PLAINTIFF'S EXHIBIT
AL-544

POINT COMFORT OPERATIONS
INDUSTRIAL HYGIENE SURVEY 1973

ARD 039909

39910

TRADE OR OTHER NAME:

CARBORUNDUM, ALUNDUM, ALOXITE, EMERY, GARNET, SANDPAPER, DIAMOND, SAND, GROUND CORN COBS

USAGE - TRANSPORTATION - STORAGE:

For grinding, cleaning and polishing purposes. 196 units of the various types of abrasives are used per month. These are stored at the storeroom and transported by truck or hand.

USING DEPARTMENTS:

Operations wide.

DESCRIPTION AND PROPERTIES:

Abrasive materials are usually bonded together if in wheel or disc form or bonded on paper or cloth. Alundum, Aloxite and Emery are non-siliceous.

EXPLANATION OF HAZARDS:

Hazardous in grinding operations due to the dust generated. Inhalation could be injurous to operators. Brass, copper, or lead when finally divided may lead to metal poisoning. Abrasives may be inert in the tissues of the lung, thus lowering the resistance to inflammatory diseases.

RECOMMENDED CONTROL:

Exhaust ventilation at grinding level. Compulsory wearing of safety glasses. Respirator in poorly ventilated areas where grinding cannot be performed in controlled environment.

TRADE OR OTHER NAME:

CH_3COCH_3, METHYL ACETYL, PROPANONE

USAGE - TRANSPORTATION - STORAGE:

Used for cleaning aluminum and pipe in laboratory analysis. Stored in tool room in shops and oil house at R-136. Carried in small amounts by shop people, 55-gallon drums by R-136 crews, plastic jugs by gas and oil personnel. Approximately 35 gallons/month used.

USING DEPARTMENTS:

Gas and Oil, Refining Maintenance Crews, Machine Shop, Laboratory

DESCRIPTION AND PROPERTIES:

Colorless liquid with a fragrant mint-like odor. B.P. 65° C. Relative density of vapor to air, 2.0. Soluble in water, alcohol, ether, chloroform and most volatile oils.

EXPLANATION OF HAZARDS:

Although not a serious industrial hazard, prolonged inhalation of its vapor may cause irritation of mucous membranes and narcocis. Also repeated contact with skin may cause irritation.

RECOMMENDED CONTROL:

Provide adequate ventilation and avoid contact with skin and eyes. Use gloves and safety goggles when handling.

TRADE OR OTHER NAME:

C_2H_2, PRESTOLITE, ETHINE

USAGE - TRANSPORTATION - STORAGE:

Used in flame cutting, burning, brazing, and reagent atomic absorbtion. Approximately 190 265 cu. in. containers are used per month. It is transferred by towed or pushed carts, or trucked in stands.

USING DEPARTMENTS:

All Maintenance Crews, Oil and Gas, Machine Shop, Power, Digestion, Laboratory, Ingot, Pot Repair, Vehicle Repair, Potrooms.

DESCRIPTION AND PROPERTIES:

Colorless gas, garlic-like odor. Relative density to air 0.9. Boiling point - 127° F. minimum explosive limit in air is 2.5% by volume. Usually compressed in cylinders as a solution in acetone.

EXPLANATION OF HAZARDS:

When mixed with air, it has 2.5 to 80% explosive range. Toxic Limits: 9000 ppm 1/2 to 1 hour bearable; 250,000 ppm 1/2 to 1 hour exposure dangerous; 450,000 ppm 5 to 10 minutes exposure is fatal. Defective equipment liberates acetone vapor as well as acetylene. Carbon monoxide is formed by oxidation.

RECOMMENDED CONTROL:

Careful handling of cylinders necessary to prevent damage. Periodic checks of valves and hoses necessary to prevent leaks. Also proper ventilation is needed to remove reaction products.

TRADE OR OTHER NAME:

LEPAGE'S GLUE, MIRACLE TYPE M, DuPONT PLASTIC, SODIUM SILICATE, WOOD-LAC GLUE, BEST-TEST PAPER CEMENT, 3-M GEN PURPOSE AND RUBBER TO METAL, NATIONAL STARCH LOAD LOCK

USAGE - TRANSPORTATION - STORAGE:

Used for various bonding purposes. Approximately 300 tubes or kits used per month. Received from storeroom and stored in small amounts in office cabinets. Carried or trucked to using sites.

USING DEPARTMENTS:

Power, Machine Shop, Ingot Plant, Gas and Oil, Offices, Vehicle Repair, Electrolyte, Chlor Alkali, Maintenance, Potroom

DESCRIPTION AND PROPERTIES:

Sticky substances which cause substances to adhere.

EXPLANATION OF HAZARDS:

Solvents may be flammable liquids.

RECOMMENDED CONTROL:

Solvents in metal cans and stored in fireproof bins. No smoking when handling.

TRADE OR OTHER NAME:

WD-40, KRYLON PAINT, VINYL-RUST VETO, FILTER HANDI-COATER, ELECTRO-DRY

USAGE - TRANSPORTATION - STORAGE:

Used as both a lubricant and paint form. Mostly as spray paint. About 350 cans per month is used. Stored within departments in self-contained cans. Trucked or carried to work site.

USING DEPARTMENTS:

Power and Machine Shop - All Maintenance

DESCRIPTION AND PROPERTIES:

Non-toxic water clear liquid that decomposes at 150°C.

EXPLANATION OF HAZARDS:

High pressure can build up in aerosol cans when heated. Dangerous to puncture cans. Some aerosols are flammable.

RECOMMENDED CONTROL:

Avoid heat when storing. Do not puncture cans. Assume all materials flammable unless known not to be. Do not discard into trash that will be burned.

TRADE OR OTHER NAME:

ALCOA NO. 2 JOINT, ALNOX JOINT

USAGE - TRANSPORTATION - STORAGE:

Used on bus and wire connections and to protect anodes. Approximately 130 pounds per month used. Transported by vehicle or hand. Stored in tubes or metal cans.

USING DEPARTMENTS:

Gas and Oil, Potrooms, Power, Machine Shop, Maintenance, Chlor Alkali

DESCRIPTION AND PROPERTIES:

Soft grease-like material. Unsoluble in water. Soluble in mineral spirits.

EXPLANATION OF HAZARDS:

Possible dermatitis.

RECOMMENDED CONTROL:

Personal hygiene.

ARD 039916

TRADE OR OTHER NAME:

ETHYL ALCOHOL WITH ADDITIVE

USAGE - TRANSPORTATION - STORAGE:

Used for crane cylinder repairs, cleaning agent and Lab reagent. About three gallons per month consumed. Stored in metal cans. Transported vehicle or hand.

USING DEPARTMENTS:

Electrical and Instrument Maintenance, Power, Laboratory, Paint and Insulation

DESCRIPTION AND PROPERTIES:

Ethyl alcohol denatured with chemicals such as benzene, gasoline, aldehydes, commercially pure wood alcohol, petroleum naptha, sulphuric acid, etc. Liquid is unfit for beverage use and odor varies depending upon additive material; is often poisonous when denatured.

EXPLANATION OF HAZARDS:

Liquid is irritant to mucous membranes of skin, nose, throat and eyes. In addition, theproduct of the reaction of the denaturant is a poison of a non-potable material.

RECOMMENDED CONTROL:

Personal hygiene, proper ventilation, and warning labels of its poisonous nature when taken internally.

ALUMINA
(ORE, TABULAR AND ACTIVATED)

TRADE OR OTHER NAME:

Al_2O_3, REFINED BAUXITE ORE

USAGE - TRANSPORTATION - STORAGE:

Regular alumina used in Potrooms is brought by railroad from Calcination to Smelting Storage and R-53 Storage for ship loading at R-52. Transported within Potrooms by crane or towed bins. Activated alumina is used in oil filters and breathers as a drying agent 500 pounds per month. Actuated stored cans, regular in tanks, and tabular in plastic-lined crates.

USING DEPARTMENTS:

Activated - Power, Gas and Oil - Laboratory
Tabular - Ingot Plant
Regular - Potrooms and Calcination - Refining Raw Materials - Pot Repair

DESCRIPTION AND PROPERTIES:

Activated - a highly porous and granular form of aluminum having a large absorptive capacity.

EXPLANATION OF HAZARDS:

Activated - none.
Regular - oxygen liberated in electrolytic process will combine with carbon to form CO and CO_2. As used in our process it is not considered hazardous.

RECOMMENDED CONTROL:

None.

TRADE OR OTHER NAME:

Al, PURE METAL, RICH ALLOYS, VARIOUS TRADE ALLOYS

USAGE - TRANSPORTATION - STORAGE:

Produce of smelting and the raw material of casting. Transported by crane and forklift.

USING DEPARTMENTS:

Potrooms and Ingot Plant and Machine Shop.

DESCRIPTION AND PROPERTIES:

Pure metal is a silvery ductile metal. Specific gravity 2.7 MP=660°C. Aluminum alloys may contain one or more of the following elements: Boron, copper, zinc, magnesium, silicon, titanium, and electrolytic manganese.

EXPLANATION OF HAZARDS:

During remelting and alloying of aluminum, the various metals making up the alloy may give off fumes that could cause serious health hazards.

RECOMMENDED CONTROL:

Fumes should be removed by furnace draft and natural building ventilation.

TRADE OR OTHER NAME:

$Al_2F_6 \times H_2O$, "FLUORIDE"

USAGE - TRANSPORTATION - STORAGE:

Used to maintain bath ratio in our Potrooms. Railroad to smelter. Loaded on ships. Conveyor to storage tanks - to buggies - to pots via buggie screw conveyor.

USING DEPARTMENTS:

Potrooms, Aluminum Fluoride Plant, Refining Raw Materials

DESCRIPTION AND PROPERTIES:

White powder or small lumps, 1/4" down to dust. Insoluble in water. Impurities SiO_2, Fe_2O_3, $3NaF\text{-}AlF_3$, $Al_2(SO_4)_3$, Al_2O_3, H_2O.

EXPLANATION OF HAZARDS:

Dust readily in handling. Has up to 5% free HF acid as impurity. Dust and fume can cause serious burns and is irritating to eyes, nose and all skin membranes. Poisonous when ingested.

RECOMMENDED CONTROL:

Handle carefully to avoid dusting. Ventilate adequately. Prevent exposure of food to dust. Wash hands prior to eating - personal hygiene.

TRADE OR OTHER NAME:

WOOD AND METAL TYPES

USAGE - TRANSPORTATION - STORAGE:

Protective covering for metal surfaces. Approximately 5 gallons per month is used. Is stored in cans and transported by truck. Used in spray cans.

USING DEPARTMENTS:

Power - Chlor-Alkali - Paint and Insulation

DESCRIPTION AND PROPERTIES:

For wood - paint is a varnish containing 50-75 gallons of oil per 100 pounds of resin.
For metal - less oil to resin producing paint film less flexible but harder and more brilliant.
Flash Point 0-70°F.

EXPLANATION OF HAZARDS:

Resins and oils may react with the skin, expecially when persons have an allergy. Fumes in confined spaces potentially hazardous.

RECOMMENDED CONTROL:

Personal cleanliness and adequate ventilation when using in confined spaces. Respirator may be required.

TRADE OR OTHER NAME:

NONE

USAGE - TRANSPORTATION - STORAGE:

A product generated in the smelting process. Either stored in end of potrooms or in skim shed. At Ingot Plant, skim is loaded into railroad cars, in potrooms it is placed back upon certain pots.

USING DEPARTMENTS:

Ingot Plant and Potrooms

DESCRIPTION AND PROPERTIES:

Aluminum skim may consist of aluminum ranging from 65% to 90% mixed with oxides, nitrides and carbides of aluminum, plus small amounts of chlorides or fluorides and possible beryllium.

EXPLANATION OF HAZARDS:

Reacts in wet atmosphere to liberate ammonia fumes - sometimes in excessive amounts which could be extremely dangerous.

RECOMMENDED CONTROL:

Exhaust ventilation or respirators.

TRADE OR OTHER NAME:

NONE

USAGE - TRANSPORTATION - STORAGE:

No usage - a gas generated from wet potlining.

USING DEPARTMENTS:

Potrooms, Pot Repair, Utility, Electrolyte

DESCRIPTION AND PROPERTIES:

Gas with a strong pungent odor.
MAC = 50/million parts of air
Explosive Limits - 16-25% by volume in air

EXPLANATION OF HAZARDS:

Irritating to nose and eyes. Fire and explosion hazard are present but considered small.

