the opening is ended.

74. Handrails must not be used as a support for material such as exchanger heads, manhole cover plates, etc.

75. Any employee removing covers from manholes or pits in floors or in the ground must replace them or see that the openings are adequately guarded if left open.

76. When working on a ladder, platform, or piece of equipment over a road, walkway, or passageway a warning sign, "Men Working Overhead", must be prominently placed below.

LADDERS AND STAIRWAYS

77. Ladders must be in good condition. They must be equipped with safety shoes or securely fastened to prevent slipping.

78. Ladders must not be placed in front of a door unless the door is locked or adequately guarded.

79. To descend a ladder, always face the ladder and keep a firm hold.

80. When necessary to climb ladders or stairways, use a hand line to raise or lower material. Carpenters building scaffolds and riggers doing construction work are excepted. However, they should see that a reasonably free use of the hands is provided at all times.

81. While going up or down stairways, avoid carrying tools or material in such a way as to prevent the free use of the hands.

82. When working from a ladder, care should always be taken to keep from leaning too far.

LIFE BELTS

83. An altitude hazard shall be construed as existing whenever men are required to work from any sort of scaffold, platform or other elevation which does not provide sufficient protection to the worker. Under such conditions, men shall be required to wear life belts.

Excepting:

(a) Men working from approved scaffolds.

(b) Men working on approved carriages.

(c) Men working on roofs with less than 1/4 pitch (on all other roofs, men must wear lift belts; also on any roof when working within six feet of the edge).

(d) Riggers.

(e) Carpenters erecting scaffolding or other timber framing.

(f) Structural iron workers when erecting structural iron.

84. When a life belt is worn, the left belt line must be supported independently of the scaffold, carriage, or platform from which the men are working.

85. All life belts and ropes should be thoroughly inspected before being used. If found to be defective, they should be discarded.

MACHINERY

86. The operation of any machine except by an authorized employee is prohibited.

87. Do not work on any machinery while it is in motion if it is practical to shut it down. All guards must be kept in place while the machinery is in motion and not being worked on.

88. No major repair work should be done over moving machinery. When working close to moving machinery, a guard must be provided between the machinery and the men working.

89. Tool rests on abrasive wheels must be kept adjusted close to the wheel and above the center of the wheel.

90. Only authorized employees shall be permitted to change or replace grinding wheels on permanent installations.

91. Hoist machine operators should keep their eyes on the man giving signals and should not allow cables to stack up on the side of the drum.

MECHANICAL EQUIPMENT

92. The use of any makeshift apparatus is prohibited. For example, drums or barrels must not be used for workbenches, supports for scaffolds, etc.

93. Men are not allowed to ride on material, hoists, crane blocks, or crane loads.

94. Chains are to be used only in places and on work where their use has been authorized.

95. Inspect all scaffolds and working platforms before going on them to see that they are adequately supported and made from good and substantial material. Use enough planks to provide sufficient footing.

96. Do not overload any scaffold or platform.

97. Avoid the use of ropes which show excessive wear or which may have been weakened due to exposure to the elements or to chemicals. Test ropes before trusting your life to them.

PETROLEUM AND CHEMICALS

98. The petroleum aromatics and certain chemicals present additional hazards to those of the ordinary petroleum hydrocarbons. In addition to the vapor inhalation hazard, they may be absorbed by skin contact. Care should be taken to avoid skin contact.

a. Before entering vessels or enclosed areas, such as pump pits, where aromatic hydrocarbons or chemicals have been stored or handled, the Safety Department must be called in order that proper tests for concentration may be made. Gas masks suitable for the condition which exists must be worn.

b. Gas Masks and protective gloves must be used when gauging and sampling these materials in tanks or tank cars.

c. Protective gloves must be used when sampling these materials at units.

d. In case of skin contact with these materials, they must be immediately washed off with soap and water.

e. When sampling or gauging on equipment handling these chemicals, extra care should be taken to avoid skin contact. The hands should be washed with soap and water after such operations.

f. When opening or cleaning equipment, processing or handling these chemicals, protective equipment such as gloves, rubber aprons or suits, etc., must be used.

g. If any of these chemicals are spilled on the clothing, the clothing should be removed and a shower taken. If a change of clothing is not available, coveralls may be provided upon authorization of the foreman or his authorized representative.

h. Any skin irritation must be reported to the Medical Department.

i. Tanks and equipment handling toxic materials shall be posted with the approved caution sign.

j. When tanks which have contained these materials are removed from service for cleaning, the Safety Department is to be notified.

k. When mechanics are given an O.K. to work on lines or equipment handling toxic materials, the line or equipment must be tagged with a caution tag by the operator designating the work.

l. When a valve, fitting, line or piece of equipment which has been in toxic material service is to be sent to the Reclamation, Inspection, or other shops, it must be tagged with a caution tag by the person sending the material. The tags may be secured from the process operators.

m. All samples of the above chemicals submitted to the Laboratories must be tagged, "Caution -- May contain skin irritants".

99. Before giving an O.K. for equipment to be repaired, the operator must check that all the necessary preparations have been made, that the required permits have been issued and that the mechanics have been advised of any special hazards.

100. No one shall enter any vessel which has contained oil, chemicals, or other harmful materials, until the vessel has been properly prepared, and the necessary permits have been issued.

101. Before returning equipment to service after repairs, the operator must inspect it to assure that it is in proper condition to operate.

102. When equipment in chemical service is to be worked on, a connected water hose must be at hand. Do not permit work until the hose is connected and ready to use.

103. Caustic or acid solutions should never be placed in galvanized iron drums.

104. Do not gauge acid or caustic tanks when materials are being unloaded into the tanks.

105. The air pressure used to remove any chemicals from tank cars shall not exceed thirty pounds per square inch.

106. Red tags are to be used on all containers holding samples having a Reid vapor pressure above 15 lbs. Approved sampling bombs are excepted.

107. Employees exposed to any toxic materials shall consult their foreman for definite instructions and necessary protective equipment. Written memoranda covering the regulations for handling toxic materials will be issued and are to be considered a part of this Accident Prevention Manual.

108. Keep to the windward of hatches when gauging and sampling in order to avoid, as far as possible, breathing vapor or fumes as they may be harmful.

109. If highly volatile products come in contact with the skin, wash them off at once as they may cause severe burns. If burning occurs, report to the First Aid Room at once for treatment.

PRODUCTION EQUIPMENT

110. When any work is to be performed inside an enclosed space under circumstances which would render the work or working conditions hazardous, if external conditions were to change, a requirement that a stand-by man be provided shall be specified on the permit to enter or to perform hot work. It will primarily be the responsibility of the operator who signs the permit to designate when the standby man is necessary. The person performing the work shall be responsible for seeing that a standby man is provided.

When any work is to be performed inside an enclosed space where a hazardous condition exists or may be created by work inside or other mechanical work in the vicinity, one man shall be designated to remain in constant attendance immediately outside to give warning, or render assistance in any emergency. The supervisor in charge of the work shall be responsible for deciding when a standby man is required, for securing the individual to function in this capacity, and for providing proper equipment and instructions.

The standby man shall be a man who understands the work being performed, who is capable of recognizing conditions which are hazardous, and who can render adequate assistance in emergencies. The equipment to be furnished (rope, extinguishers, blanket, gas mask, etc.) shall be determined and secured by the mechanical supervisor in charge of the work. The instructions to be given the standby man shall be determined by the person or persons involved in the determination for the need of a standby man. If the standby man is assigned any other duties, it shall be the responsibility of the supervisor assigning the standby man to see that such duties do not take him away or detract from his primary duty as standby. If a process man is available, he may be used.

If at any time, either before or during the work, the inspector, operator, or mechanical supervisor in charge of the work, thinks a standby is necessary, one shall be provided.

111. When men are working inside any enclosed vessel, signs indicating this fact shall be prominently displayed at the entrance or manhole.

112. Because of thermal expansion, liquid must not be blocked off in any line or piece of equipment where the temperature of the liquid can be raised from any source of heat. Failure to bleed, vent, or circulate the liquid may result in the rupture of the line due to thermal expansion and a possible subsequent explosion. Attention is called to refrigeration systems, exchangers, coolers, condensers, cooling jackets, steam traced lines, pancake coils, and similar types of equipment.

