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PVC PLANT SAFETY AND HEALTH MANUAL
ABERDEEN, MS

SUBJECT: Fire Prevention Plan

EFFECTIVE DATE: March 18, 1983

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Safety Director

APPROVED BY: *John T. ...*

Manager

References: CFR 1910, Subpart L-Fire Protection, 1910.134

Purpose: The potential for personal injury and property damage in operating plants that handle flammable and toxic materials can be serious if the hazards are not properly controlled. Conscientious operation of our plant and adherence to sound operating practices are the only consistent methods that can be used to control these hazards. This plan is therefore being issued to:

1. Minimize the potential for fires and related emergencies through positive housekeeping and control of flammable materials and ignition sources.
2. Insure that all fire protection systems operate properly by routine testing and maintenance of critical systems.

FIRE PREVENTION PLAN

Fire related losses which can occur in industries like ours are particularly severe. Due to the nature of the materials which are routinely handled in our plant (primarily VCM, natural gas, propane, and other hydrocarbon raw materials and fuels), operating personnel must exercise preventive control of hazards which can lead to fires.

Many of the materials used to make PVC and its compounds are flammable or combustible. Table I, below, is a list of commonly used materials which are flammable or combustible and can be fire hazards if not properly controlled. The majority of these materials are supplied as finely divided dusts and in some cases are capable of causing an explosion if dust accumulations are allowed to form an ignitable cloud.

TABLE IVINYL DEPARTMENTFlammable

PVC Initiators (Oxidizer)
Gasoline
Natural Gas/Propane
Vinyl Chloride Monomer

Combustible

Alpha Methyl Styrene (AMS)
Odorless Mineral Spirits (OMS)
Bubble Breaker
Cardboard
Diesel Fuel
2-Ethyl Hexaldehyde (CTA)
Glycerine
Methocel
Paper Bags
Hydroquinone

COMPOUND DEPARTMENTFlammable

Gasoline

Combustible

Antimony Trioxide
4310 R-1 Violet
Expoxidized Soybean Oil
Oncor 75RA
Paper Bags
Cyasorb UV-531
Diabasic Lead Stearate
Ferro ThermOCheck 1827
Synpron 1438
Hostalube XL 165
Wax Lubricants (polyethylene,
petroleum)

"Mark" Compounds
Mineral Oil
Bisphenol A
Cardboard Boxes
Color Concentrates (Vinyl Base)
Lead Stabilizers
R-4067 (Interstab)
Hal-Lub-D
Hystrene 5016

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DRY BLEND DEPARTMENT

Flammable

Gasoline

Combustible

"Acryloid" Products
Acrawax
"Advastab" Products
Advawax
Calcium Stearate
Cardboard Boxes

Diesel Fuel
"Mark" Products
Paper Bags
Thermolite 101, 175
Wax Lubricants
(polyethylene, petroleum)

PLASTICIZER DEPARTMENT

Flammable

Gasoline

Combustible

Alcohols
Phthalic Anhydride
"Darco" Carbon Black

Cardboard Boxes
Diesel Fuel

Bisphenol A
Paper Bags
Sulfonic Acid Catalyst
(liquid)
(Scott Air Pak and turnout
gear required for fire
fighting)

MAINTENANCE DEPARTMENT

Flammable

Acetylene
Amercor Mark III
Anhydrous Ammonia
Gasoline
Hydrogen Gas

Natural Gas
Propane
Paints and Thinners
Sulfuric Acid (generates
hydrogen gas)

Combustible

Agitene (regular, super)
Amerzene 35
Ammonium Nitrate (highly
dangerous if mixed with
oils)
BETZ K1-2
Cardboard Boxes
Conoco lube oils and
greases
Diesel Fuel

Mitee Thread Cutting Oil
Neutraneen NA-7
Polysperse Plus
Slimicide C-31
Slimicide C-68
UCON Lubricants and heat
transfer fluids

LABORATORY DEPARTMENT

Numerous flammable and combustible liquids and solids are stored and used in small quantities in this department.