RECOMMENDED CONTROL:

Ventilate well and avoid exposure. Stored away from heat and sunlight.

ARD 039923

TRADE OR OTHER NAME:

NH_4OH, AMMONIA, AMMONIUM HYDRATE

USAGE - TRANSPORTATION - STORAGE:

Used for the detection of chlorine leaks. Lab reagent.

USING DEPARTMENTS:

Ingot Plant - Laboratory - Chlor-Alkali

DESCRIPTION AND PROPERTIES:

Ammonium hydroxide is a solution of 28-30% ammonia gas dissolved in water. Specific gravity - less than 1, solution gives off a pungent odor.

MAC = 100 parts per million
Explosive Limits - 16-25% by volume in air

EXPLANATION OF HAZARDS:

Vapor is very irritating to eyes and the respiratory system. The liquid is very irritating to the skin and mucous membranes.

RECOMMENDED CONTROL:

Provide adequate ventilation, eye protection and rubber gloves. Avoid contact with the liquid.

TRADE OR OTHER NAME:

PRESTONE, ETHYLENE GLYCOL
(METHANOL - SEE METHANOL 1)

USAGE - TRANSPORTATION - STORAGE:

Used once a year in feed water transmission and on plant air lines in winter. Total amount used per year is about 1000 gallons. Stored in drums and cans and transported by truck.

USING DEPARTMENTS:

Power - Vehicle Repair - Instrument Maintenance

DESCRIPTION AND PROPERTIES:

Ethylene-glycol, 95% by weight; oil, 1.5% by weight; water 3% by weight. Specific gravity 1.116 at 60°F. Soluble in water, green dye added.

EXPLANATION OF HAZARDS:

None as used.

RECOMMENDED CONTROL:

None

TRADE OR OTHER NAME:

AIRCO 330 CU. CL.

USAGE - TRANSPORTATION - STORAGE:

Used by all departments with exception of the Ingot Plant for the welding of aluminum used in Lab for reagent. Ingot plant uses to flux molten metal. Is stored in metal cylinders. Kept upright or in racks, 23 cylinders per month is used.

USING DEPARTMENTS:

Power, Ingot, Machine Shop, Maintenance, Gas and Oil, Laboratory

DESCRIPTION AND PROPERTIES:

Colorless - inert gas. Does not combine chemically with other elements. Slightly soluble in water, will liquify at - 185.8°C.

EXPLANATION OF HAZARDS:

None

RECOMMENDED CONTROL:

None

TRADE OR OTHER NAME:

JOHNS-MANVILLE NO. 450, CAREY NO. 7M
(Also see MARINITE)

USAGE - TRANSPORTATION - STORAGE:

Used for manifold gaskets, insulation in metal transfer and pot cathodes, welding protection and caulking. Stored loose or in boxes and transported by truck or hand.

USING DEPARTMENTS:

Potrooms, Ingot Plant, Power, Paint-Insulation Dept., Pot Repair, Electrolyte - Smelting Mechanical Maintenance

DESCRIPTION AND PROPERTIES:

A material consisting of various silicates such as magnesium, iron and calcium. Usually in a silky strong fibrous or block state.

EXPLANATION OF HAZARDS:

Possible silicosis.
MAC = 5 fibers longer than 5 micrometers per cubic centimeter of air.

RECOMMENDED CONTROL:

Respirator.

USAGE - TRANSPORTATION - STORAGE:

Iron tool protection and metal transfer usage.

USING DEPARTMENTS:

Ingot Plant

DESCRIPTION AND PROPERTIES:

Lime (CaO) content to be less than 0.5% and calcium carbonate content to be at least 98%.

EXPLANATION OF HAZARDS:

If excessive amounts get into bottom of D.C. Pits and mixes with water causes high concentration (CaO) it could cause an explosion when contacted by molten metal.

RECOMMENDED CONTROL:

The above explanation was an if clause. Atomite in use in the Ingot Plant for tool and trough protection and therefore there is no possibility of any getting down in the pit.

TRADE OR OTHER NAME:

NONE

USAGE - TRANSPORTATION - STORAGE:

Used after processing as bearings for machinery. About 50 pounds per month is consumed. Transported by truck.

USING DEPARTMENTS:

Machine Shop, R-136 Maintenance Shop

DESCRIPTION AND PROPERTIES:

Lead Base

70-90% Lead
9-20% Antimony
0.5-9% Tin

Tin Base

80-90% Tin
3-10% Copper
5-10% Antimony

Variable low melting ranges.

EXPLANATION OF HAZARDS:

During melting, fumes containing lead, copper, or antimony are released. Poisonous when inhaled. Dust from grinding or cutting may cause acute stomach and intestinal disturbances.

RECOMMENDED CONTROL:

Adequate ventilation. Remove fumes and dust on all operations.

TRADE OR OTHER NAME:

NONE

USAGE - TRANSPORTATION - STORAGE:

In sheet form it is used as insulating materials. Approximately 2 sq. ft. per month used. Hand carried.

USING DEPARTMENTS:

Machine Shop, Instrument Maintenance

DESCRIPTION PROPERTIES:

Bakelite is a trade name for a phenolic resin plastic material.

EXPLANATION OF HAZARDS:

When used as a solid - no hazard. Can cause conjunctivitis.

RECOMMENDED CONTROL:

None in sheet form. When baking, the gases should be exhausted to atmosphere.

TRADE OR OTHER NAME:

ELECTROLYTE

USAGE - TRANSPORTATION - STORAGE:

Found in either liquid or solid form. In potrooms, it is necessary for alumina dissolution. In Ingot Plant, it is found in furnace skim and stored in skim shed. Potroom solids are stored in west end of potrooms and transported by payloader.

USING DEPARTMENTS:

Potrooms and Ingot Plant Rodding

DESCRIPTION AND PROPERTIES:

Composed mainly of cryolite. Other constituents are alumina, fluorspar, sodium fluoride and soda ash. Melting point approaches 1000°C. HF and SiF_4 are formed during reduction process.

EXPLANATION OF HAZARDS:

In a molten state in a reduction cell, gaseous fluorides and CO are poisonous. Prolonged inhalation will irritate and damage the respiratory tract. If ingested in sufficient quantitites, are toxic. Normal exposure to gases and fumes is not injurious.

RECOMMENDED CONTROL:

Collect gases, dust, and fumes from source. Prevent exposure of food to dust. Wash hands prior to eating.

TRADE OR OTHER NAME:

NONE

USAGE - TRANSPORTATION - STORAGE:

Used as an alloy. Approximately 500 pounds used per month.

USING DEPARTMENTS:

Ingot

DESCRIPTION AND PROPERTIES:

A steel-gray light strong brittle toxic bivalent metallic element.
MAC = 2 micrograms/m^3

EXPLANATION OF HAZARDS:

The inhalation of beryllium into the body can cause either an acute or a delayed chemical pneumonitis. Ulceration and irritation of the skin have been observed.

RECOMMENDED CONTROL:

Go to great lengths to avoid contact: Chemical safety goggles, respirator. Good general ventilation.

TRADE OR OTHER NAME:

NONE

USAGE - TRANSPORTATION - STORAGE:

Used in alloying as a 3% boron-aluminum master alloy.

USING DEPARTMENTS:

Ingot Plant

DESCRIPTION AND PROPERTIES:

Boiling Point - 2550°C
Melting Point - 2300°C
Monocl. yellow or brown amorphous powder

EXPLANATION OF HAZARDS:

Not highly toxic or considered an industrial poison.

RECOMMENDED CONTROL:

If exposed to high dist concentrations, respirators should be worn.

TRADE OR OTHER NAME:

VANI-SOL, SANI-FLUSH, URINAL BOWL-WEST CHEM

USAGE - TRANSPORATION - STORAGE:

Cleaning toilet bowls. Metal cans - small amounts poured into bowls.

USING DEPARTMENTS:

Plant wide

DESCRIPTION AND PROPERTIES:

Approximately 80% solid sodium bisulphate. Forms strong acid solutions in water.

EXPLANATION OF HAZARDS:

Irritating to skin on prolonged contact.

RECOMMENDED CONTROL:

Avoid contact with skin. Wear rubber gloves and eye protection.

TRADE OR OTHER NAME:

WAGNER ELECTRIC

USAGE - TRANSPORTATION - STORAGE:

Used in cranes, fork trucks, and bar burners. Approximately 14 gallons per month used. Stored in metal cans and transported by vehicle and hand.

USING DEPARTMENTS:

Ingot Plant, Machine Shop, Electrical and Instrument Maintenance, Vehicle Repair

DESCRIPTION AND PROPERTIES:

Largely alcohol ethers blended with varying amounts of material such as castor oil and mineral oil.

EXPLANATION OF HAZARDS:

All are chlorinated oils and may cause dermatitis. Has been known to cause allergic symptoms in humans.

RECOMMENDED CONTROL:

Personal hygiene and protective clothing.

TRADE OR OTHER NAME:

Si-Phos, Ti-al, Phos-Cu, P6-Bi, Mn-B, Be-Al, Ca-Al, CASTOLING, EASY FLOW, STANDARD BRONZE, NON-FLAMING BRAZING NO. 25

USAGE - TRANSPORTATION - STORAGE:

In equipment repair of metal parts, approximately 25 pounds per month used. Mostly kept in Stores and picked up as needed. Within departments, mostly stored in cabinets and hand carried.

USING DEPARTMENTS:

Machine Shop, Mechanical Maintenance, Electrical Maintenance, Gas and Oil, Power, Vehicles Repair

DESCRIPTION AND PROPERTIES:

Some rods have a thin coating while others use a separate flux.

EXPLANATION OF HAZARDS:

Fumes from these alloys may cause metal fume fever. Fumes from fluxes used may be poisonous if ingested.

RECOMMENDED CONTROL:

Adequate ventilation. Forced ventilation when working in confined areas.

TRADE OR OTHER NAME:

FIRE BRICK, RED BRICK, PAVING BRICK OR TILE, BUILDING BRICK, REFACTORY

USAGE - TRANSPORTATION - STORAGE:

Used as furnace, kiln, floor, R-181 box, and as pot lining insulation.

USING DEPARTMENTS:

Ingot Plant, Potrooms, Calcination, Pot Repair, Property Maintenance

DESCRIPTION AND PROPERTIES:

Properties and composition vary. Silica, alumina, chromates and iron oxides are common constituents.

EXPLANATION OF HAZARDS:

Continued inhalation of fine particles resulting from sawing or grinding may cause fibrosis of lung tissue.

RECOMMENDED CONTROL:

Provide adequate ventilation and a system for exhausting dust during cutting or grinding.

USAGE - TRANSPORTATION - STORAGE:

Used as an additive to flow systems. Contained within pipes and tanks.

USING DEPARTMENTS:

Chlor-Alkali

DESCRIPTION AND PROPERTIES:

A highly concentrated saline solution - salt and water.

EXPLANATION OF HAZARDS:

No great danger in handling. May sting slightly upon contact. Depleted brine may irritate the nose due to the presence of dissolved chlorine.

RECOMMENDED CONTROL:

Avoid breathing fumes.

TRADE OR OTHER NAME:

PASTE

USAGE - TRANSPORTATION - STORAGE:

Produced in Paste Plant - transferred by railroad car to R-53 for ship or barge loading. Used in Potrooms.

USING DEPARTMENTS:

Paste Plant, Refining Raw Materials, Potrooms

DESCRIPTION AND PROPERTIES:

Black in color; mixture of pitch and coke; formed into briquetts in Paste Plant.

EXPLANATION OF HAZARDS:

Phenolic compound may cause burns through contact with skin or eyes. This is aggravated by sunlight - volatiles from pitches burn readily. Dust is explosive in certain concentrations.

RECOMMENDED CONTROL:

Provide adequate ventilation when fumes or dust are produced. Avoid skin contact. Use mechanical handling equipment.

TRADE OR OTHER NAME:

NONE

USAGE - TRANSPORTATION - STORAGE:

Used as bushings. Kept in stores and drawn out as needed. Approximately 50 pounds per month used. Hand carried to work areas.

USING DEPARTMENTS:

Machine Shop

DESCRIPTION AND PROPERTIES:

A copper-tin alloy of variable composition containing some zinc or lead or both and a small percentage of other metals.

Flash Point 80°F or possibly lower.

EXPLANATION OF HAZARDS:

None in a solid state.