113. Production operators must see that water or test liquid has been drained from equipment hydrostatically tested, after the final test has been made and before the equipment is placed in operation.

114. Tightening or adjusting of production equipment in service must not be done until the Mechanical Department mechanic doing the work has made a personal check of the work and received the approval of the Production Department. Some member of the Production Department must be in the immediate vicinity when the work is being done. The rule does not apply to mechanics regularly assigned to a given unit.

115. Before starting a fire in a firebox, be sure that the firebox has been purged of gas.

116. Do not go on top of tanks during storms.

117. When gauging tanks with steel tapes, the tape should be kept in contact with the gauge hatch at all times when raising or lowering the bob.

118. Inspect all stairways, tank tops and lines as you pass over them and report any major defects. Keep off roofs as far as possible, particularly roofs showing signs of rusting.

RESPIRATORY PROTECTION

119. Where a gas hazard exists, a gas mask of a type suited to protect against the specific condition must be worn. If there is any doubt, consult your supervisor.

120. The following work requires the use of a respirator; in addition, supervisors may require its use on other work not specified:

Dust Respirators:

(a) Using buffing machines.

(b) Installing or repairing lead lining in enclosed vessels or enclosed spaces.

(c) Cleaning tubes in boilers, stills, flues, etc., where a dry or dusty condition exists.

(d) Dismantling concrete, brick or other materials of a similar nature.

(e) Acetylene burning and cutting in confined spaces.

(f) Handling materials in powder or semi-powder form or which cause dust particles to be present in the atmosphere: (Catalyst, aluminum sulphate, bulk soda lime, sulphur, filter clay and all powdered chemicals)

(g) Handling litharge.

(h) Filling sandblast and gunnite machine.

(i) Handling cement in enclosed areas and dumping cement bags.

(j) Anyone standing or working near other persons whose work requires the use of a respirator must also wear one.

C ster Respirators:

(k) All paint spraying operations.

(l) All operations where annoying or irritating gases or fumes may be present in such small quantities that large gas mask canisters are not needed.

121. Before using a gas mask, be certain that you are thoroughly familiar with the proper methods of adjusting and testing it. See your supervisor or report to the Safety Department for instructions.

122. In mounting stairs with a mask on, walk up slowly and rest a minute at the top before beginning operations.

TOOLS

123. Do not use defective tools.

124. S. wrenches or light wrenches of any kind shall not be struck with a maul or hammer.

125. The use of two open end wrenches to secure leverage by placing one into the jaws of the other is prohibited.

126. Files without handles must not be used (glass work excepted).

127. Tools made from spark-resistant material must be used where gas may be present. The minimum requirements are the use of intermediate tools made of spark-resistant materials. In extreme cases, a water hose must be played on the tools.

128. When using a wrench, be sure it fits properly and in applying force push or pull evenly and steadily.

129. Before using a pneumatic tool, inspect the couplings and hose connections to see that they are safely attached and in good condition.

130. No hoist or chain block is to be used for a load greater than its rated safe working capacity. These tools should be inspected before each use to assure that they are in good condition.

131. Care should be exercised to use the proper tool and method for the work at hand.

132. Exercise care in carrying and using tools to avoid injury to yourself and others.

TRESTLE SCAFFOLDS

133. Trestle scaffolds must have a base with the least dimension equal to not less than one-half the scaffold height. The scaffold legs shall be spread at equal angles from the vertical.

134. Trestle scaffolds shall be decked, where possible, with a minimum of three 2 x 10 boards.

135. Each decking board shall have an overhang of eight to twelve inches on each end.

136. The extent to which and the purpose for which trestle scaffolds are used should be limited.

MISCELLANEOUS

137. Protective caps must be kept on compressed gas cylinders at all times when the cylinders are not actually connected to equipment.

138. The use of air for opening plugged sewers is unsafe and is prohibited.

139. Packing must not be removed from a gland by blowing it with pressure.

140. Wash the hands frequently, always before eating.

SECTION C. PERSONAL PROTECTIVE EQUIPMENT

Personal protective equipment is provided to enable work to be carried on where the hazard involved cannot be eliminated. The ideal solution, and always the first thing to be considered, is to remove the hazard. Since this is not always possible, especially where the condition is of an emergency or temporary nature, the use of personal protective equipment is the only practical solution. The selection of the proper personal protective equipment for the needs of the job is very important. As a guide in making this selection, the following information is provided.

RESPIRATORY PROTECTION

Certain of our operations may at times contaminate the air we breathe, introducing noxious or nuisance dusts, or corrosive vapors, or toxic fumes or gases. The effects of these contaminants may range from minor discomfort to actual menace to health. This condition creates the need for a device which will either remove the substance from the air we breathe or supply us with uncontaminated air.

In general, five different types of respiratory protection are approved. These are:

1. Canister-type gas masks.
2. Fresh air hose masks.
3. Air line or supplied air equipment.
4. Canister (fume) respirators.
5. Dust (filter type) respirators.

Each type of equipment has a definite purpose, but its limitations must be kept in mind. One limitation is common to all: they will not provide protection in an atmosphere contaminated by a substance which may be absorbed through the skin.

CANISTER-TYPE GAS MASKS

The action of a canister-type gas mask is one of absorbing gases which may be mixed with air by drawing them through a container, called a canister, filled with a chemical. The efficiency of the chemicals in the canister is dependent on the amount of gases which may be present. Large amounts, or high concentrations, overload the absorbing rate and some of the gases pass on through. Therefore, this equipment should be used only in low concentrations of gases.

It is also necessary that an adequate supply of oxygen be present in the atmosphere where such equipment is used. The canister does not supply oxygen; it only removes a definite limited quantity of the gas for which it was designed.

For these reasons, the canister-type masks are not approved for use in closed containers. Exceptions to this are in cleaning tanks where tests have indicated a gas concentration of less than 20% of the lower explosive limit.

Canister Service Identification

Five different types of canisters are listed. Each type affords protection against a specific type or combination of gases. Be certain that you have the correct canister for the gas to which you may be exposed.

BLACK CANISTER---Provides protection against organic vapors such as aniline, benzene, ether, gasoline, tetraethyl lead, in low concentrations. These canisters contain activated charcoal.

Time Limit -- 10 hours.

Maximum concentration -- 20% of lower explosive limit.

WHITE CANISTER---Provides protection against acid gases, such as hydrochloric acid (HCl), hydrogen sulphide (H_2S), sulphur dioxide (SO_2), chlorine, etc., in low concentrations. These canisters contain soda lime or caustic soda fused on pumice granules.

Time limit -- 10 hours.

Maximum concentration -- 2%

YELLOW CANISTER---Provides protection against a combination of acid gases (See White Canister) and organic vapors (See Black Canister) in low concentrations. These canisters contain activated charcoal and soda lime.

Time limit -- 10 hours.

Maximum concentration -- 20% of lower explosive limit.

GREEN CANISTER---Provides protection against ammonia in concentrations not exceeding 3 per cent. It must be noted that this concentration of ammonia may cause serious skin irritation. These canisters usually contain silica gel or malic acid.

Time limit -- None; replace if odor of ammonia is detected.

Maximum concentration -- 3%

RED CANISTER (All-Service)---Provides protection against combinations of acid gases, organic vapors, ammonia and carbon monoxide (CO), in low concentrations. This canister contains soda lime, activated charcoal, silica gel, hopcalite and cotton wool filters.

Time limit -- 2 hours.

Maximum concentration -- 2%

If in doubt as to the correct canister, call the Safety Department.

Maintenance and Inspection

Masks should be carefully inspected before each use. The facepiece should be checked for any defects, such as loose or cracked lens, defective exhalation valve or head straps broken or missing. The hose should be checked to assure that it is securely fastened to the facepiece and canister and that there are no breaks in it. The canister should be checked to see that there is sufficient time remaining for the job at hand and that the canister is not over one year old. Keep the mask clean and in good condition. Make no repairs to the mask -- return it to the Safety Storeroom at once if you find any defect.

Limitations and Cautions

The canister must be renewed once every twelve (12) months, whether used or not. They must not be used beyond the time limit given in the Canister Service Identification Chart.