Many of the above noted chemicals classified as combustible are used routinely and are not commonly thought to be fire hazards due to the very high temperatures required to ignite them. We must always remember that elevated processing temperatures can cause a material that is classified as a combustible at normal storage temperatures to be reclassified as a flammable material. Special precautions are outlined in the Safety Control Permit System Procedure which will govern all hot work operations in areas where flammable or combustible materials are used or stored. Hot work in the vinyl and propane processing area should be allowed only when there is no other reasonable method.

Fire protection and control systems used in the plant range from simple hand held fire extinguishers to sophisticated water spray deluge systems. This equipment is routinely checked by Safety and/or Electrical and Instrument Personnel to insure that it operates properly when needed. The Safety Director is responsible to see that fire protection systems are maintained in an operational condition.

Supervisory personnel plant-wide are responsible for controlling fuel source hazards through conscientious operation and the Safety Control Permit System. Smoking will be permitted only in areas of the plant specifically identified for that purpose. Fire protection rules in the Safety Rule Book will be strictly adhered to.

Table II, below, is a listing of fire protection equipment which is available for used in the event of a fire related emergency.

TABLE IIFIRE FIGHTING EQUIPMENT

<u>Equipment</u>	<u>Areas Of Coverage</u>
Diesel Driven Fire Pumps For Water Supply (4-2000 GPM, 100 psig units - north pump house) (2-2000 GPM, 130 psig units - south pump house)	Areas processing vinyl chloride monomer and propane fuel.
Process Water System	Plasticizer, compound, and warehouse buildings sprinkler systems
Deluge Spray Systems	Vinyl reactors and tank farm.
Fire Monitors (Fixed)	Vinyl reactor, VCM and propane tank farm, VCM incinerators.

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TABLE II (Continued)

<u>Equipment</u>	<u>Areas Of Coverage</u>
Fire Monitors (portable)	Emergency equipment station, initiator storage freezers.
Dry Chemical Wheeled Fire Extinguishers	New reactor module, old reactor module, south compound cooling tower.
Dry Chemical Hand Portable Fire Extinguishers	Various locations plant-wide.
Hose Houses and Fire Hydrants	Various locations plant-wide.
Fire Turnout Clothing (hats, coats, boots & gloves)	Available for use plant-wide, stored in the Emergency Equipment Station.
Extra Handline Fire Hoses, Nozzles, and gated wyes	Selected hose houses in vinyl areas.
Extra Fire Hose (3-inch hose with 2½-inch couplings)	Hose reel cart in Emergency Equipment Station.
Scott Air Paks	Various locations plant-wide.
Additional Firefighting Nozzles and related equipment	Available for use plant-wide, stored in the Emergency Equipment Station.
CO ₂ (Carbon Dioxide) Fire Extinguishers	Laboratory and Motor Control Centers.
Halon 1211 Fire Extinguishers	Behind vinyl control panel and in telephone switching room.

HOUSEKEEPING

Along with the proper control of flammable and combustible materials, maintenance of high housekeeping standards is critically important. The proper disposal of trash from the various plant operations will minimize the accumulation of combustible materials and thereby reduce the potential for fire. The following is a list of basic housekeeping requirements for fire prevention purposes:

HOUSEKEEPING - (Continued)