RECOMMENDED CONTROL:

None

TRADE OR OTHER NAME:

"FISH", "BURN OFFS"

USAGE - TRANSPORTATION - STOARGE:

Solid chunks of anode that have been removed from operating pots, placed in courtyard to cool, transported by payloader to stockpiles outside of potrooms.

USING DEPARTMENTS:

Potrooms

DESCRIPTION AND PROPERTIES:

Remnants of carbon anodes after use in pots with bath and alumina adhering. Dust contains finely divided carbon, fluoride compounds and alumina.

EXPLANATION OF HAZARDS:

Fluoride dust and fumes are irritating to nose and throat and act as poisons when ingested in quantities. Dermatitis may occur.

RECOMMENDED CONTROL:

Collection of dust from source. Prevent exposure to food. Personal hygiene.

TRADE OR OTHER NAME:

ANODES, ELECTRODES, GRAPHITE ML 885, GRAPHITE ML 886

USAGE - TRANSPORTATION - STORAGE:

Used as electrodes in shop for cutting purposes. Ingot Plant to retard aluminum alloy oxidation; and in potrooms is discarded as skimmings to be later processed through Flotation to reclaim bath. Used on generators as brushes.

USING DEPARTMENTS:

Machine Shop, Ingot Plant, Potroom, Power, Electrical Maintenance, Gas and Oil, Pot Repair

DESCRIPTION AND PROPERTIES:

A non-metallic chiefly tetravalent element found native or as a constituent of coal, petroleum, and asphalt, of limestone and other carbonates and of organic compounds or obtained artifically in varying degrees of purity especially as carbon block, lamp black, activated carbon, charcoal, and coke.

EXPLANATION OF HAZARDS:

Carbon monoxide and dioxide formed during use in pots, but most gases are exhausted through scrubbing towers thereby minimizing the hazard.

RECOMMENDED CONTROL:

Adequate ventilation and potroom fume collecting systems control most hazards.

TRADE OR OTHER NAME:

CO_2, CARBONIC ACID, DRY ICE

USAGE - TRANSPORTATION - STORAGE:

In power it is used in dry ice form for freezing bearings. Is kept in a deep freeze and transported in boxes. Approximately 200 pounds per month used. In Gas or Oil it is used as fire protection and is stored in gas form in metal cylinders. Large quantities are used in Chlor-Alkali in the treatment of brine. Lab reagent. Used in CO_2 fire extinguishers. Large quantities are also used in Cryolite Plant.

USING DEPARTMENTS:

Power, Oil and Gas, Chlor-Alkali, Electrolyte, Laboratory, Electrical Maintenance, Plant Protection

DESCRIPTION AND PROPERTIES:

Colorless, odorless gas. Relative density of gas to air is 1.5. Boiling point (Sublimes) -78.5°. Specific gravity 1.53. Compressed as a liquid in steel cylinders. Formed whenever organic materials are burned in air. An atmosphere of this gas will not support life.

MAC = 5,000 parts per million.

EXPLANATION OF HAZARDS:

Includes asphyxia by excluding oxygen. Heavier than air and may collect in manholes, tanks, vats, etc.

RECOMMENDED CONTROL:

Adequate ventilation. Dilution with uncontaminated air. Use a self-contained breathing apparatus when hazard is present.

TRADE OR OTHER NAME:

CO

USAGE - TRANSPORTATION - STORAGE:

Monoxide gas is produced in any department where combustion of an incomplete nature occurs.

USING DEPARTMENTS:

Plant wide

DESCRIPTION AND PROPERTIES:

Colorless, odorless gas, lighter than air 0.967 to 1. Combustible and explosive --12.5 to 75%. Combines chemically with blood hemoglobin preventing it from picking up oxygen. Toxic limits 100 ppm for 8-hour work period. 1,500 to 2,000 ppm for 60 minutes very dangerous.

MAC = 50 parts per million
Explosive limits = 12.5-74% volume in air

EXPLANATION OF HAZARDS:

Hemoglobin of blood has an affinity for CO 300 times greater than for oxygen. Toxic effects show headache, confusion, nausea and collapse in varying degrees and depending upon concentration. The most widespread poisonous gas in industry and very frequently encountered in all phases of industry and the home where incomplete combustion of carbon monacerous materials may occur. Death occurs due to lack of oxygen, and chemical asphyxiation occurs with production of cherry red color to skin.

RECOMMENDED CONTROL:

Exhaust all fumes, replacing with uncontaminated air. Proper ventilation, proper adjustment of burning and carburetor units to decrease production CO. Oxygen breathing apparatus should be available.

TRADE OR OTHER NAME:

CCl_4, CARBONA, PYRENE, TETRA, CARBON TET.

USAGE - TRANSPORTATION - STORAGE:

For vulcanizing of conveyor belts and rubber lined tanks when repair is necessary. Used as Lab reagent, scrubbing chlorine gas. Approximately 50 drums per month used. Is stored in drums, but transported in smaller quantities contained in cans.

USING DEPARTMENTS:

Chlor-Alkali, Laboratory

DESCRIPTION AND PROPERTIES:

Clear colorless liquid, highly volatile halogenated hydrocarbon. Specific gravity 1.58. Boiling point 76.8°C non-flammable and non-explosive. Relative density of vapor to air is 5.3. Least detectable odor of this vapor is 72 ppm.

MAC = 100 parts per million.

EXPLANATION OF HAZARDS: HIGHLY TOXIC MATERIAL

Continued immersion of skin membranes may dissolve the natural oils leading to dermatitis. Inhalation of the vapor may cause poisoning. MAC is 25 ppm of vapor. Known to react with the liver, heart and kidney.

RECOMMENDED CONTROL: SHOULD NEVER BE USED AS A SOLVENT

Provide adequate ventilation, rubber gloves, and eye protection.

TRADE OR OTHER NAME:

CF_4, TETRAFLURO-METHANE

USAGE - TRANSPORTATION - STORAGE:

Product of the reduction process in Smelting. Constituent of pot gas.

USING DEPARTMENTS:

Potrooms

DESCRIPTION AND PROPERTIES:

Gas slightly soluble in water.

EXPLANATION OF HAZARDS:

Hydrofluoric acid is a reaction product. Carbon tetrafluoride given off only in minor quantities. Hazard dependent upon total quantities of fluoride as gas rather than carbon tetrafluoride itself.

RECOMMENDED CONTROL:

Collect and remove gases by shielding pots.

ARD 039946

TRADE OR OTHER NAME:

PECORA CAULKING COMPOINDS, ALUMILASTIC C PARR PAINT, ALUMILASTIC CB PARR PAINT.

USAGE - TRANSPORTATION - STORAGE:

Used as a sealing compound. About 26 gallons per month used. Stored either in cans or tubes and transported by vehicle.

USING DEPARTMENTS:

R-136 Maintenance, Chlor-Alkali, Property Maintenance

DESCRIPTION AND PROPERTIES:

A non-hardening putty-like compound.

EXPLANATION OF HAZARDS:

None as used.

RECOMMENDED CONTROL:

None

ARD 039947

TRADE OR OTHER NAME:

ALAMO 28 DAY TYPE - MASONRY CEMENT

USAGE - TRANSPORTATION - STORAGE:

Transported and handled in paper bags. Used for making concrete throughout plant.

USING DEPARTMENTS:

Power, Ingot Plant, Potrooms, Property Maintenance

DESCRIPTION AND PROPERTIES:

Mixture of calcium silicate and calcium aluminate with excess of lime.

21 - 23.5%	Silica
2.49 - 3.54%	Ferric Oxide
5.68 - 8.12%	Alumina
60.25 - 64.12%	Calcium Oxide
0.88 - 2.78%	Magnesia

Very finely divided material.

EXPLANATION OF HAZARDS:

Can cause respiratory irritations. In contact with water will form a caustic which will act as a skin irritant. In dry form, it is conductive to eye irritation. Dermatitis is the hazard usually encountered.

RECOMMENDED CONTROL:

Personal hygiene. Avoid prolonged exposure.

TRADE OR OTHER NAME:

LUMNITE, HYTEMPITE, HALLEMITE, THERMOLITY, HORWOCO BOND, SUPER 3000 POROK CEMENT, CARBONACEOUS

USAGE - TRANSPORTATION - STORAGE:

In furnace and metal transfer crucible linings as well as pot and laddle lings. Filling anchor bolts holes. Stored in bags and transported by vehicle.

USING DEPARTMENTS:

Potrooms and Ingot Plant, Maintenance, Pot Repair

DESCRIPTION AND PROPERTIES:

Properties and composition vary. Usually high in silicous materials and/or alumina.

EXPLANATION OF HAZARDS:

Continued inhalation of fine particles of dry cement may cause fibrosis of lung tissue. Dust from handling could be hazardous if duration of exposure is excessive.

RECOMMENDED CONTROL:

Handle carefully when dry. Wearing respirator recommended during periods of long exposure to dust such as when unloading.

TRADE OR OTHER NAME:

Cl_2

USAGE - TRANSPORTATION - STORAGE:

Is used as both an aluminum fluxing agent and in water and sewage treatment. Lab reagnet. Stored in 150 pound cylinders and transported by trailer. 8 cylinders per month are used. In Refining, it is a by-product of the production of caustic soda and is stored in luqid form under refrigeration.

USING DEPARTMENTS:

Smelting Mechanical Maintenance, Ingot Plant, Gas and Oil, Chlor-Alkali, Laboratory, Property Maintenance

DESCRIPTION AND PROPERTIES:

Greenish yellow gas with a pungent odor, suffocating odor. Relative density to air 2.44. Very soluble in water. Corrosive to most metals. Non-corrosive to cast iron and stainless steel. Reacts with moisture of atmosphere to form hydrogen chloride. Least detectable odor is 3.5 ppm.

MAC = 1 part per million.

EXPLANATION OF HAZARDS: POISONOUS GAS

MAC is 1 ppm. Irritant to upper respiratory tract and also toxic to the deeper tissues. Exposure to concentrations of 40-60 ppm for 30-60 minutes may have serious or fatal consequences. Small amounts cause prolonged coughing. During fluxing, chlorides of the various constituents of the alloy as well as free chlorine will be given off. Removed via stack if dampers correctly set and hose, valves, and fluxing pipe are in good operating order.

RECOMMENDED CONTROL:

Provide adequate ventilation. Careful handling of cylinders necessary. Check frequently on valves, hoses, and connections on fluxing equipment. Proper regulation of furnace drafts to remove fumes to the outside.

TRADE OR OTHER NAME:

BOILER CLEANER ACID

USAGE - TRANSPORTATION - STORAGE:

Used in Refining Power Department. Bulk stored in R-25A tank farm. Pumped to boilers and back to tank. About 10,000 gallons stored. Used three times every two years. Small amount in Lab to clean glass.

USING DEPARTMENTS:

Refining Power, Laboratory

DESCRIPTION AND PROPERTIES:

A mixture of acids formulated for this purpose. Chromic acid is usually the main ingredient.

EXPLANATION OF HAZARDS:

Handle on the assumption that chromic is an ingredient. Hazards of chromic acid are:

1. Should not be brought into immediate contact with organic substances or other reducing agents, as a serious explosion is likely to result.

2. Fire hazard: dangerous, causes severe burns.

RECOMMENDED CONTROL:

Handle as any strong acid. Store away from possible heat or fire. As use at Point Comfort controls are adequate.

TRADE OR OTHER NAME:

CrO_3, CHROMIC ACID, CHROMIC TRIOXIDE

USAGE - TRANSPORTATION - STORAGE:

As a water inhibitor in rectifier areas.

USING DEPARTMENTS:

Power

DESCRIPTION AND PROPERTIES:

Reddish brown crystals. Specific gravity of 2.67 to 2.82 up at 196°C. Soluble in water and ether. Deliquescent. A hexavalent chromium compound. MAC for dust is 1 mg per 10 cu meters of air.

EXPLANATION OF HAZARDS:

Hexavalent chromium compounds are highly toxic. This material will dust readily. Is irritating to the eyes and will penetrate through cracks and fissues and set up typical "Chrome Ulcers."

RECOMMENDED CONTROL:

Careful handling to prevent dusting. Personal hygiene, particularly regarding cracks or fissures of the skin that are exposed to the anhydride.

TRADE OR OTHER NAME:

Cr_2O_3, CHROME GREEN, CHROMIUM OXIDE

USAGE - TRANSPORTATION - STORAGE:

Alloying material for both pots and furnaces. Received in bags, weighed and placed in smaller quantities. Added to pots on schedules.