Canister gas masks shall not be used in any enclosed area, such as a closed vessel, condenser box, excavation or manhole, unless gas tests indicate that the quantity of gas present is within the safe limit of the canister. Care must be taken in using such equipment to assure that the capacity of the canister is not exceeded. This may occur in such work as repairing leaks in gas lines even when working in the open. If there is any doubt, use a fresh air mask. Only the all-service or red canister mask is approved for use where there is heavy smoke; the others will give no protection.

Do not use gas mask facepieces which have been used by others until they have been sterilized. Return the masks to the Safety Storeroom.

An individual with a punctured ear drum may not be adequately protected from gas by a gas mask. Under certain conditions, it may be possible for gas to be drawn through the punctured ear drum into the lungs. In order to provide the greatest possible protection for such employees, the following procedure must be followed:

Any employee who is required to wear a gas mask, either canister or fresh air type, must be asked if he has a punctured ear drum. If he has, he should be instructed to secure from the Safety Storeroom a device known as an "ear defender". This device should be inserted in the punctured ear before the mask is put on. It should not be removed until after the mask is removed. If at any time gas is noticed while wearing the mask, leave the contaminated area at once and check the equipment.

FRESH AIR HOSE MASKS

Fresh air hose masks must be used in all cases where it is necessary to enter any enclosed area where tests indicate hydrogen sulphide (H_2S) gas to be present even in slight concentrations; in all cases where flammable gases are present in concentrations above 20% of the lower explosive limit; in all cases where it may be necessary to enter a closed vessel which has not been prepared in accordance with the standards for such preparation; in all cases where the gas concentration exceeds the allowable limit for canisters; in entering areas where there is heavy smoke; or where there is an oxygen deficiency.

Operation

The facepiece should be adjusted and tested as in the case of canister masks. See that the hose and life lines are not entangled. The blower MUST be placed where there is plenty of fresh, uncontaminated air. Where a hand-driven blower mask is being used, the crank must be turned continuously from the time the man puts on the facepiece until he has returned to pure air and has removed facepiece completely.

A life line must be attached to the hose mask harness.

Maintenance and Inspection

The facepiece should be inspected as instructed in the case of canister type masks. The hose should be carefully inspected to assure that there are no defects and that all joints are tight. The blower should be checked and tested to see that it is operating properly. The life line should be inspected to assure that it is in good condition and securely attached to the hose mask harness. When through using the equipment, clean the exterior of hose and the life line. Be sure all parts of the equipment are returned to the Safety Storeroom.

Limitations and Cautions

Do not use more than 150 feet of hose on each blower connection.

Care must be used to avoid placing the blower where the air may be contaminated -- do not place it in the vicinity of sewer manholes or catch basins. Keep to the windward side of any possible contaminating source.

Always have a man present to assist in any emergency which might arise.

Use only men who are thoroughly experienced in the work which is to be performed.

Be certain that the gas or vapor is not a type which may be harmful to the skin; for example, a high concentration of ammonia.

AIR LINE MASK

When and Where Used

An air line respirator, for connection to compressed air lines, provides essentially the same protection given by fresh air masks. It differs from the hose mask mainly in two features: It has a hand operated, quickly detachable coupling connected to the belt or body harness so the operator can connect onto a compressed air hose, and a flow-limiting device with capacity to permit air flow only between 2 and 20 cubic feet per minute. A trap and filter are installed in the compressed air line ahead of the mask to remove any oil, water, scale, or gas from the air. They are used where operations require continuous use of a mask. They offer no breathing resistance and are consequently not fatiguing.

CHEMICAL CARTRIDGE RESPIRATOR

When and Where Used

Chemical cartridge respirators may be used for all operations where annoying or irritating gases or fumes may be present in such small quantities that the canister gas mask is not needed. Such operations as spray painting, or where organic solvents are used and when done in the open air are examples of situations where the use of this equipment is advisable. It is recommended for use during long exposure to gases which are not ordinarily considered harmful or are not present in harmful concentrations.

Operation

The facepiece should be adjusted so as to fit snugly on the face. The head straps should be adjusted to maintain tension without discomfort. The correct cartridge should be used for the service. The cartridges are identified by the same color system as is used in the canisters.

Maintenance and Inspection

The facepiece should be inspected for any defects in the exhalation and inhalation valves, and to assure that the headbands are in good condition. The cartridge should be checked to see that it is the proper type and is tightly screwed into the holder. Keep the facepiece clean and dry.

Limitations and Cautions

This equipment must not be used where gases or fumes may be present in high concentrations.

It must not be used in closed vessels. It must not be used as a substitute for a canister mask.

Due to the nature of the work where this equipment is used, time cards are not required. If any gases or fumes are smelled through the cartridge, it should be changed at once.

Do not wear a respirator which has been worn by som e else until it has been sterilized. Return it to the Safety Storeroom for cleaning.

Keep the cartridge dry. If it becomes saturated with moisture, it should not be used again.

This respirator will not provide protection against dust or metal fumes from welding, burning, soldering, etc.

DUST RESPIRATORS (Mechanical Filter Type)

When and Where Used

Dust respirators must be used for all operations where there is an excessive amount of dust in the air. Such work as handling powdered chemicals, lime, soda ash, sulphur, litharge, and handling filter clays, sand, etc., are examples of operations where dust respirators must be worn. The filters provided are approved for all dusts, both toxic dusts such as lead, cadmium, arsenic, etc., as well as type A dusts such as silica, asbestos, coke, cement, etc.

Operation

The respirator must be adjusted so that it fits snugly around the nose and mouth to secure protection. Respirators with metal facepieces should be shaped by the user to fit his individual facial contours. The headbands should not be any tighter than necessary to hold the facepiece secure.

Maintenance and Inspection

The facepiece should be inspected for any defects in the inhalation and exhalation valves and to assure that the headbands are in good condition.

The filter must be properly fitted and securely fastened.

The filters should be cleaned or changed as frequently as is required to maintain ease of breathing. This will depend on the amount of dust present.

Limitations and Cautions

This equipment is only a dust filter. It will NOT protect against gases, fumes, vapors or smoke.

Do not wear a respirator which has been worn by someone else until it has been sterilized. Return it to the Safety Storeroom for cleaning.

FACE AND EYE PROTECTION

To protect the eyes and face against injury from flying objects, splashing liquids and harmful rays that cannot always be controlled at the source, the following types of personal protective equipment are provided:

1. Goggles (Safety Glasses)
2. Face Shields
3. Dust Hoods and Masks
4. Acid Hoods
5. Welding Hoods

GOGGLES

When and Where Used

Nearly all eye injuries can be prevented by the use of goggles. Eye injuries may be caused in so many different ways that it is impossible to say under what circumstances we may be safe without goggles.

There is hardly any job, whether in a shop, on maintenance or construction work, on any operating unit, in a laboratory, or even in an office, where an eye injury has not occurred. From past experience of our own, as well as that of others, certain jobs and operations have been designated as requiring the use of goggles. They are minimum requirements and must be followed.

Recommended Service

It is obvious that no one device can provide protection against the wide variety of eye hazards presented in the many operations in the plant. The following types of goggles are provided for the services indicated:

HEAVY IMPACT---Cup type goggles provide protection against heavy impact from relatively large flying objects while chipping, cutting rivets or bolts, riveting, caulking, heavy grinding, striking operations such as breaking concrete, etc.

LIQUID SPLASHES---Plastic mask type goggles are provided for protection against splashes of injurious liquids, such as chemicals, oil, etc. They also provide some protection against dust as well as moderate and light impact hazards.

DUST---A plastic frame goggle with a large single plastic lens provides protection against dust. The plastic mask type without ventilators may also be used. They also provide protection against flying objects and liquid splashes.

VAPORS AND GASES---A rubber frame gas-tight goggle provides protection against vapors and gases where respiratory protection is not required. Due to inbuilt cup construction, a slight nod of the head quickly clears fogged lens. This goggle is not recommended for impact hazards.

Operation

For maximum protection and comfort, goggles must be properly adjusted to fit the face.

Goggles with elastic headbands can be easily adjusted by the user. The headband should be worn just tightly enough to hold the goggle firmly to the face. The headband should come just above the ears and then slope down on the lower part of the back of the head. Do not place the band over a cap or hat while using the goggles.