1. Ordinary hazard materials such as floor sweepings, paper bags, used filters, rags, and other miscellaneous discarded items shall be placed in dumpsters which are routinely dumped into the central trash compactor.
2. Initiator bottle disposal shall be done in accordance with current Vinyl Department procedures. Disposal of initiators which cannot be used in our operations shall be done under supervision of the Safety Department and Process Engineering.
3. Inventories of empty drums in the various operating areas shall be kept to a minimum. All empty steel drums shall be taken to the drum storage area east of the API Separator. Empty fiber drums should be placed in the large open top trash containers located south of the plasticizer building.
4. Cleanup and disposal of dust type materials which have been contaminated with substances hazardous to health, such as lead, shall be done with vacuum cleaning methods.
5. Housekeeping requirements for operations which involve hot work are specified in the Safety Control Permit System Procedure.
6. Motor control center areas (breaker rooms) shall be maintained free and clear of discarded materials and shall not be used as storage areas. Whenever breaker panels are located in storage areas, a clear access lane of at least 36 inches from the front of the breaker panel shall be maintained.
7. Containers of laboratory solvents and reagents, once empty, shall be disposed of as ordinary hazards (see paragraph 1). Waste chemicals shall be disposed of in accordance with approved waste disposal procedures.

FIRE PROTECTION SYSTEM MAINTENANCE

The fire protection systems and equipment used in the plant undergo routine testing and maintenance. The Safety Director is responsible to see that all systems are operational and that routine testing is accomplished. Also, he is responsible to see that repair work on systems and equipment is accomplished on a timely basis whenever problems are discovered. Table III below specifies testing requirements and frequencies for the various systems and equipment.

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TABLE IIIFIRE PROTECTION SYSTEM
AND
EQUIPMENT MAINTENANCE

<u>System/Equipment</u>	<u>Frequency</u>	<u>Checkout Requirements</u>
Fire Pumps	Weekly	1) All engines start on pressure drop and sequence. 2) Battery and charger condition. 3) Engine operating temperature. 4) Engine oil pressure. 5) Engine hours. 6) Fuel levels. 7) Flowing and static pressure. 8) Engine RPM
	Semi Annual	1) Flow studies. 2) Verify engine RPM with tachometer. 3) Cooling system flush and charge with fresh coolant (annual). 4) Verify thermostat operation.
Deluge Systems (Reactors & Tank Farm)	Weekly	1) Flow gas over gas detector field sensors on gas detection system - check for system release. 2) Proper operation of deluge valves - trip and reset.
	Monthly	1) Systems drain freely. 2) No breaks in deluge piping systems.
	Quarterly	1) Check flowing pressure on each system.
VCM Storage Sphere	Weekly	1) Remote and local control operation of actuated valve (pit).
		2) Nozzle orientation directed at bottom half of sphere.
Stationary Fire Monitor Nozzles	Semi-Annual	1) Free operation of valve. 2) Flush until water is clear. 3) Nozzle free of debris.
Sprinkler Systems	Annual	1) Flow test at inspector check point. 2) All systems protected by antifreeze solution if wet.
Post Indicator Block Valves and Other Fire System Valves In Each Unit	Weekly	1) Check to insure that firewater supply valves to unit deluge valves are open and locked. 2) Verify all thermostatic release air line valves are open and locked.

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<u>System/Equipment</u>	<u>Frequency</u>	<u>Checkout Requirements</u>
Post Indicator Block Valves and Other Fire System Valves In Each Unit	Quarterly	1) Check to insure that all underground supply line block valves are open and locked.
Fire Hose	Annual	1) Hydrostatic pressure test of at least 200 psig maintained for at least 15 seconds. 2) Hose shall not leak or jacket threads break. 3) Dried and reinstalled in hose house, or rack, pre-connected to hydrant or supply valve.
Fire Extinguishers (Hydrostatic)	Five or Twelve Years	1) Done under contract with licensed cylinder hydrostatic test contractor.
Emergency Alarm	Weekly	1) Test alarm tones (vapor, fire, evacuation, weather) one per week on rotating sixteen week cycle. 2) Test all clear tone after each test.
Smoke Detection System	Semi Annual	1) Check voltages, detectors and alarm signal devices for proper operation. 2) Check supervisory circuitry.
CO ₂ Fire Extinguishing System - Lab Chemical Storage Room	Semi Annual	1) Weigh CO ₂ supply bottles, refill as needed. 2) Check actuating mechanism for proper operation. 3) Check pre-alarm for operation and audibility. 4) Assure that all piping connections are secure and that there are no system leaks.