USING DEPARTMENTS:

Potrooms and Ingot Plant

DESCRIPTION AND PROPERTIES:

Bright green crystalline powder. Specific gravity of 5. Melting point 1990°C. Insoluble in water and acids. Impurities are SiO_2 and Fe_2O_3. A trevalent chromium compound.

EXPLANATION OF HAZARDS:

Chromium compounds taken internally are poisonous. Handled in small quantities with little danger of dusting.

RECOMMENDED CONTROL:

Personal hygiene.

ARD 039953

TRADE OR OTHER NAME:

ANTHRACITE, BITUMINOUS

USAGE - TRANSPORTATION - STORAGE:

Processed at Paste Plant for potlining. In final form is semi-solid and very hot.

USING DEPARTMENTS:

Potrooms, Paste Plant, Pot Repair

DESCRIPTION AND PROPERTIES:

Black shiny solids consisting mainly of carbon and some impurities such as sulphur and iron. Contains volatile until calcined or burned. Combustible to a varied extent.

EXPLANATION OF HAZARDS:

Hazards are due to reaction with products during combustion. Exposure to coal dust may lower resistance to respiratory disease.

RECOMMENDED CONTROL:

Handle in enclosed crushers and conveyors and wet down when possible. Provide adequate exhausting equipment for handling gaseous products of combustion.

TRADE OR OTHER NAME:

PET OR PETROLEUM COKE, PITCH

USAGE - TRANSPORTATION - STORAGE:

Processed at the Paste Plant to produce the substance used for our plant anode material. In final form it is a semi-solid and very hot.

USING DEPARTMENTS:

Potrooms, Pot Repair, and Paste Plant

DESCRIPTION AND PROPERTIES:

Formed as residue from distructive distillation of coal, pitch, petroleum or other carbonaceous materials. Usually cellular in structure.

EXPLANATION OF HAZARDS:

Hazards due to reaction products - formation of CO being the primary one. During handling, some dusting is likely. Prolonged exposure to fine dust may be contributory to the weakening of resistance to lung disorders.

RECOMMEND CONTROL:

Provide adequate ventilation and sufficient dust collecting devices during handling. Dust respirators to employees exposed to considerable dusting.

TRADE OR OTHER NAME:

Cu

USAGE - TRANSPORTATION - STORAGE:

Found as: alloying element, by-product of undercutting commutators, dust from sawing or filing of electrical connectors, collector, collector straps, and electrical wire. Stored in rolls, open stock pile, or bins and transported by truck or cart. About 5000 pounds per month used.

Used in Potroom for dead-heads and flexible straps.

USING DEPARTMENTS:

Ingot Plant, Electrical and Instrument Maintenance, Machine Shop, Power, Chlor-Alkali, Potrooms

DESCRIPTION AND PROPERTIES:

Reddish, lustrous, flexible, ductile, malleable metal.
Specific gravity 8.96, Melting Point 1083°C
Boiling point 2310°C
MAC = fumes 0.1 mg/m^c - dust 1 mg/m^3

EXPLANATION OF HAZARDS:

As normally used, it is not a hazard. Excessive amounts of fine dust may cause metal poisoning if absorbed.

RECOMMENDED CONTROL:

Copper dust from grinding operations should be removed by an exhaust system. Operators should wear respirators in confined area. Dust should be collected.

MAC = 1 mg/m^3 - Dust

TRADE OR OTHER NAME:

Na_3AlF_6, KRYOLITH, KRYOFLUX, HEISER, SYNTHETIC

USAGE - TRANSPORTATION - STORAGE:

Produced as a finished product from Electrolyte and Flotation. Used in Potrooms as main constituent of bath. Railroaded from Electrolyte to Smelting storage. Storage to pots via payloader. Flotation cryolite is bagged and placed on pots when needed. Loaded to barge and ship.

USING DEPARTMENTS:

Potrooms and Electrolyte, Refining Raw Materials

DESCRIPTION AND PROPERTIES:

Lumps or powder chemically inert. Insoluble in water. Natural fluoride of Na and Al. Impurities in synthetic NaF, Na_2CO_3, SiO_2, Al_2O_3, AlF_3, $Al_2(SO_4)_3$

HF and SiF_4 formed during reduction process.
MAC = 1-2.5 mg/m^3

EXPLANATION OF HAZARDS:

Cryolite dusts readily and if ingested in sufficient quantities is toxic. When molten, small amounts of fluorine are given off as gaseous fluorine compounds. Prolonged inhalation will cause irritation and damage to the respiratory tract.

RECOMMENDED CONTROL:

Collect gases and fumes at the source. Prevent exposure of food to dust. Personal hygiene.

TRADE OR OTHER NAME:

KEROSENE ML 912

USAGE - TRANSPORTATION - STORAGE:

Used as fuel. Transported by tank truck and pipeline.

USING DEPARTMENTS:

Gas and Oil, Refining Raw Materials, Precipitation, Pot Repair, Property Maintenance

DESCRIPTION AND PROPERTIES:

SEE KEROSENE

EXPLANATION OF HAZARDS:

SEE KEROSENE

RECOMMENDED CONTROL:

SEE KEROSENE

ARD 039958

TRADE OR OTHER NAME:

DRAINO, PIPE KLENZO

USAGE - TRANSPORTATION - STORAGE:

Stocked in cans for janitorial use. Hand carried and dispensed in small amounts to drains.

USING DEPARTMENTS:

Plant wide.

DESCRIPTION AND PROPERTIES:

Granular sodium hydroxide, a strong caustic. May have small particles of aluminum included to hasten the reaction.

EXPLANATION OF HAZARDS:

All forms, both solid and liquid, will burn skin membranes and cause conjunctivitis of the eyes. MAC set at 2 mg per cubic meter of sodium hydroxide for dust or mist.

RECOMMENDED CONTROL:

Care in handling. Follow instructions on labels. Wear gloves and eye protection when needed.

TRADE OR OTHER NAME:

CO_2

USAGE - TRANSPORTATION - STORAGE:

For drying out refrigeration systems. About 100 pounds per year used. Stored in freezer and transported by vehicle and hand.

USING DEPARTMENTS:

Electrical Maintenance

DESCRIPTION AND PROPERTIES:

SEE CARBON DIOXIDE

EXPLANATION OF HAZARDS:

SEE CARBON DIOXIDE

RECOMMENDED CONTROL:

SEE CARBON DIOXIDE

TRADE OR OTHER NAME:

SPOTCHECK DEVELOPER, SPOTCHECK PENETRANT, SPOTCHECK CLEANER, MAGNAGLO, PEN BLUE, PRURRIAN BLUE

USAGE - TRANSPORTATION - STORAGE:

Used for coloring and detecting metal cracks.

USING DEPARTMENTS:

Power, R-136 Maintenance, Ingot, Vehicles Repair

DESCRIPTION AND PROPERTIES:

MAC = 200 ppm
Explosive limits = 1.3-6.8% by volume in air.

EXPLANATION OF HAZARDS:

Same as any hydrocarbon. A flammable liquid and a dangerous hazard.

RECOMMENDED CONTROL:

Store in cool, well-ventilated area away from any potential fire hazard. Personal hygiene.

TRADE OR OTHER NAME:

FORMICA, MICARTA, OKONITE CEMENT, J. M. DUXSEAL, GLYPTOL - G.E., WEST. INSUL VARNISH-EPOXY

USAGE - TRANSPORTATION - STORAGE:

For bus, wiring, etc. Form of either material or liquid (Glyptol). Carried or trucked.

USING DEPARTMENTS:

Machine Shop, Power, Potrooms, Electrical and Instrument Maintenance, Property Maintenance, Pot Repair

DESCRIPTION AND PROPERTIES:

Composition varies by manufacturer.

EXPLANATION HAZARDS:

None as used.

RECOMMENDED CONTROL:

None

TRADE OR OTHER NAME:

COAST PAINT, WESTINGHOUSE, G.E., DOLPH'S, TARSET

USAGE - TRANSPORTATION - STORAGE:

For equipment repair and insulation. Comes in either tubs or cans. Stored in cardboard cartons and either carried or trucked to job site.

USING DEPARTMENTS:

Operation wide.

DESCRIPTION AND PROPERTIES:

SEE PAINT AND ENAMEL DESCRIPTION.

EXPLANATION OF HAZARDS:

Although not a serious industrial hazard, prolonged exposure or contact can cause irritation to eyes or skin.

RECOMMENDED CONTROL:

Adequate ventilation. Use with proper equipment. Avoid direct contact with hardners or uncured resins.

ARD 039963

TRADE OR OTHER NAME:

ETHYL ETHER

USAGE - TRANSPORTATION - STORAGE:

Used in vehicle repair for quick start on vehicles. 15 oz. cans used in Lab as reagent.

USING DEPARTMENTS:

Vehicle Repair, Laboratory

DESCRIPTION AND PROPERTIES:

A light volatile flammable liquid - obtained by distillation of alcohol with sulfuric acid.
MAC = 400 ppm

EXPLANATION OF HAZARDS:

Flammable - Anesthetic - Severe explosion hazard. Highly dangerous in presence of heat.

RECOMMENDED CONTROL:

Keep away from open flames or heat. Provide good ventilation.

ARD 039964

TRADE OR OTHER NAME:

IRON MANGANESE ALLOY

USAGE - TRANSPORTATION - STORAGE:

For alloy in pots. Stored in plastic lined crates or open pile. Measured into proper amounts by Utility, to pots by forklift, poured manually onto sealed pots.

USING DEPARTMENTS:

Potrooms

DESCRIPTION AND PROPERTIES:

Dense metallic-like substance ranging from 4" lumps down to fines which disintergrates when exposed to atmosphere for a period of time. It is an alloy consisting principally of 7% iron and 93% manganese. Impurities are silicone and carbon.

EXPLANATION OF HAZARDS:

There are no shipping regulatons or industrial hazards.

RECOMMENDED CONTROL:

None

USAGE - TRANSPORTATION - STORAGE:

Used as a sealer in molten metal transfer - applied to joints.
Used in fluidized vessels as a fluidizing membrane.

USING DEPARTMENTS:

Ingot Plant, Calcination, Electrolyte

DESCRIPTION AND PROPERTIES:

A fiberous ceramic insulating material. The liquid cement QF7 is painted on and when dry has the same insulating quality as the paper.

EXPLANATION OF HAZARDS:

None

RECOMMENDED CONTROL:

None

TRADE OR OTHER NAME:

Fiberglass cloth

USAGE - TRANSPORTATION - STORAGE:

Used for insulation - used with resin and activated to hatch and join fiberglass pipe.

USING DEPARTMENT:

Paint and Insulation, Maintenance

DESCRIPTION AND PROPERTIES:

Glass in a fibrous form used to make various products

EXPLANATION OF HAZARDS:

Skin irritation

RECOMMENDED CONTROL:

Personal Hygiene

FLOOR SWEEPING COMPOUND

USAGE - TRANSPORTATION - STORAGE:

To clean floors. High absorption capacity. Approximately 2500 pounds per month used. It is stored in barrels or drums and carried by bucket to work area.

USING DEPARTMENTS:

Operations wide.

DESCRIPTION AND PROPERTIES:

Actual composition not known. Believed to be sawdust and a dye, wet with an oil.

EXPLANATION OF HAZARDS:

None

RECOMMENDED CONTROL:

None

USAGE - TRANSPORTATION - STORAGE:

For lighting and relamping. About 160 per month used. Stored in cardboard cartons and carried or trucked to work site.

USING DEPARTMENTS:

Operations wide.

DESCRIPTION AND PROPERTIES:

Glass tubes with insides coated with phosphor powder.

EXPLANATION OF HAZARDS: NO HAZARD EXCEPT BREAKAGE

Formerly very hazardous due to the inside coating of poisonous berrylium phosphor powder. This type of powder is no longer used.

RECOMMENDED CONTROL:

Care in handling. Wear proper safety equipment when installing.

TRADE OR OTHER NAME:

CaF_2, FLUORITE, "SPAR," CALCIUM FLUORIDE

USAGE - TRANSPORTATION - STORAGE:

As a constituent of electrolyte in pots and of one of the raw materials for the Aluminum Fluoride Plant. Railroad to plant, stored in stock-piles. Unloaded from ship to storage.