Maintenance and Inspection

When goggles are not in use, keep them in the case provided. Do not throw them in tool boxes, drawers, etc. They may be damaged or the adjustment thrown out of line.

Keep your goggles and lens clean. Do not wear a pair of goggles which have been worn by someone else until they have been sterilized.

Be sure the headbands are in good condition and elastic. Have defective bands replaced.

The lens must be securely held in the frames. Inspect them for pits or scratches which may cause eye strain. Have such lens replaced at once.

Limitations and Cautions

Do not make any repairs to goggles. Do not use defective goggles. Return them to the Safety Storeroom for repairs or exchange.

Be sure you use the correct goggles for the hazard involved. Do not use an impact type goggle for a liquid splash hazard.

PRESCRIPTION GOGGLES

When corrective lens are needed, prescription goggles will be provided. These spectacle goggles do not replace the need for other types of eye protection, where an employee is exposed to splash hazards. In such cases, additional suitable eye protection must be secured and used.

In all cases, the employee must furnish the prescription.

The procedure for obtaining prescription goggles is as follows:

a. Secure industrial prescription form on which frame details will be noted.

b. Take the industrial prescription form to your oculist or optometrist, who must complete and sign it.

c. Return the signed completed prescription to the Safety Department and select your frame style. You will be notified when the goggles are received.

FACE SHIELDS

When and Where Used

Certain operations present a hazard to the face as well as to the eyes. In such cases, one of the various types of face shields provides suitable protection. A transparent plastic shield in a suitable frame is recommended for such jobs as metal sawing, working with chemicals at laboratory benches, buffing, sanding, light grinding, wood-working operations, etc.

Operation

The headband is the only adjustable feature on the face shield. It should be adjusted so as to hold the shield in place.

Maintenance and Inspection

As the shield is plastic, it is easily scratched. It should be replaced when these scratches cause interference with the vision.

Limitations and Cautions

These shields should not be used for heavy grinding, chipping, or other operations where resistance to severe impact is necessary.

DUST HOODS AND MASKS

When and Where Used

Dust hoods and masks are provided to furnish working comfort on all dusty jobs where nuisance or harmful dusts affect the eyes as well as the respiratory system. The hood type is particularly suited for use when cleaning boilers, furnaces, etc., or where irritating dusts are present.

Operation

The operation is similar to that of a dust respirator.

Maintenance and Inspection

Same as for dust respirators.

Limitations and Cautions

This equipment is only a dust respirator. It will NOT protect against gases, fumes, vapors or smoke.

Do not use a mask or hood which has been worn by someone else until it has been sterilized. Return it to the Safety Storeroom for cleaning.

ACID HOODS

When and Where Used

An acid hood should be used for protection of the head, eyes and face from chemical sprays and splashes. Opening chemical lines, repairing chemical pumps, emergency repair work, etc., are types of work for which it is recommended.

Operation

The headband should be adjusted to fit the wearer. The lens should be cleaned before use.

Maintenance and Inspection

The lens should be inspected to see that it is not broken.

The hood should be checked for breaks or tears.

Limitations and Cautions

This equipment does not protect against fumes, vapors or gases.

HEAD PROTECTION

When and Where Used

The protective or safety hat is a necessary item of personal protective equipment where the head is exposed to the impact of falling objects or severe bumps against overhead structures or objects. Since these hazards are ever present in almost all parts of the plant, it follows that the sensible and practical course is to use a safety hat at all times when in the plant.

Operation

The cradle should be adjusted so that the weight of the hat is carried on it. There must be clearance between the top of the hat and the head.

Do not draw the headband too tight, just snug enough to prevent the hat from tilting. Special liners are available for winter use.

Maintenance and Inspection

Inspect the hat daily for broken brim or crown, defective headband or cradle. Replace them at once if found defective. Keep the headband clean.

Limitations and Cautions

Do not cut or drill any holes in your safety hat. You may weaken it and destroy its protection.

HAND PROTECTION

CHEMICALS AND IRRITANTS

When and Where Used

The injurious effects of chemicals and many oils on the skin require the use of protective gloves.

Protective gloves shall be used on any operation where there is a definite contact or probability of contact with injurious chemicals, solvents, aromatics, heavy catalytic cracked oils or hot oil. Where there is continuous contact with any type of oil, protective gloves shall be used.

Two types of protective gloves are provided for this service, synthetic rubber coated and plastic coated. The plastic coated gloves will not give as good service.

Maintenance and Inspection

The gloves should be carefully inspected for breaks before use. Chemicals or oil should be washed from the gloves after use, as it may weaken the glove if it remains on it for long periods.

Do not wear a glove which has been worn by someone else until it has been sterilized. Return it to the Safety Storeroom. Keep the inside of the glove clean. If it becomes soiled or contaminated with chemicals or oil, return it to the Safety Storeroom for cleaning.

HEAT

When and Where Used

When handling steam hose for long periods or when exposed to excessive heat during preheating operations, a cloth protective glove is provided which will give protection.

When melting and pouring hot tar or asphalt, the asbestos glove should be used.

Maintenance and Inspection

Inspect for breaks or tears. Keep glove dry.

FOOT PROTECTION

Standard safety shoes and boots are recommended for in-plant wear and are available at factory cost. The shoes are durable and provide adequate protection against foot and toe hazards on the plant.

When work is performed on hot surfaces, wood sole over-shoes are provided. The shoes are worn over regular safety shoes.

Rubber boots are provided for work involving acids, caustics, slop, sludge, bottom settlement, and water. Rubber boots are not an item of re-issue for sanitary reasons. Plastic throw-away boots may be issued as an expendable item.

BODY PROTECTION

APRONS AND SUITS

When and Where Used

When opening or working on equipment in chemical, aromatic, or heavy catalytic cracked oil service, protection for the body may be obtained by the use of synthetic rubber or plastic coated aprons. Where severe conditions exist, synthetic rubber or plastic suits should be used.

The suits may also be used for protection on extremely wet jobs such as in cooling towers, condenser boxes, etc.

For special conditions, complete protection can be obtained by the use of the acid suit which combines boots and gloves as an integral part of the suit. This should be used with an acid hood.

Operation

When using combinations of protective clothing, the upper garment should always overhang the lower to avoid dripping chemicals or oil into the lower. Trouser legs should be outside of boots.

Where corrosive or harmful liquids are handled, the protective clothing should be washed with a water hose before it is removed. Boots, coats, hats and aprons should be removed before gloves, and the hands should be washed before removing goggles or face shields.

Limitations and Cautions

When using this equipment, it should be remembered that its use to eliminate one hazard may introduce another. Working with such equipment around revolving or reciprocating machinery may introduce a hazard of loose ends catching. Under such conditions, be sure there are no loose or dangling strings or parts.

When using this equipment, be sure that the proper respiratory protection, if needed, is secured. If a hood is not used or required, use the proper goggle.

COVERALLS

When and Where Used

Coveralls are provided and required as personal protective equipment when performing operations where a definite injury hazard exists, such as unloading lime, sulphur or other injurious dry chemicals, during cleaning operations in leaded gasoline tanks and tank cars, etc.

Coveralls may be furnished to protect ordinary clothing upon authorization of the department foreman or his designated representative for:

a. Working on or opening equipment in chemical service.

b. Working on extremely dirty jobs.

Maintenance and Inspection

Return coveralls for cleaning after use. Do not use defective coveralls for the service indicated above.

Limitations and Cautions

These coveralls do not provide adequate protection from liquid splashes of harmful chemicals or oils. Synthetic rubber or plastic coated aprons or suits should be used in such cases.

MISCELLANEOUS ITEMS

LIFE BELTS

When and Where Used

Life belts are required whenever a fresh air hose mask is used.

Their use is also required where work is performed under an altitude hazard.

Operation

The life belt should be fastened snugly but not tight. All buckles should be securely fastened. The life line, minimum size 3/4 inch manila rope, must be supported independently of the scaffold, carriage, or platform from which the work is being done.

The life line must be tied off as short as the necessary movement of the worker will permit, in order to limit the length of any possible free fall. The longer the free fall, the greater the impact on the wearer and the belt.

Maintenance and Inspection

Life belts must be inspected very carefully before each use. Fabric belts must not be used if the outer plies are cut or worn through, or if there are any signs of chemical damage.

All belt hardware must be inspected and replaced if it shows any signs of wear. If the belt is riveted, each rivet should be examined separately.

The life line must be carefully inspected for any signs of damage or wear. If in doubt, replace the rope. Be sure that the life line is securely attached to the D-Ring of the belt. Be sure the tie-off point is of adequate strength.

Limitations and Cautions

If a life belt is exposed to or comes in contact with chemicals during use, clean it immediately. Report such cases when returning the belt. Keep the belt clean, dry and in good condition. Your life may depend on it.

SWEAT PADS

When and Where Used

Sweat pads are provided to eliminate the discomfort and possible hazard caused by perspiration from the forehead running over the face and into the eyes. Its use is optional with any employee.

Operation

The pads should be dipped in cool water and squeezed dry before use.

Maintenance and Inspection

The pad should be washed out after each use. Keep it clean.

EAR PROTECTION

When and Where Used

In boiler shops, on construction jobs, during the operation of pneumatic tools and cleaners, excessive noise may cause fatigue and distraction which might result in an accident and injury. For such jobs, ear plugs can reduce the sound level and provide some relief. Ordinary conversation can be carried on while wearing them.

Operation

The correct size ear plug should be inserted in each ear before starting the job.

Maintenance and Inspection

The ear plug should be washed with soap and water and carefully dried after use. When not in use, they should be kept in the container provided.

Limitations and Cautions

Do not use an ear plug which has been used by someone else until it has been sterilized. Never use paper, cotton or any other makeshift in the ear.

PROTECTIVE CREAMS

When and Where Used

Protective creams are provided to protect the skin against the irritating effects of oil, certain chemicals, dusts and grime. Its use on the hands is suggested for operations where dirt, grime, paint, grease, etc., may clog the pores of the skin. It will also provide a certain amount of protection for tender parts of the body while handling lime, sulphur, creosoted material, or while cleaning boilers, furnaces or towers where sulphur compounds may be encountered.

Operation

The protective cream should be applied to the clean skin surface to be protected. The cream should be gently rubbed in and any excess removed.

The cream should be reapplied as often as necessary to provide protection. Varying conditions may require more or less frequent applications. Always remove the old coating by thorough washing with soap and water before reapplying another coat.

The cream should be removed before eating and at the completion of the job or shift.

Limitations and Cautions

Do NOT use protective creams as a substitute for gloves, aprons, suits, hoods, etc. They are intended as a supplement to them only.

Be sure you have the proper cream. A water soluble cream will not protect against water solutions; a water repelling cream will not protect against oil solutions.

SECTION D. PRECAUTIONS OF CHEMICALS

GENERAL INFORMATION

(1) All chemicals are relatively safe if the proper precautions are observed.

(2) Good practice requires that all chemicals be removed from the skin as soon as possible.

(3) Unless otherwise stated, only soap and water should be used when washing the skin and eyes.

(4) All petroleum products are solvents and continued contact with the skin may produce irritations.

ACETYLENE

HOW TO RECOGNIZE:	A colorless gas with a garlic-like odor.
TOXIC PROPERTIES:	Fire hazard. Explosive. Not a health hazard, unless it would cut down supply of oxygen.
PRECAUTIONS:	No special precautions necessary except as to fire hazard.

AGEL 67WZ

HOW TO RECOGNIZE:	A white powder.
TOXIC PROPERTIES:	A relatively safe material. Dust may be mildly unpleasant.
PRECAUTIONS:	Wear dust respirator if necessary. Otherwise, no special precautions required.

ANHYDROUS AMMONIA

HOW TO RECOGNIZE:	A colorless gas with a sharp pungent odor.
TOXIC PROPERTIES:	Causes severe burns. Vapors irritate nose and throat. Flammable.
PRECAUTIONS:	Have adequate ventilation or use proper respirator, goggles. Wear rubber gloves. Avoid inhaling vapors. Avoid contact with the skin, eyes, and clothing. Keep away from open flames.
IN CASE OF CONTACT:	Flush skin and eyes with large quantities of water. Remove clothing if necessary. Give artificial respiration if necessary. Get medical aid.

ASBESTOS

HOW TO RECOGNIZE:	A white, fibrous material.
TOXIC PROPERTIES:	Inhalation of fibers or dust may cause irritation of lungs.
PRECAUTIONS:	Work in well ventilated area. Avoid inhalation of fibers or dust. In areas of high concentration of dust it may be necessary to wear respirators.

BAUXITE

HOW TO RECOGNIZE:	Tan to black sandy looking material. Commonly called "clay".
TOXIC PROPERTIES:	Dust is a nuisance. Otherwise, relatively safe material.
PRECAUTIONS:	Dust respirator may be worn in case of high concentration of dust. Otherwise, no special precaution.

BENZENE

HOW TO RECOGNIZE:	A water white liquid with aromatic odor.
TOXIC PROPERTIES:	Highly flammable. Vapor forms explosive mixture with air. Toxic by inhalation, absorption, and ingestion. High concentration can be fatal.
PRECAUTIONS:	Avoid inhalation of vapors. Avoid contact with skin. Eyes, skin, and respiratory systems must be protected.
FIRST D:	Remove patient from exposure. Remove clothing and wash with soap and water. Start artificial respiration if breathing has stopped. Get medical aid.

BUTADIENE

HOW TO RECOGNIZE:	A colorless gas.
TOXIC PROPERTIES:	Has a narcotic effect in high concentrations. May irritate skin, eyes and upper respiratory passages. Effect on skin may be delayed and burning sensation not immediately apparent. Explosive.
PRECAUTIONS:	Wash skin with soap and water Irrigate eyes with water.

CARBON DIOXIDE

HOW TO RECOGNIZE:	A heavy, colorless, odorless gas.
TOXIC PROPERTIES:	High concentrations may cause headache, weakness, dizziness, unconsciousness, increased breathing.
PRECAUTIONS:	This is a heavy gas that collects in low places such as manholes, tank bottoms, etc. If working where there is a high concentration, wear fresh air mask or proper respirator. Cylinder of carbon dioxide should be handled carefully to prevent breaking.
IF PERSON OVERCOME:	Remove to fresh air immediately, and if breathing has stopped, institute artificial respiration. If necessary, give oxygen. Get medical aid.

CARBON DISULFIDE

HOW TO RECOGNIZE:	Clear colorless liquid. Odorless when pure; commercial grades have disagreeable odor.
TOXIC PROPERTIES:	Extremely flammable. High concentrations may be fatal. Toxic by inhalation, absorption, and ingestion.
PRECAUTIONS:	Avoid inhalation of vapors. Avoid contact with skin. Have emergency showers or wash water readily available. In high concentrations, require hose mask or air line mask. Safety belts and life lines necessary. Wear chemical-proof gloves and clothing.
FIRST AID:	Remove patient to fresh air. If breathing has stopped, start prone pressure method artificial respiration. Keep patient quiet and warm. Get medical aid.

CARBON MONOXIDE GAS

HOW TO RECOGNIZE:	A colorless, odorless gas, usually found in exhaust from motors or around furnaces.
TOXIC PROPERTIES:	May cause headaches, dizziness, nausea. High concentrations may cause severe illness or death.
PRECAUTIONS:	If concentration is great, wear fresh air mask. Avoid inhalation.
IN CASE OF ACCIDENT:	Remove from area. Give artificial respiration. Get medical aid.

CARBON TETRACHLORIDE

HOW TO RECOGNIZE:	A clear, colorless, heavy liquid with an odor of chloroform.
TOXIC PROPERTIES:	A dangerous, highly toxic solvent. Vapors will injure body system and eyes. May irritate the skin.
PRECAUTIONS:	Have adequate ventilation or wear proper respirator. Wear rubber gloves, goggles. Avoid inhalation of vapors. Avoid contact with the skin and eyes.
IN CASE OF CONTACT:	Wash skin with soap and water. Flush eyes with water. Give artificial respiration if necessary.

CAUSTIC POTASH (LIQUID)

HOW TO RECOGNIZE:	A heavy, odorless, cloudy liquid.
TOXIC PROPERTIES:	Very dangerous. Causes severe burns. Inhalation of vapors or mists causes serious injury to respiratory system.
PRECAUTIONS:	Have adequate ventilation or wear proper respirator. Wear face mask and rubber gloves. Avoid contact with skin, eyes and clothing. Avoid inhalation of vapors or mist.
IN CASE OF CONTACT:	Wash skin with water. Flush eyes with water. Gargle throat with water. Get medical aid.