USING DEPARTMENTS:

Potrooms and Electrolyte and Refining Raw Materials

DESCRIPTION AND PROPERTIES:

Varicolored, powdery or lumpy material. Major constituent is CaF_2, may contain 2.3% silica as impurities. Other impurities are $CaCO_3$; Fe_2O_3, Pb, Zn, Ca, Al_2O_3

EXPLANATION OF HAZARDS:

As used, it can be classified as non-hazardous, but if ingested in quantity it is a dangerous poison.

RECOMMENDED CONTROL:

Personal hygiene, prevent exposure of food to dust.

TRADE OR OTHER NAME:

CCl_2F_2, Dichloro Difluoromethane, F-12

USAGE - TRANSPORTATION - STORAGE:

As additive to air conditioning and refrigeration systems. Stored in steel cylinders. Approximately 4,000 pounds per month used.

USING DEPARTMENTS:

Electrical Maintenance, Chlor-Alkali, Vechicle Repair

DESCRIPTION AND PROPERTIES:

Colorless, odorless, and tasteless gas which is 4.2 times heavier than air. Non-explosive and non-flammable - non-corrosive to metals.

EXPLANATION OF HAZARDS:

Acts as an anesthetic at high concentrations. Decomposed by heat releasing carbon monoxide, chlorine, phosgene, hydrogen fluoride. These products act as irritants to skin, eyes, nose and throat with prolonged exposure possibly causing death. Freon MAC 1000 ppm. Spray into eyes instantly freezes tissue.

RECOMMENDED CONTROL:

Proper maintenance and inspection to prevent leaks. Adequate ventilation should be provided for repair work, little danger of poisoning in low concentration. Goggles required when handling or working in the vicinity of freon. Do not expose to heat.

TRADE OR OTHER NAME:

GROUND BRICK, GROG

USAGE - TRANSPORTATION - STORAGE:

Used on both potlinings and floors.

USING DEPARTMENTS:

Potrooms

DESCRIPTION AND PROPERTIES:

A highly refractory material. May contain silicon, iron, chromates, alumina. Often ground fire brick or other siliceous materials.

EXPLANATION OF HAZARDS:

Continued inhalation of fine particles resulting from crushing or grinding may cause fibrosis of lung tissue. Dust from handling could be hazardous but usually particles are too coarse to be harmful.

RECOMMENDED CONTROL:

Adequate ventilation should be provided during handling and crushing of bricks. For prolonged exposure, face masks should be available and used.

USAGE - TRANSPORTATION - STORAGE:

For engine and furnance combustion. Finished product of Oil and Gas Plant. Contained within piping.
Lab for heating and distillation.

USING DEPARTMENT:

Power, Ingot Plant, Oil and Gas, Calcination, Electrolyte, Chlor-Alkali, 18-I, 18-F, 18X, Laboratory, Machine Shop, Pot Repair, Vehicle Repair, Property Maintenance
(Hot water heating in several locations)

DESCRIPTION AND PROPERTIES:

Explosive limits = 4.8 - 13.5% by volume in air.

EXPLANATION OF HAZARDS:

These gases are all flammable and dangerous fire hazards.

RECOMMENDED CONTROL:

Adequate ventilation, keep away from possible fire hazards.

TRADE OR OTHER NAME:

ALUMILASTIC C AND CB, WHITE LEAD

USAGE - TRANSPORTATION - STORAGE:

To glaze surfaces. Stored at storeroom and trucked to job as needed. Approximately one gallon per month used.

USING DEPARTMENTS:

Mechanical and Instrument Maintenance, Paint and Insulation

DESCRIPTION AND PROPERTIES:

Mixture of whiting (chalk) with linseed oil, with or without lead or other pigments.

EXPLANATION OF HAZARDS:

None except for lead.

RECOMMENDED CONTROL:

See LEAD

TRADE OR OTHER NAME:

$C_3H_5(OH)_3$, GLYCEROL, GLYCYLALCOHOL

USAGE - TRANSPORTATION - STORAGE:

As lubricators. Contained within bottles and stored in a cabinet. Trucked to job site. Approximately one gallon per month used. Lab to calibrate thermometers.

USING DEPARTMENTS:

Power and Electrical Maintenance, Laboratory, Oil and Gas

DESCRIPTION AND PROPERTIES:

Clear, colorless, yellow syrupy liquid with a sweet taste. Specific gravity 1.265. Boiling Point 290°C.

EXPLANATION OF HAZARDS:

None as used.

RECOMMENDED CONTROL:

None

ARD 039975

TRADE OR OTHER NAME:

INSULATING VARNISH G.E.

USAGE - TRANSPORTATION - STORAGE:

As insulation. Contained within metal cans and either carried or trucked to job site. Approximately 8 quarts per month used. Sealing vacuum leaks.

USING DEPARTMENTS:

Electrical and Instrument Maintenance, Chlor-Alkali, Property Maintenance, Power

DESCRIPTION AND PROPERTIES:

Percent solids - weight average - 50
Solvent system Xylene
Flash Point - open cup - I Over 80°F
Excellent resistance to acid and oil.

EXPLANATION OF HAZARDS: COMBUSTIBLE

Possible dermatitis and possible danger to respiratory tract. Harmful if taken internally.

RECOMMENDED CONTROL:

Use with adequate ventilation. Do not take internally. Keep away from heat and open flame. Avoid prolonged contact with skin and breathing of vapors or spray mist. Before smoking or eating, cleanse hands thoroughly.

TRADE OR OTHER NAME:

ML 885 FLAKE, ML 886 POWDERED, NATIONAL CARBON TUBES AND PLATES

USAGE - TRANSPORTATION - STORAGE:

Material for fluxing tubes and as a constituent of potlining. Coating gasket and bolts.

USING DEPARTMENTS:

Operations wide.

DESCRIPTION AND PROPERTIES:

Form of carbon.

EXPLANATION OF HAZARDS

None

RECOMMENDED CONTROL

None

TRADE OR OTHER NAME:

AIRCO CYLINDER

USAGE - TRANSPORTATION - STORAGE:

As a carrier gas for chromotog. Stored in cylinders.

USING DEPARTMENTS:

Gas and Oil, Laboratory

DESCRIPTION AND PROPERTIES:

A non-flammable gas, colorless, odorless, tasteless.
Boiling Point = 268.9°C
Melting Point = 272.2 @ 26 ATM

EXPLANATION OF HAZARDS:

None

RECOMMENDED CONTROL:

Should be transported with care due to steel storage cylinders.
Store in cool place.

TRADE OR OTHER NAME:

HCl, MURIATIC ACID, HYDROGEN CHLORIDE

USAGE - TRANSPORTATION - STORAGE:

A lab reagent used for brine treating. A cleaner for stone and brick by R&M department. May be present in the atmosphere in ingot as a reaction product from chlorine fluxing. Received in liquid in glass containers. Stored in storeroom. 32 bottles per month used. Received by truck in larger quantities and transfered by Raw Materials to storage at R-52 for ship loading. Received by truck at Chlor-Alkali.

USING DEPARTMENTS:

Laboratory and Maintenance, Refining Raw Material, Chlor-Alkali, Power and Vehicle Repair

DESCRIPTION AND PROPERTIES:

Hcl is a solution of hydrogen chloride gas dissolved in water. Liquid Hcl is a colorless, fuming pungent liquid with specific gravity of 1.188 at 60°F, soluble in water, alcohol and ether. Common Hcl used in plant is 20° Baume!

MAC = 5-10 parts per million

EXPLANATION OF HAZARDS:

Corrosive liquid will produce severe burns on skin. Fumes are irritating to skin and mucous membranes. MAC for fumes set at 5 ppm.

RECOMMENDED CONTROL:

Caution in handling of liquid. Rubber gloves and eye protection should be used. Adequate ventilation. Flush spillage from skin at once with water.

USAGE - TRANSPORTATION - STORAGE:

By-product of Chlor-Alkali Plant. Piped to R-110 Powerhouse for fuel.

USING DEPARTMENTS:

Chlor-Alkali, Refining Power

DESCRIPTION AND PROPERTIES:

Colorless gas, lighter than air.

EXPLANATION OF HAZARDS:

Flamable, explosive in presence of heat. Reacts vigorously with oxidizing materials.

RECOMMENDED CONTROL:

Adequate ventilation. Absence of heat and open flame.

TRADE OR OTHER NAME:

HF GAS

USAGE - TRANSPORTATION - STORAGE:

No usage. A constituent of pot gas.

USING DEPARTMENTS:

Potrooms and Electrolyte Plant

DESCRIPTION AND PROPERTIES:

The liquid is a clear, colorless, fuming corrosive liquid. Boiling point 199°C. Specific gravity of 0.988. HF gas is dissolved in water. Product produced to use as a raw material in the Electrolyte Department.

EXPLANATION OF HAZARDS:

Inhalation of HF gas may result in respiratory tract irritation. The liquid may cause severe burns and lesions which are very difficult to heal. MAC for pure hydrogen fluoride gas is 3ppm

RECOMMENDED CONTROL:

Provide adequate ventilation. Provide rubber gloves and eye goggles for use during handling of the liquid.

TRADE OR OTHER NAME:

NEP-22
Pickling Compound - Parkin Chemical Co, Pittsburgh, Pa.

USAGE - TRANSPORTATION - STORAGE:

Used in Digestion as an agent to protect metal in sulfuric tube cleaning.
NEP received in 55 gallon drums. Dakath tank saver.
25 gallons per month used.

USING DEPARTMENTS

Digestion

DESCRIPTION AND PROPERTIES:

Acid - Pickling Compound

EXPLANATION OF HAZARDS:

Skin or eye burns.

RECOMMENDED CONTROL:

Avoid contact-use rubber gloves - wash off with water.

TRADE OR OTHER NAME:

FOXBORO - L&N, RECORDER

USAGE - TRANSPORTATION - STORAGE:

For recording and identification purposes.

USING DEPARTMENTS:

Throughout Operations.

DESCRIPTION AND PROPERTIES:

Fluid composed of pigment or dye plus a liquid medium.

Stencil paste - concentrated ink with denatured alcohol.

EXPLANATION OF HAZARDS:

None

RECOMMENDED CONTROL:

None

TRADE OR OTHER NAME:

FLIT, BUG-A-BOO, PERMAX, VAPOSECTOR, HEP AEROSOL BOM, FLY SPRAY, 2-4-D, 6-12

USAGE - TRANSPORTATION - STORAGE:

Throughout the plant to kill flies and other insects. Purchased in glass bottles, gallon cans and 55 gallon drums. May be sprayed by hand spray guns or by compressed air guns.

USING DEPARTMENTS:

Plant wide.

DESCRIPTION AND PROPERTIES:

Insecticides composed of a light deodorized petroleum oil or mineral spirits plus the killing agent which may be pyrethrum rotenone or DDT (Dichlorodiphenyl-tri-chloroethane) plus a synergest such as sesame oil.

EXPLANATION OF HAZARDS:

High concentrations of fume irritate the nose and throat and should be avoided. Repeated contact with the liquid may cause skin irritation. Rotenone is harmful to man.

RECOMMENDED CONTROL:

Wear respirator suitable for mists when spraying in confined areas. Avoid exposure to the liquid itself. Personal hygiene.

TRADE OR OTHER NAME:

CALCIUM, CALCIUM SILICATE, THERMOBESTOS, ASBESTOS SHORTS

USAGE - TRANSPORTATION - STORAGE

Used as sealing solution for pots. Used for hot equipment insulation.

USING DEPARTMENTS:

Pot Repair, Power, Paint and Insulation, Gas and Oil

DESCRIPTION AND PROPERTIES:

A material consisting of various silicates such as magnesium, iron, and calcium

EXPLANATION OF HAZARDS:

Possible silicosis

RECOMMENDED CONTROL:

Respirator - Good ventilation.

KEROSENE

TRADE OR OTHER NAME:

ML-912

USAGE - TRANSPORTATION - STORAGE:

For water-molten aluminum explosion retardation and as a flotation reagent. Lab for oil analysis. Heating fuel.

USING DEPARTMENTS:

Ingot Plant, Potrooms, Laboratory, Property Maintenance and Power

DESCRIPTION AND PROPERTIES:

Colorless liquid, distilled from petroleum.
Explosive limits 1.16-6.0% by volume in air.
A flammable liquid and a moderate fire hazard.

EXPLANATION OF HAZARDS:

Inhalation or direct contact for prolonged periods of time results in irritation. The liquid may cause burn if left in contact for a long period of time.