CAUSTIC SODA (LIQUID)

HOW TO RECOGNIZE:	A heavy, colorless, cloudy liquid.
TOXIC PROPERTIES:	Very dangerous. Causes severe burns. Inhalation of vapors or mist causes severe injury to respiratory system.
PRECAUTIONS:	Have adequate ventilation or wear proper respirator. Wear face mask and rubber gloves. Avoid contact with skin, eyes and clothing. Avoid inhalation of vapors or mist.
IN CASE OF CONTACT:	Wash skin with water. Flush eyes with water. Gargle throat with water. Get medical aid.

CHLORINE (CYLINDERS)

HOW TO RECOGNIZE:	In cylinders under pressure. When liberated, it is a greenish-yellow gas.
TOXIC PROPERTIES:	Very dangerous to eyes. Injurious to nose and throat. High concentrations of gas irritate the skin.
PRECAUTIONS:	In high concentrations, wear proper respirator, goggles. Avoid contact of gas or liquid with skin and eyes, nose and throat.
IN CASE OF ACCIDENT:	Remove from area, give oxygen, artificial respiration. Get medical aid. Use olive oil for eyes.

STOCK 929	DIETHYLENE GLYCOL
HOW TO RECOGNIZE:	Clear, colorless, heavy, viscous liquid with practically no odor.
TOXIC PROPERTIES:	A relatively safe material.
PRECAUTIONS:	No special precautions required.

FURFURAL

HOW TO RECOGNIZE:	A yellowish to reddish brown liquid with a characteristic penetrating odor.
TOXIC PROPERTIES:	May irritate the skin. Vapors may irritate eyes, nose, and throat.
PRECAUTIONS:	If concentration is heavy, wear proper respirator and goggles. Wear rubber gloves. Avoid contact with skin and eyes. Avoid inhalation of vapors.
IN CASE OF CONTACT:	Wash skin with soap and water. Flush eyes with water.

GASOLINES (NON-LEADED)

HOW TO RECOGNIZE:	A colorless liquid.
TOXIC PROPERTIES:	May irritate the skin and eyes. Flammable.
PRECAUTIONS:	Avoid prolonged contact with skin. Do not wash skin with gasoline. Keep away from open flames.
IN CASE OF CONTACT:	Wash skin with soap and water. Flush eyes with water.

GAS OILS, HIGH BOILING AROMATIC

HOW TO RECOGNIZE:	A bright green liquid.
TOXIC PROPERTIES:	May cause skin irritation.
PRECAUTIONS:	Wear rubber gloves. Avoid contact with skin. Avoid prolonged wearing of contaminated clothing.
IN CASE OF CONTACT:	Wash skin with soap and water. Change clothing if contaminated.

STOCK 1108-1/2 — GRAPHITE, SYNTHETIC, AMORPHOUS

HOW TO RECOGNIZE:	A black powder.
TOXIC PROPERTIES:	May irritate skin and eyes.
PRECAUTIONS:	Wear rubber gloves. Avoid contact with skin and eyes.
IN CASE OF CONTACT:	Wash skin with soap and water. Flush eyes with great quantities of water.

GREEN LIGHT

HOW TO RECOGNIZE:	A greyish white powder.
TOXIC PROPERTIES:	May irritate skin, eyes, nose and throat.
PRECAUTIONS:	Have adequate ventilation or wear proper respirator. Wear rubber gloves, goggles. Avoid contact with skin and eyes. Avoid inhalation of dust or mist.
IN CASE OF CONTACT:	Wash skin with soap and water Flush eyes with water.

HAGAN PHOSPHATE

HOW TO RECOGNIZE:	A colorless, glassy plate.
TOXIC PROPERTIES:	A relatively safe material.
PRECAUTIONS:	No special precautions required.

HYDROGEN SULFIDE GAS

HOW TO RECOGNIZE:	A colorless gas with an odor of rotten eggs.
TOXIC PROPERTIES:	Very poisonous. May cause dizziness, nausea. Irritates respiratory system and eyes. High concentrations may cause severe sickness or death.
PRECAUTIONS:	Wear airline respirator if concentration is great. Avoid inhalation of gases. Avoid contact with eyes.
IN CASE OF ACCIDENT:	Remove to fresh air. Give artificial respiration if necessary. Get medical aid.

STOCK 1096	IONOL
HOW TO RECOGNIZE:	A colorless or pale yellow granular solid with a disagreeable odor.
TOXIC PROPERTIES:	A relatively safe material.
PRECAUTIONS:	No special precautions required.

KEROSINE, SOLVASOL AND NAPHTHAS

HOW TO RECOGNIZE:	Colorless liquids.
TOXIC PROPERTIES:	May irritate the skin and eyes. Flammable.
PRECAUTIONS:	Avoid prolonged contact with the skin. Do not wash skin with these products unless specifically instructed. Keep away from open flames.
IN CASE OF CONTACT:	Wash skin with soap and water. Flush eyes with water.

KONTOL 118

HOW TO RECOGNIZE:	A colorless liquid with an aromatic odor.
TOXIC PROPERTIES:	May irritate skin and eyes.
PRECAUTIONS:	Wear rubber gloves, goggles. Avoid contact with skin and eyes.
IN CASE OF CONTACT:	Wash skin with soap and water. Flush eyes with water.

KONTOL 123

HOW TO RECOGNIZE:	A colorless liquid with an aromatic odor.
TOXIC PROPERTIES:	May irritate skin and eyes.
PRECAUTIONS:	Wear rubber gloves and goggles. Avoid contact with skin and eyes.
IN CASE OF CONTACT:	Wash skin with soap and water. Flush eyes with water.

STOCK 961-1/2	LEAD, RED
HOW TO RECOGNIZE:	A red amorphous powder.
TOXIC PROPERTIES:	May irritate skin, eyes. Inhalation of dust or fumes injurious to body system. Dangerous if eaten.
PRECAUTIONS:	Have adequate ventilation or wear proper respirator. Wear rubber gloves, goggles. Remove contaminated clothing. Avoid direct contact with skin, eyes, clothing. Avoid inhalation of dust or fumes. Do not eat or smoke until hands and face are washed thoroughly. Keep away from food.
IN CASE OF CONTACT:	Wash skin with soap and water. Flush eyes with water.

MERCURY (QUICK SILVER)

HOW TO RECOGNIZE:	An extremely heavy silver colored liquid.
TOXIC PROPERTIES:	Relatively high vapor pressure. Vapors or mist may be absorbed into system. Finely divided dust may be absorbed through skin. Absorption of mercury affects nervous system. Poisonous if eaten.
PRECAUTIONS:	Avoid contact with skin. Avoid inhalation of vapors. Wash hands before eating. Vacuum clean where mercury is spilled. Change clothes if contaminated.
IN CASE OF CONTACT:	Wash skin with soap and water.

METHYL ALCOHOL (METHANOL)

HOW TO RECOGNIZE:	A clear, colorless liquid.
TOXIC PROPERTIES:	Toxic if inhaled for periods of time. Very poisonous if ingested. May be absorbed through skin. Fire hazard.
PRECAUTIONS:	Avoid contact with skin. Avoid inhalation of vapors. Do not ingest.
IN CASE OF CONTACT:	Wash skin with soap and water. Irrigate eyes with water. If ingested get medical aid immediately.

OXYGEN

HOW TO RECOGNIZE:	Stored in a cylinder. It is a colorless, odorless gas.
TOXIC PROPERTIES:	Flammable. Compressed oxygen dangerous if cylinder shocked or broken. May form explosive mixtures with other materials.
PRECAUTIONS:	Handle cylinders with great care so that they will not be shocked or broken.

STOCK 937 — PHENOL (98%)

HOW TO RECOGNIZE:	A whitish yellow solid with a distinctive aromatic odor. Liquid when heated.
TOXIC PROPERTIES:	Causes severe burns to skin. Fumes irritating to eyes, nose, and throat. Flammable, vapors will explode in air. Severe reactions in body system after absorption through skin.
PRECAUTIONS:	Have adequate ventilation or wear proper respirator. Wear rubber gloves, face mask or goggles. Avoid contact with skin and eyes. Avoid inhalation of vapors. Keep away from open flames.
IN CASE OF CONTACT:	Wash skin with water, then alcohol. Flush eyes with water. Remove clothing if necessary. Get medical aid.

PROPANE

HOW TO RECOGNIZE:	A gas.
TOXIC PROPERTIES:	Non-toxic. Undue exposure to evaporating propane may irritate the skin. Flammable.
PRECAUTIONS:	Avoid contact with skin.
IN CASE OF CONTACT:	Get medical aid if necessary.

PYROGALLIC ACID (PYROGALLOL)

HOW TO RECOGNIZE:	White crystals.
TOXIC PROPERTIES:	Irritating to skin. Irritating to nose and throat.
PRECAUTIONS:	Have adequate ventilation or wear proper respirator. Wear goggles, rubber gloves. Avoid contact with skin. Avoid inhalation.
IN CASE OF CONTACT:	Wash skin with soap and water. Flush eyes with large quantities of water. Get medical aid.

SALT

HOW TO RECOGNIZE:	White crystals.
TOXIC PROPERTIES:	A relatively safe material.
PRECAUTION:	No special precautions required.

SAND

HOW TO RECOGNIZE:	White to tan colored granules. Used in sandblasting.
TOXIC PROPERTIES:	Inhalation of dust may cause irritation of lungs.
PRECAUTIONS:	When sandblasting, wear respirator. Avoid inhalation of dust.

STOCK 953 — SODA ASH, 58%

HOW TO RECOGNIZE:	A white powder.
TOXIC PROPERTIES:	Dust or mist from solution may irritate eyes, nose, throat, and skin.
PRECAUTIONS:	Have adequate ventilation or use respirator. Wear rubber gloves, goggles. Avoid inhalation of dust. Avoid contact with skin and eyes.
IN CASE OF CONTACT:	Wash skin with soap and water. Flush eyes with water. If dust is inhaled, spray nose with water. Gargle with water.

STOCK 986	SULFUR, FLOWERS
HOW TO RECOGNIZE:	Yellow crystals.
TOXIC PROPERTIES:	Dust or vapors may explode in air. Dust may cause irritation to skin and eyes.
PRECAUTIONS:	Have adequate ventilation or wear proper respirator. Wear rubber gloves and goggles. Avoid direct contact with skin and eyes.
IN CASE OF CONTACT:	Wash skin with soap and water. Flush eyes with large quantities of water.

SULFUR DIOXIDE GAS

HOW TO RECOGNIZE:	A colorless, odorless gas found in most stack gases.
TOXIC PROPERTIES:	Irritating to the eyes, nose, throat, and lungs.
PRECAUTIONS:	Wear proper respirator and goggles if concentration is great.
IN CASE OF CONTACT:	Get to fresh air. Give artificial respiration. Get medical aid.

STOCK 940 — SULFURIC ACID

HOW TO RECOGNIZE:	A heavy liquid that may be colorless or any shade of brown to black. Will give off heat when diluted with water.
TOXIC PROPERTIES:	Causes severe burns. Vapors irritate nose and throat.
PRECAUTIONS:	Have adequate ventilation or wear proper respirator. Wear goggles, rubber gloves. Avoid contact with skin, eyes, and clothing. Avoid inhaling vapors.
IN CASE OF CONTACT:	Wash eyes and skin with great quantities of water. Get medical aid.

TERTIARY-BUTYLCATECHOL

HOW TO RECOGNIZE:	Light brown to white solid with a phenilic odor.
TOXIC PROPERTIES:	Definite hazard of skin irritation and burns. Similar to phenol in toxicity.
PRECAUTIONS:	Use protective equipment. Especially protect the eyes. Avoid contact where possible.
IN CASE OF CONTACT:	Apply generous amounts of alcohol to skin. Wash with soap and water. Flush eyes with water. Change to fresh clothing.

TOLUENE

HOW TO RECOGNIZE:	A clear, colorless liquid with an aromatic odor.
TOXIC PROPERTIES:	A flammable liquid and a dangerous fire hazard. Vapors irritate eyes, nose and throat and are injurious to lungs. Irritating to skin.
PRECAUTIONS:	Have adequate ventilation or wear proper respirator. Wear goggles, rubber gloves. Avoid contact with skin and eyes. Avoid inhalation of vapors.
IN CASE OF CONTACT:	Wash skin with soap and water. Flush eyes with large quantities of water. Get medical aid.

ZEOLITE

HOW TO RECOGNIZE:	A white powder.
TOXIC PROPERTIES:	A relatively safe material.
PRECAUTIONS:	No special precautions required.

SAFETY PROCEDURE NO. 1

PROCEDURE FOR HANDLING REPAIR OF ELECTRICAL EQUIPMENT

Effective immediately, the following plan for preparing electrically operated equipment for mechanical work will be plant-wide in the chemical plant. It is felt that a standard method of "Danger" tagging electrically operated pumps, elevators, mixers, motors and other equipment before mechanical work is performed will be a step forward in accident prevention.

The procedure is outlined below:

1. When a piece of electrically operated equipment has been shut down for repairs, the operator in charge shall open the Main Disconnect Switch. The only exception is an open-type, 2300-Volt Disconnect Switch. These should always be operated by electricians who are on call 24 hours per day. A red "DANGER -- DO NOT OPERATE" tag is then attached to the Main Disconnect Switch by the operator. The tag is to be signed and dated.

2. Before repair men start work on any electrically operated equipment, they shall be sure that the "Danger" tag of the operator of the equipment is attached to the Main Disconnect Switch. The craftsman shall then also attach his own white "Danger" tag to the Main Disconnect Switch.

3. The craftsman must remove his white "Danger" tag at the end of each day and at any time he moves to another job or the job is completed.

4. Where work may continue for several shifts or longer, the operator in charge of the equipment at the time the work is completed will remove the red "Danger" tag.

5. When necessary to start and stop machines and equipment during repairs, or to energize circuits controlling such equipment for test purposes during such repairs, the operator in charge of the equipment, after having properly warned and safeguarded all others who might be subject to injury from such operations, will temporarily remove his "Danger" tag and permit this type of test operation. The "Danger" tag is to be replaced following the test, unless the job is complete and no further work is to be done on the equipment.

NO EQUIPMENT WILL BE ENERGIZED SO LONG AS A "DANGER" TAG IS ATTACHED.

SAFETY SECTION

SAFETY PROCEDURE NO. 2

TANK CAR LOADING RACKS

1. Before loading or unloading tank cars at the racks, "Stop Tank Car Connected" sign will be placed on the open track end of the car. The sign will be two car lengths from the exposed end of the connected car. A track "Derail" will also be located two car lengths on the open track end of the connected car. Right and left derails are available, and consideration should be given to the proper side of the track to effect the derail so that there is a minimum of damage to adjacent equipment.

2. Bonding cables and static lines must be connected at all times during tank car loading and unloading operations.

3. Employees will not enter a tank car until Work Permit has been issued.

4. Extreme care should be exercised in using hand tools (to prevent sparking) around the loading operation.

5. Loading or unloading of tank cars shall be stopped during electrical storms. Manholes and discharge chambers should be closed.

6. Dome covers and belly caps will be replaced before moving any car.

7. Cars will be disconnected immediately after loading or unloading operation is completed.

8. Do not attempt to connect cars that are improperly spotted.

9. Set hand brake on all cars during loading or unloading operation.

SAFETY SECTION

SAFETY PROCEDURE NO. 3

PROCEDURE FOR HANDLING REPAIR OF POWER EQUIPMENT

Effective immediately, the following plan for preparing power equipment other than electrical for maintenance work will be plant-wide in the Mobil Chemical plant. The procedure is outlined below:

1. When a piece of power operated equipment (other than electrical) is to be shut down for repair, the operator in charge will accomplish the shutdown. The operator will inspect the equipment to insure that it is safe to start the repair work. As soon as the safety inspection is completed and everything is in order, the operator will place a "Danger - Do Not Operate" tag on the equipment. The tag will be dated and bear the signature of the operator taking the equipment out of service.