RECOMMENDED CONTROL:

Proper ventilation. Irrigate eyes with water. Wash contaminated areas of body with soap and water.

TRADE OR OTHER NAME:

Pb

USAGE - TRANSPORTATION - STORAGE:

For patching repair purposes. Stored in sheet form in toolroom and trucked to job site. About 500 lbs. per year used.

USING DEPARTMENTS:

R-136 Mechanical and Instrument Maintenance

DESCRIPTION AND PROPERTIES:

Heavy malleable, ductile, gray, soft metal of low tensile strength. Density 11.35. Melting point 327°C. Boiling point - 1.525 to 1.620°C. Soluble in dilute nitric acid. Insoluble in water.
MAC = 0.15 mg/m^3

EXPLANATION OF HAZARDS:

Lead poisoning is a serious industrial disease. Dust or fumes from lead is usual method of entering the body. May also be absorbed through the skin. Lead poisoning is usually gradual and chronic. In case of lead dust, inhalation is 100 times greater a hazard than swallowing an equivalent amount. MAC is 1.5 mg lead per cu. meter of air.

RECOMMENDED CONTROL:

Melt only under exhaust hood or in outside air. Provide adequate ventilation whenever lead is being cut, machined or melted. Remove fume or dust at source.

TRADE OR OTHER NAME:

$Ca(OH)_2$, CALCIUM HYDRATE, CALCIUM HYDROXIDE, CHEMICAL LIME, CaO

USAGE - TRANSPORTATION - STORAGE:

For neutralization of scrubber water and gyh - used for Refining Process. Stored in bulk within tanks. Delivered by railroad and conveyed to tanks. Approximately 14,000 tons per month used. Produced from oyster shell at R-60 and stored for Refining use.

USING DEPARTMENTS:

Smelting Mechanical Maintenance, Potrooms, Calcination, Electrolyte, Clarification, Digestion

DESCRIPTION AND PROPERTIES:

White powder or slurry.

EXPLANATION HAZARDS:

Irritating to skin and respiratory tract.

RECOMMENDED CONTROL:

Gloves and respirator. Personal hygiene.

TRADE OR OTHER NAME:

BOILED OIL, RAW OIL, FLAXSEED OIL

USAGE - TRANSPORTATION - STORAGE:

As gasket material on turbine casing joints, paint mix. Stored in cans. Approximately four quarts per month used.

USED DEPARTMENTS:

Power, Paint and Insulation

DESCRIPTION AND PROPERTIES:

Unlike the regular linseed oil, the type used here is a thicker, molasses-type oil.

EXPLANATION OF HAZARDS:

No hazard as used.

RECOMMENDED CONTROL:

Personal hygiene.

TRADE OR OTHER NAME:

(LlF) Lithium Fluoride or (Li_2CO_3) Lithium Carbonate

USAGE - TRANSPORTATION - STORAGE:

Used as constituent of electrolyte in pots. Transported by railroad or truck. Stored in bags, fibre drums, storage tank or loose stockpile.

USING DEPARTMENTS:

Potrooms

DESCRIPTION AND PROPERTIES:

A colorless opaque, fine crystalline or granular product in powder or pellet form. Sparingly soluble in water - not hygroscopic.

EXPLANATION OF HAZARDS:

Inhalation of ingestion of lithium fluoride can cause drowsiness, nausea, diarrhea, thirst, fatigue and muscular incoordination.

RECOMMENDED CONTROL:

Avoid prolonged contact with the skin. Avoid inhalation or ingestion of material. Use of dust mask and good personal hygiene is mandatory. Adequate ventilation.

TRADE OR OTHER NAME:

SEE LISTINGS AT BACK

USAGE - TRANSPORTATION - STORAGE:

Used as: mold and saw lubricant, vehicle lubrication, cleaning electrical joints, hydraulic fluid, coating paste buckets, machine lubrication and motor repair. Stored in drums as metal cans. About 500 pounds per month of grease and 70,000 gallons per month liquid lubricant are used.

USING DEPARTMENTS:

Operation wide.

DESCRIPTION AND PROPERTIES:

ML - Machine Lubricants

PL - Process Lubricants

See Section II for details.

EXPLANATION OF HAZARDS:

Possible dermatitis. In addition, carbon monoxide is a by-product of incomplete combustion.

RECOMMENDED CONTROL:

Personal hygiene. Adequate ventilation. When sprayed, use goggles.

LUBRICANTS
(Not listed in Sec. II)

TRADE OR OTHER NAME:

ML-696 - Texaco - P4D

ML-698 - Sun Oil - 7083

ML-678 - Mortrex -605

USAGE - TRANSPORTATION - STORAGE:

Used in large quanities as crankcase and upper cylinder lubrication for gas engine in Smelting Power. Received mostly by railroad tank car, some by truck. Stored in tanks between Power Houses. Approximately 150,000 gallons used per month.

USING DEPARTMENTS:

Power

DESCRIPTION AND PROPERTIES:

ML-698 - Sun Oil - Non-additive type

ML-696 - Texaco - P-40 - Anti-oxident agent added

ML-678 - Mortrex - 605 - Anti-oxident agent added

EXPLANATION OF HAZARDS:

Flash Point - 390°F

Possible dermatitis, in addition, carbon monoxide is a by-product of incomplete combustion.

RECOMMENDED CONTROL:

Personal hygiene. Keep away from open flame.

USAGE - TRANSPORTATION - STORAGE:

As an alloying element. Received in brick form.

USING DEPARTMENTS:

Ingot Plant

DESCRIPTION AND PROPERTIES:

MAC = 15 mg/m^3

A highly flammable mable solid and can cause explosions in the finely divided state.

EXPLANATION OF HAZARDS:

A dangerous fire hazard.

RECOMMENDED CONTROL:

Stored in cool, well ventilated place away from areas of acute fire hazards and open flame.

USAGE - TRANSPORTATION - STORAGE:

As an alloying element.

USING DEPARTMENTS:

Ingot Plant, Potrooms

DESCRIPTION AND PROPERTIES:

MAC = 5 mg/m^3

EXPLANATION OF HAZARDS:

Chronic exposure of the eyes can cause retinal edema. Poisoning is rare.

RECOMMENDED CONTROL:

Proper protective equipment.

USAGE - TRANSPORTATION - STORAGE:

As insulation material.

Also see ASBESTOS (Hi-Temp)

USING DEPARTMENTS:

Ingot Plant, Property Maintenance, Smelting Mechanical Maintenance PL

DESCRIPTION AND PROPERTIES:

Asbestos, silica and lime. These elements are mixed and bonded together.

EXPLANATION OF HAZARDS:

Dust can irritate lungs. Can cause asbestosis and possible lung cancer.

MAC = 5 fibers longer than 5 micrometers/cubic centimeter of air.

RECOMMENDED CONTROL:

Wearing of dust mask while sawing or machining material. Use dust collecting equipment for control. Vacuum sweepers for cleanup of floors. Dispose of scrap and dust.

USAGE - TRANSPORTATION - STORAGE:

As insulation material.

Also see ASBESTOS (Hi-Temp)

USING DEPARTMENTS:

Ingot Plant, Property Maintenance, Smelting Mechanical Maintenance

DESCRIPTION AND PROPERTIES:

Asbestos, silica and lime. These elements are mixed and bonded together.

EXPLANATION OF HAZARDS:

Dust can irritate lungs. Can cause asbestosis and possible lung cancer.

MAC = 5 fibers longer than 5 micrometers/cubic centimeter of air.

RECOMMENDED CONTROL:

Wearing of dust mask while sawing or machining material. Use dust collecting equipment for control. Vacuum sweepers for cleanup of floors. Dispose of scrap and dust.

TRADE OR OTHER NAME:

Hg, QUICKSILVER

USAGE - TRANSPORTATION - STORAGE:

Used in metering. Stored in plastic or cast iron jugs. In Potrooms, used in pyrotitration of bath samples. At Chlor-Alkali, large amounts used in reaction cells. Lab for analysis - used in Instruments.

USING DEPARTMENTS:

Gas and Oil, Power, Potrooms, Chlor-Alkali, Laboratory, Instrument Maintenance

DESCRIPTION AND PROPERTIES:

Silvery, mobile liquid, soluble in acids, insoluble in water, alcohol and ether. Density to air 6.9. Boiling Point 357°C. Freezing Point -40°F. Specific gravity 13.59. Mercury metal in liquid form gives off vapors at ordinary temperatures.

MAC = 0.1 mg/m^3

EXPLANATION OF HAZARDS:

Mercury is a poisonous metal and because of the vapors normally given off, a serious hazard exist whenever it is used or handled. Very small amounts of vapor given off at room temperature may cause poisoning. Mercury may also be absorbed through skin membranes on contact and cause poisoning. MAC is 0.1 to 0.25 mg per cubic meter.

RECOMMENDED CONTROL:

All mercury should be kept in closed containers to prevent the escape of vapors. Local exhaust systems should be used where necessary. Spilled mercury should be picked up by a siphon pump at once. Rotation of workers is advisable. A mercury detector should be used to warn of dangerous concentrations. Gloves must be worn when handling.

TRADE OR OTHER NAME:

G.E., WESTINGHOUSE, SYLVANIA

USAGE - TRANSPORTATION - STORAGE:

For lighting.

USING DEPARTMENTS:

Operation wide.

DESCRIPTION AND PROPERTIES:

SEE FLUORESCENT TUBES

EXPLANATION OF HAZARDS:

SEE FLUORESCENT TUBES

RECOMMENDED CONTROL:

SEE FLUORESCENT TUBES

TRADE OR OTHER NAME:

CALCIUM SULFIDE COMPOUND (HgX)

USAGE - TRANSPORTATION - STORAGE:

Used to decontaminate mercury spillage. Comes in cardboard containers from ACTON ASS.- Pittsburgh

USING DEPARTMENTS:

Chlor-Alkali, Control

DESCRIPTION AND PROPERTIES:

Sodium Sulfide Compound.
White granular similar to detergent

EXPLANATION OF HAZARDS:

None as used.

RECOMMENDED CONTROL:

Have good ventilation. Don't use with solvents.

TRADE OR OTHER NAME:

METHYL ALCOHOL

USAGE - TRANSPORTATION - STORAGE:

Utilized for anti-freeze protection. Approximately 400 gallons per month used. Stored in tank in Building 36. Trucked to job site. Lab reagent.

USING DEPARTMENTS:

Electrical Maintenance, Clarification, Precipitation, Laboratory, Oil and Gas, Refining Power

DESCRIPTION AND PROPERTIES:

MAC = 200 ppm

Explosive limits - 6.0 to 35.6% by volume in air.

EXPLANATION OF HAZARDS:

A flammable liquid and a dangerous fire hazard. Toxic - Ingestion or absorption causes central nervous system damage, particularly of the optic nerve. Inhalation of excessive amounts will result in acute poisoning within a short time.

RECOMMENDED CONTROL:

Personal treatment with all haste. Material should be stored in cool, weel-ventilated area. Wear all protective equipment and avoid personal contact.

USAGE - TRANSPORTATION - STORAGE:

Used as a paint additive. Stored in cans under refrigeration in R-136A. Approximately 15 gallons per year is used.

USING DEPARTMENTS:

Paint and Insulation

DESCRIPTION AND PROPERTIES:

Colorless gas with etheral odor. 1.7 times heavier than air with explosive limits of 8-17% concentration by volume in air. Non-corrosive to common metals. Boiling Point - 24°C.

MAC = 100 ppm

EXPLANATION OF HAZARDS:

Acts as an anesthetic and a narcotic without warning of its presence in concentrations harmful to life. MAC is 100 ppm. Decomposes on contact with flame or hot surface and forms toxic fumes of hydrogen chloride and phosgene.

RECOMMENDED CONTROL:

Proper maintenance and frequent inspection of equipment to prevent leaks.

TRADE OR OTHER NAME:

SHELL OIL

USAGE - TRANSPORTATION - STORAGE:

Solvent, Patching fiberglass

USING DEPARTMENTS:

Ingot Plant, Chlor-Alkali, Paint and Insulation, Mechanical Maintenance

DESCRIPTION AND PROPERTIES:

MAC = 200 parts per million
Explosive limits = 1.81 - 11.5% by volume to air
Its vapors form flammable mixtures with air at all temperatures down to 24°F. Fire Hazard.

EXPLANATION OF HAZARDS:

Can cause irritation of eyes and respiratory tract. Headache, dizziness, nausea and dermatitis. Fire Hazard

RECOMMENDED CONTROL:

Adequate ventilation. Wear goggles. Store in cool, well-ventilated area away from fire.

TRADE OR OTHER NAME:

LUPPERSOL DDM, du VERRE CATALYST, MEK PEROXIDE, COPON - 106 ACTIVATOR

USAGE - TRANSPORTATION - STORAGE:

Used in the Maintenance Department for fusing plastic-pipeline together in the Chlor-Alkali Department. Lab. reagent.

USING DEPARTMENTS

Refining Mechanical Maintenance, Paint and Insulation, Laboratory

DESCRIPTION AND PROPERTIES:

Clear, flammable, oxidizing material. 60% MEK Peroxide in Dimethyl Phthacate product has limited shelf life. Has to be refrigerated above 77°F (25°C).

EXPLANATION OF HAZARDS: FLAMMABLE MIXTURE

Flammable, oxidizing material. Heat shock or contact with other materials may cause fire or explosive decomposition. Do not add hot materials; do not grind or subject to friction heat.

RECOMMENDED CONTROL:

Use ventilated cap. Store upright. Protect from direct contact with sunlight. Keep away from heat, sparks and open flame. Prevent contamination with readily oxidizable materials and polymerization acceleration. Avoid contact with skin, eyes and clothes.

METHYL ISOBUTYL CARBINOL

TRADE OR OTHER NAME:

SHELL OIL 55 GALLON DRUM
Methyl Amyl Alcohol, 4 methyl pentanol-2

USAGE - TRANSPORTATION - STORAGE:

Flotation Plant reagent.

USING DEPARTMENTS:

~~Potrooms~~ Flotation, Utility Dept.

DESCRIPTION AND PROPERTIES:

A flammable liquid and a moderate fire hazard.

Boiling Point = 131.4°C
Flash Point = ~~160°F~~ 106°F
Colorless Liquid

density 0.8079 @ 20°/20°C
vap. press = 2.8 mm @ 20°C
LEL = 1.0 %
U.E.L. = 5.5%

EXPLANATION OF HAZARDS:

Moderate fire hazard, when exposed to heat or flame
Can react with oxidizing materials.

RECOMMENDED CONTROL:

Store in cool, ventilated place away from areas of acute fire hazard.

TOXICOLOGY: A STRONG IRRITANT. HIGH CONCENTRATIONS CAUSE ANESTHESIA

Ref p. 910 Sax 4th Ed Dangerous Prop. of Ind. materials

ARD 040004

TRADE OR OTHER NAME:

MYLAR SHEETS 36 x 36 SHEET

USAGE - TRANSPORTATION - STORAGE:

By-product of repair work on armatures. Sight glass insulation.

USING DEPARTMENTS:

Electrical Maintenance, Power

DESCRIPTION AND PROPERTIES:

A class of silicate with varying compositions of silicate of aluminum and alkali, either potassium or sodium.

Specific gravity 2.78 - 3.0
MAC = 20 million particles/ft^3

EXPLANATION OF HAZARDS:

Hazard to inhale and may cause skin irritation.

RECOMMENDED CONTROL:

Personal hygiene.

TRADE OR OTHER NAME:

INSULATING BOARD AND RAIL

USAGE - TRANSPORTATION - STORAGE:

For electrical insulation. Stored in open and trucked to job site.

USING DEPARTMENTS:

Potrooms, Power and Electrical and Instrument Maintenance, Ingot

DESCRIPTION AND PROPERTIES:

Consist of a fabric or paper material laminated with a phenolic resin.

EXPLANATION OF HAZARDS:

None

RECOMMENDED CONTROL:

None

TRADE OR OTHER NAME:

BRIXMENT

USAGE - TRANSPORTATION - STORAGE:

To bond bricks in furnace lining.

USING DEPARTMENTS:

Ingot

DESCRIPTION AND PROPERTIES:

A finely ground mixture of lime, cement or other like materials to which sand is added to form motars.

EXPLANATION OF HAZARDS:

No hazards as ordinarily used. Lime may cause skin irritations leading to dermatitis, and inhalation of dust, especially those containing lime, may cause respiratory tract irritations.

RECOMMENDED CONTROL:

Personal hygiene is the best control. The use of respirators is recommended during prolonged exposure to dry dust.

USAGE - TRANSPORTATION - STORAGE:

Throughout the plant wherever gasoline engines are operating.

USING DEPARTMENTS:

Plant wide.

DESCRIPTION AND PROPERTIES:

Contain carbon monoxide together with combustion products of tetraethyl lead, a gasoline additive. One reference states that carbon monoxide comprises 6-7% by volume of motor vehicle gases.

EXPLANATION OF HAZARDS:

SEE CARBON MONOXIDE

RECOMMENDED CONTROL:

Provide adequate ventilation wherever gasoline engines are operating. Remove exhaust fumes to open area by means of forced suction. Do Not run gasoline engines inside buildings unless absolutely necessary.

TRADE OR OTHER NAME:

MULTILITY REPELEX, DUPLIMAT PLATEX, PRESERVATIVE SOLUTION, DEEP EZE, DEOXIT

USAGE - TRANSPORTATION - STORAGE:

Used in multilith printing equipment in Building 1.

USING DEPARTMENTS:

Printing

DESCRIPTION AND PROPERTIES:

The actual composition of some of these materials is not available; however, the manufactuer states that they do not present health hazards in normal use.

EXPLANATION OF HAZARDS:

Possible dermatitis due to allergies.

RECOMMENDED CONTROL:

Personal hygiene.

TRADE OR OTHER NAME:

NALCO NO. 45 BALLS, NALCO NO. 2 LIQUID, NALCO NO. 728, NALCO NO. 748 BALLS, SEE CLASS 270 IN STORES CATALOG
NALCO NO. 19, NALCO NO. 751, NALCO NO. 754, NALCO NO. 763

USAGE - TRANSPORTATION - STORAGE:

Scrubber, boiler, and cooling water treatment, anti-foam in Precipitation. Stored in fibre containers-drums-buckets-or paper sacks. 20,000 pounds per month used.

USING DEPARTMENTS:

Potrooms, Gas and Oil, Power, Ingot Plant, Calcination, Precipitation, Chlor-Alkali, Laboratory

DESCRIPTION AND PROPERTIES:

Unknown chemical composition; however, some Nalco liquids contain sodium aluminate.

EXPLANATION OF HAZARDS:

Not a serious hazard but personal contact should be avoided due to dermatitis.

RECOMMENDED CONTROL:

Personal hygiene.

TRADE OR OTHER NAME:

BENZENE, SOLVENT NAPHTHA, HEAVY NAPHTHA, LIGHT NAPHTHA

USAGE - TRANSPORTATION - STORAGE:

A solvent and degreaser for small parts in some departments. A carrier for graphite in the treatment of molds. Received in one-gallon or five-gallon cans.

USING DEPARTMENT:

Plant wide

DESCRIPTION AND PROPERTIES:

A mixture of small quantities of benzene and toluene with xylene and higher homologs from coal tar.

MAC = 100 ppm

EXPLANATION OF HAZARDS:

Inhalation of the fumes causes headache, nausea, etc. If liquid is used hot, the hazards are increased. Naphtha will dissolve natural fats of the skin causing the membranes to crack and scale, opening the way to dermatitis.

MAC is set at 100 ppm.

RECOMMENDED CONTROL:

Adequate ventilation. Substitution of less volatile liquid. Rotation of workers if used daily. Provide rubber gloves and eye protection.

TRADE OR OTHER NAME:

Ni

USAGE - TRANSPORTATION - STORAGE:

Used as alloying material in Potrooms and Ingot Plant.

USING DEPARTMENTS:

Potrooms and Ingot Plant

DESCRIPTION AND PROPERTIES:

Very hard silvery metal that takes a high polish.

MAC = 0.1 mg/m^3

EXPLANATION OF HAZARDS:

None as used - possible dermatitis

RECOMMENDED CONTROL:

None as used - personal hygiene

TRADE OR OTHER NAME:

HNO_3, AQUA FORTIS

USAGE - TRANSPORTATION - STORAGE:

As a mold cleaner. Lab reagent.

USING DEPARTMENTS:

Ingot Plant, Laboratory

DESCRITPION AND PROPERTIES:

A colorless or yellowish, fuming, suffocating, corrosive liquid. Specific gravity 1.530. Melting Point - 41.3°C. Boiling Point - 86°C. Soluble in water and alcohol.

EXPLANATION OF HAZARDS:

Corrosive liquid will produce sever burns on skin. Fumes are irritating and toxic. Oxides of nitrogen formed during reaction if nitric acid are dangerous because they give off little or no warning as to their presence. Oxides enter the body and form nitrous or nitric acid through chemical combustion.

MAC is set 2 ppm.

RECOMMENDED CONTROL:

Caution in handling of liquid. Provide rubber gloves and eye protection. Provide exhaust ventilation on dip tanks. Provide adequate instructions on proper procedures of mixing solutions.

TRADE OR OTHER NAME:

N_2, AIRCO IN CYLINDER

USAGE - TRANSPORTATION - STORAGE:

Fluxing agent and in air conditioning and refrigeration systems. Lab reagent. Testing and drying of instruments.

USING DEPARTMENTS

Ingot Plant, Electrical and Instrument Maintenance, Laboratory

DESCRIPTION AND PROPERTIES:

Colorless, odorless, tasteless gas. Makes up 80% of the atmosphere. Slightly soluble in alcohol and it is soluble in water.

EXPLANATION OF HAZARDS:

Gas itself is harmless; however, when suddenly released under pressure, it may cause freezing on contact with skin.

RECOMMENDED CONTROL:

Proper equipment for handling and release of gas.

USAGE - TRANSPORATION - STORAGE:

Used on bus joints. Cables for rust preventive.

USING DEPARTMENTS:

Potrooms, Refining Raw Material, Power, Electrical and Instrument Maintenance

DESCRIPTION AND PROPERTIES:

A solid wax-like grease compound, high in paraffin waxes.

EXPLANATION OF HAZARDS:

Possible dermatitis.

RECOMMENDED CONTROL:

Personal hygiene.

TRADE OR OTHER NAME:

ALDOX

USAGE - TRANSPORTATION - STORAGE:

For steam cleaning machine parts. About 220 gallons per month used.

USING DEPARTMENTS:

Machine Shop, Power, Property Maintenance, Vehicle Repair, Gas & Oil

DESCRIPTION AND PROPERTIES:

This is a trade name for several kinds of cleaners. Both acid and alkaline cleaners are sold as Oakite compounds. All should be treated as hazardous.

EXPLANATION OF HAZARDS:

The chromium compound CrO_3 is toxic. Contact with this product or its solutions with skin membranes may cause irritation. Refer to data on Chromic Anxydride.

RECOMMENDED CONTROL:

Personal hygiene. Prevent splashing and contact. Refer to data on Chromic Anhydride.

TRADE OR OTHER NAME:

SULFURIC ACID

USAGE - TRANSPORTATION - STORAGE:

As a raw material for the Aluminum Fluoride Plant, chlorine drying. Received in barges, piped into storage tanks prior to use.

USING DEPARTMENTS:

Aluminum Fluoride, Refining Raw Material, Chlor-Alkali

DESCRIPTION AND PROPERTIES:

SEE SULFURIC ACID

EXPLANATION OF HAZARDS:

Contact with skin membranes causes severe burns. When mixed with water, heat is generated and spattering occurs. Reacts with various metals to liberate hydrogen gas. This gas combining with oxygen in air may produce an explosion.

RECOMMENDED CONTROL:

Care in handling liquid. Provide rubber gloves and eye protection. When exposed, wash off skin membranes with water at once. When mixing, always add the acid to water

USAGE - TRANSPORTATION - STORAGE

Gaseous reaction product given off from nitric acid solutions at caustic dip locations, under current conditions.

USING DEPARTMENTS:

Wherever nitrogen is used.

DESCRIPTION AND PROPERTIES:

Nitrogen dioxide and nitrogen tetroxide are usually in equilibrium and are encountered as a yellowish to reddish-brown gas. Of the oxides listed, these two are the dangerous ones in industrial locations. NO_2 is a dark chocolate-brown gas while its polymer N_2O_4 is colorless. This mixture reacts with water to form nitrous acid and nitric acid.