2. The Maintenance Supervisor will make sure that the equipment is properly "tagged out" of service and is ready for repair work to start. The Maintenance Supervisor will place his "Danger" tag on the equipment indicating that he accepts the equipment as ready for repair work.

3. The Maintenance Supervisor must remove his "Danger" tag at the end of each day and at any time he moves to another job or the job is completed.

4. Where work continues past shift change or longer, the operator in charge of the equipment at the time the work is completed will remove the operator's "Danger - Do Not Operate" tag.

5. To put the equipment back in service permanently or for test purposes, the operator and Maintenance Supervisor on the job must personally remove their respective tags.

UNDER NO CONDITION WILL A PIECE OF POWER EQUIPMENT BE ENERGIZED SO LONG AS A "DANGER" TAG IS ATTACHED.

SAFETY SECTION

SAFETY PROCEDURE NO. 4

PROCEDURE FOR USING FIRE WATER FOR PURPOSES OTHER THAN FIRE FIGHTING

Effective immediately, when it is necessary to use fire water and fire water equipment for purposes other than fire fighting, the following procedure will be followed:

1. Contact the Safety and Fire Supervisor on duty or in his absence the Production Supervisor and describe the work that is to be done. This information should include the supervisor in charge, location, pressure required, fire equipment to be used, and estimated time to complete the job.

2. Upon completion of the job involving fire water and fire fighting equipment, notify the Fire Protection Supervisor that the job is complete and report any damage to the fire equipment.

3. When the fire water system is connected to any vessel or line for filling or any purpose, a check valve will be placed in the line. The check valve will be placed on the vessel end of the hose, never next to the fire hydrant.

4. Work involving fire water and fire fighting equipment will immediately be discontinued and the equipment will be returned to fire fighting service when the fire alarm is sounded.

5. Fire hydrants when used for any purpose will be completely opened. Severe damage is caused when a fire hydrant is operated at partial capacity. Be sure the hydrant is completely opened or closed.

SAFETY SECTION

SAFETY PROCEDURE NO. 5

USE OF HAND OPERATED FIRE EXTINGUISHERS

Effective May 10, 1961, hand operated fire extinguishers will not be removed from the racks, except as needed for fire fighting. The wheel mounted extinguishers will not be removed from their locations except in the case of fire in the plant.

1. Hand extinguishers (20 lb. CO_2) for welding service will be a part of each welding unit and will be bracket-mounted on each welding machine.

2. Any time an extinguisher is used or appears to need servicing, the welder or his immediate supervisor will report the extinguisher to the Fluor Maintenance Superintendent.

3. Mobil Chemical Safety Section will be responsible for servicing all fire extinguishers in the plant. The Fluor Maintenance Superintendent is responsible for notifying Mobil Chemical Safety Section when an extinguisher in maintenance service needs repairs or recharging.

4. Mobil Chemical will use an exchange system in the fire extinguisher service program. The used or damaged extinguisher will be replaced with a charged extinguisher at the time the pickup is made.

SAFETY SECTION

SAFETY PROCEDURE NO. 6

PROCEDURE FOR CALLING FIRE FIGHTING AID FROM MOBIL OIL COMPANY

Effective immediately, when a fire develops on the Mobil Chemical Company plant that is of such scope and intensity that it cannot be controlled with Mobil Chemical personnel and equipment, the Mobil Oil Company Fire Department will be summoned.

The procedure is outlined below:

1. The following list of Mobil Chemical supervisors are authorized to request fire protection aid from Mobil Oil Refinery:

M. B. Tohline	E. M. Patton	E. T. Craig
R. B. Thompson	C. W. Cox	C. M. Townsend
R. E. Turkleson	F. M. Crow	J. H. Kerr
W. E. McKellar, Jr.	C. C. Mills	C. E. Adams
R. M. Huff	V. E. Bazine	D. C. Graham
C. H. Wallace	R. C. Scott	
H. A. Parker	J. L. Leon	

2. The Mobil Chemical supervisor requesting aid will, during normal work hours 8:00 a.m. to 4:30 p.m. Monday through Friday, call anyone of the following Mobil Oil Company supervisors:

L. E. Cranston	Phone 8-401
L. B. Wheat	8-408
I. H. Thacker	8-470
A. W. Saxe	8-476 or 8-304

   During nights, weekends and holidays, the request for emergency aid will be directed to the Mobil Oil Company night superintendent through the refinery telephone operator. Dial 8-"0".

3. The Mobil Chemical supervisor, when requesting aid, will give his name and job title, location of the fire, brief description of the emergency, and the gate to use in entering Mobil Chemical Company property. The gate southwest of the Mobil Chemical cooling tower will be used if accessible. The alternate route would be via county road and in Mobil Chemical's main gate.

4. The Mobil Chemical supervisor in charge is responsible for opening the designated gate and directing the emergency aid personnel and equipment to the fire.

5. Mobil Chemical Company will supervise the fire fighting activity of both Mobil Oil and Mobil Chemical Company personnel and equipment.

SAFETY SECTION

SAFETY PROCEDURE NO. 7

PROCEDURE FOR SAMPLING LIQUIFIED GASES

The following safety precautions will be observed when sampling liquified gases. Liquified gas is any material which exists as a liquid in the system being sampled, but which will boil or vaporize at room temperature. Examples are butadiene, butylene, propylene, and propane.

1. Sample cylinders carrying Underwriters approval for the service intended should be used. These cylinders are available in our laboratories and are marked for the service for which they were designed.

2. Always check to insure that the sample cylinder has a greater pressure rating than the pressure of the system being sampled.

3. Be sure the material being sampled is compatible with the cylinder. For example, do not take a butadiene sample in a cylinder with brass fittings, as butadiene and brass can react to form an explosive compound. Watch for tags on the cylinders designating their intended service capabilities.

4. Check the area in the vicinity of the sample point to insure that it is safe to vent flammable materials. Be sure there are no open flames, power grinding, non-explosion proof equipment, etc., in the area.

5. Extreme caution should be exercised in connecting the sample cylinder to prevent breaking the sample tube or connection. Connect the cylinder to the sample point either by means of a transfer line such as tubing or directly if the sample line is large enough to support the cylinder.

6. Approximately 20 per cent outage should be allowed in filling cylinders to take care of heat expansion.

7. Check the cylinder for leaks after the sample is taken. If leaks appear, clear the sample cylinder by opening both valves.

SAFETY SECTION

SAFETY PROCEDURE NO. 8

HANDLING AND STORAGE OF CYLINDERS CONTAINING COMPRESSED OR LIQUIFIED GASES

I. Handling Cylinders

A. Always consider cylinders as full and handle them with corresponding care.

B. Do not drop cylinders nor permit them to strike each other or other objects violently. Protect cylinder surfaces from cuts and abrasions.

C. Cylinders may be rolled during loading and unloading provided the protective cap is fully threaded in place but such rolling should be kept to a minimum.

D. Where cylinders must be handled by crane or davit, carry them in a cradle or similar device. Do not use a sling.

E. Do not use cylinders, whether full or empty, for rollers, supports, or any other purpose than to contain gas.

F. All empty cylinders should be tagged and returned to a storage rack as soon as possible.

G. Cylinder caps must be placed on all cylinders when not connected for use, or when empty.

H. When moving cylinders manually, they must be handled one at a time.

I. When transporting gas welding carts with cylinders the cylinder valves should be closed, the regulators removed and the protective caps fully threaded in place.

II. Storing Cylinders

A. All cylinders must be securely tied in storage to prevent falling.

B. Cylinders should be stored valve end up where possible.

C. Indoor storage of cylinders should be well ventilated.

D. Oxygen cylinders should be stored apart from cylinders containing flammable gases.

E. Do not store or place cylinders near any source of heat or sparks.

III. Using Cylinder

A. To open cylinder valves not provided with hand wheels, use the special tools provided or approved. Never hammer on cylinder valves.

B. Approved pressure regulators should be used on compressed gas cylinders where recommended.

C. Only inert gas may be used as a substitute for compressed air or as a source of pressure.

D. Never use oil or grease as a lubricant on valves or attachments for oxygen or chlorine cylinders.

E. Regulators and pressure gauges shall be used only with gases for which designed or intended.

F. Leaky cylinders should be isolated and bled down.

G. Fully open cylinder valves while in use.