EXPLANATION OF HAZARDS:

Fumes of nitrogen oxides are dangerous because of insidious character; i.e., they give little or not warning as to their presence and fail to set up defense respiratory reflexes. Oxides enter the body and form nitrous or nitric acid through chemical combination.

MAC is set at 5 ppm.

RECOMMENDED CONTROL:

Provide adequate ventilation at point of origin.

TRADE OR OTHER NAME:

U.C.C. OR AIRCO, IN CYLINDER AND TANKS

USAGE - TRANSPORTATION - STORAGE:

Used in cutting, burning, and heating operations as well as for safety inhalation in the chlorine areas. About 10,000 cu. ft. in bulk form is used per month and approximately 300 cylinders per month used. Transported in portable carts or trucked or racks. Lab reagent.

USING DEPARTMENT:

Machine Shop, Smelting Mechanical Maintenance, Electrical and Instrument Maintenance, R-136 Mechanical Maintenance, Gas and Oil, Ingot Plant, Chlor-Alkali, Power, Digestion, Laboratory, Pot Repair, Vehicle Repair, Potroom

DESCRIPTION AND PROPERTIES:

Colorless, odorless gas compressed in steel cylinders. Atmosphere contains about 21% oxygen.

EXPLANATION OF HAZARDS:

Necessary for Life. Cylinders under pressure - accelerates combustion.

RECOMMENDED CONTROL:

Keep secured valve cap on when not in use. Keep gauges free of oil. (O.S.H.A.) Oxygen cylinders in storage to be separated from fuel-gas cylinders or combustible material (especially oil or grease), a minimum of 20 feet or 5 feet high fire resistant barrier.

TRADE OR OTHER NAME:

SEE CLASS 080 IN CATALOG

USAGE - TRANSPORTATION - STORAGE:

For identification and surface protection purposes. Stored in metal cans. Approximately 300 gallons per month used. It is trucked to job site.

USING DEPARTMENTS:

Potrooms, Gas and Oil, Power, Electrical Maintenance, Ingot Plant, Paint and Insulation, Vehicle Repair

DESCRIPTION AND PROPERTIES:

Essentially finely divided metallic compound with drying oils, thinner, driers, and resins. Paint pigments most widely used contains: Titanium, Barium, Zinc, Leade and sometimes Arsenic

Flash Point = 0-80 $^{\circ}$ F (Closed cup)

EXPLANATION OF HAZARDS:

Vapors may cause eye, nose, or throat irritation. Pigments may sometimes be poisonous and care should be used in avoiding skin contact.

RECOMMENDED CONTROL:

Adequate ventilation and personal hygiene.

USAGE - TRANSPORTATION - STORAGE:

Used by painters throughout the plant. Received and handled in metal containers.

USING DEPARTMENTS

Paint and Insulation

DESCRIPTION AND PROPERTIES:

Vary greatly. Used in relatively small quantities. Some, particularly lead, arsenic and zinc compounds may be poisonous.

EXPLANATION OF HAZARDS:

Lead, arsenic and zinc compounds in particular may be toxic.

RECOMMENDED CONTROL:

Use care in handling, avoid contact with skin. Personal hygiene.

TRADE OR OTHER NAME:

KUHNS NO. 731, SEMI-PARTE COPON NO. 1182

USAGE - TRANSPORTATION - STORAGE:

Used at several locations for the removal of paints. Received and handled in metal cans.

USING DEPARTMENTS:

Paint and Insulation

DESCRIPTION AND PROPERTIES:

A liquid, usually containing large percentages of benzol (over 15%).

Flash Point = 0-80°F (Closed Cup)

EXPLANATION OF HAZARDS:

Fumes are dangerous and explosive in confined areas. Also a possibility of a person developing skin irritation if in contact with liquid for extended periods. Dangerous fire hazard.

RECOMMENDED CONTROL:

Personal cleanliness and provide adequate ventilation. Store in cool, well-ventilated place.

TRADE OR OTHER NAME:

SEE CLASS 080-750 IN CATALOG

USAGE - TRANSPORTATION - STORAGE:

For thinning paint and varnish. Also used in the cleaning of brushes. Stored in drums or cans and transported by truck. Approximately 220 gallons per month used.

USING DEPARTMENT:

Power, Electrical Maintenance, Paint and Insulation, Potrooms, Vehicle Repair

DESCRIPTION AND PROPERTIES:

Thinners or some turpentine substitute such as petroleum naphtha.

EXPLANATION OF HAZARDS:

Are volatile and the vapors usually toxic. Any of these materials should not be allowed to come in contact with the skin for prolonged periods and inhallation of the vapors should be avoided.

RECOMMENDED CONTROL:

Adequate ventilation and personal hygiene.

USAGE - TRANSPORTATION - STORAGE:

Part of the janitorial supplies.

USING DEPARTMENTS:

Plant wide.

DESCRIPTION AND PROPERTIES:

Moth crystals
MAC - 25 parts per million suggested
Explosive limits = .88 to 5.9% by volume in air

EXPLANATION OF HAZARDS:

Dust or vapor is flammable and a moderate fire hazard. Avoid personal contact.

RECOMMENDED CONTROL:

Avoid high fume concentrations. Personal hygiene.

TRADE OR OTHER NAME:

COLD WATER CLEANER - PC 5 - SORBENT

USAGE - TRANSPORTATION - STORAGE:

Used to clean oil from floors - 55 gallon drums.
110 gallons used per month.

USING DEPARTMENTS

Vehicle Repair, Chlor-Alkali, Gas Plant, Power, Potroom

DESCRIPTION AND PROPERTIES:

Concentrated cold water cleaner from White Chemical Co., Houston, suitable for dishwashing.

EXPLANATIONS OF HAZARDS:

None

RECOMMENDED CONTROL:

None

TRADE OR OTHER NAME:

$HClO_4$

USAGE - TRANSPORTATION - STORAGE:

A laboratory reagent. Received in Storeroom in seven pound glass bottles in a 10-bottle wooden case. Stored in special explosion type building outside lab building.
6 cases per month used.

USING DEPARTMENTS:

Laboratory

DESCRIPTION AND PROPERTIES:

70-72% grade as ordered in a stable compound. Clear, colorless liquid, specific gravity 1.76, soluble in water, freezing point below -45°F. Very strong oxidizing agent at elevated temperatures.

EXPLANATION OF HAZARDS:

Contact with organic material or dehydrating agents will convert to the anhydrous acid, which is violently explosive. In contact with combustible or easily oxidizable chemicals at elevated temperatures, it can start fires and cause explosions. Solutions are irritating and corrosive to mucous membranes and skin.

RECOMMENDED CONTROL:

Used as a reagent only with full knowledge of reaction products. Keep away from all organic material. In case of spillage, flush immediately with water. If acid penetrates into wood or other organic material, scrap and dispose of the charred product by burying.

TRADE OR OTHER NAME:

CHLOROTHANE - NY

USAGE - TRANSPORTATION - STORAGE:

For cleaning of electrical equipment. Stored in barrels and transported by fork truck. About six barrels per month used.

USING DEPARTMENTS:

Power, Property and Instrument and Electrical Maintenance

DESCRIPTION AND PROPERTIES:

MAC = 200 parts per million
Non-flammable but it is a volitale solvent.
Boiling Point = 121.20°C
Melting Point = 22.35°C
Colorless liquid

EXPLANATION OF HAZARDS:

Not corrosive or dangerously reactive, but toxic by inhalation, by prolonged or repeated contact with the skin or mucous membrane, or when ingested by mouth. Liquid can cause eye injury.

RECOMMENDED CONTROL:

Respiratory equipment needed. Personal hygiene. Adequate ventilation.

USAGE - TRANSPORTATION - STORAGE:

Pyrotitration of bath samples.

USING DEPARTMENTS:

Potrooms, Laboratory, Power, Gas and Oil

DESCRIPTION AND PROPERTIES:

Indicator consist of an organic coal tar dye used in concentrations of approximately 0.5% in either ethyl or methyl alcohol.

EXPLANATION OF HAZARDS:

None

RECOMMENDED CONTROL:

None

USAGE - TRANSPORTATION - STORAGE:

Anti-corrosion agent. Lab reagent.

USING DEPARTMENTS:

Paint and Insulation, Laboratory

DESCRIPTION AND PROPERTIES:

A strong acid which is colorless, yellow deliquescent crystals. A very powerful dehydrating agent. Very corrosive.

EXPLANATION OF HAZARDS:

Material by itself is non-flammable and non-corrosive. When in contact with water, it iforms phosphoric acid which is toxic and corrosive. The liquid is toxic and very dangerous to the eyes.

RECOMMENDED CONTROL:

Avoid contact with skin. Wear chemical goggles and recommended safety equipment. Rubber gloves. Should be stored in cool, ventilated area that is <u>not</u> protected from fire by overhead sprinkling systems.

TRADE OR OTHER NAME:

DK-50, DK-72, DK-4, EASTMAN PHOTOSTAT DEVELOPER, KODAK VARIFAX ACTIVATOR, KODALITH, SUPERV IX X-RAY DEVELOPER

USAGE - TRANSPORTATION - STORAGE

Received in metal cans or paper containers. Used as H_2O solutions for developing X-ray films and photographic film.

USING DEPARTMENTS:

Blueprint Room, First Aid

DESCRIPTION AND PROPERTIES:

Usually elon-hydroquinone type.

EXPLANATION OF HAZARDS:

Contact with skin may cause irritation. Possible dermatitis.

RECOMMENDED CONTROL:

Avoid contact with concentrated solutions. Personal hygiene.

TRADE OR OTHER NAME:

Q SEAL JOINT COMPOUNDS, RED GLYPTAL, LITHARGE AND GLYCERINE, FEL-PRO, WHEZ ANTI SEIZE, COPALLITE, TITE-SEAL

USAGE - TRANSPORTATION - STORAGE:

Applied to pipe joints for sealing purposes. Stored in cans or tubes and is either carried or trucked. About 40 pints per month used.

USED DEPARTMENTS:

Operations wide

DESCRIPTION AND PROPERTIES:

Quick seal-like compunds consist of clay and a liquid such as linseed or mineral oil composition. White lead may also be used.

EXPLANATION OF HAZARDS:

None as used.

RECOMMENDED CONTROL:

Personal hygiene.

TRADE OR OTHER NAME:

LOW SOFTENING POINT, HIGH SOFTENING POINT, TAR

USAGE - TRANSPORTATION - STORAGE:

A constituent of raw anode and potlining material. Stored in tanks and kept at high temperatures.

USING DEPARTMENTS:

Potrooms, Pot Repair
(PL)

DESCRIPTION AND PROPERTIES:

A black solid, semi-solid or viscous material with a "tar odor" characteristic. Contains phenolic compounds, toluene, benzene, etc.

EXPLANATION OF HAZARDS:

Phenolic compounds may cause burns through contact with skin and eyes. This is aggravated by exposure to sunlight. Volatiles from pitches burn readily. Dusts are explosive in certain concentrations.

RECOMMENDED CONTROL:

Provide adequate ventilation when fumes are produced. Avoid skin contact. Use mechanical handling equipment.

USAGE - TRANSPORTATION - STORAGE:

For the pyrotitration of bath sample - used in wire form.
Lab uses in crucible and dish form - used for thermocouplings.

USING DEPARTMENTS:

Potrooms, Laboratory, Instrument Maintenance

DESCRIPTION AND PROPERTIES:

Small wire with a silvery finish.

EXPLANATION OF HAZARDS:

None as used.

RECOMMENDED CONTROLS:

None

TRADE OR OTHER NAME:

WESTCHEM TREDCATE, FULLER SHINEALL

USAGE - TRANSPORTATION - STORAGE:

Utilized by custodians on floors and other surfaces. Contained in cans and bottles and applied in small amounts.

USING DEPARTMENTS:

Operations wide.

DESCRIPTION AND PROPERTIES:

May be in solid, liquid or paste form and contain various waxes, such as carnauba or paraffin plus solvents such as kerosene, turpentine, H_2O, or ammonium hydroxide.

EXPLANATION OF HAZARDS:

Flammable liquids and dangerous fire hazards.

RECOMMENDED CONTROL:

Store in cool, well-ventilated place away from acute fire hazards, open flames and powerful oxidizing materials.

USAGE - TRANSPORTATION - STORAGE:

Combination of pitch and coal. Produced at Paste Plant and transported to Pot Repair by buggy. Is placed into pot shell and worked while in semi-solid form at high temperatures.

USING DEPARTMENTS:

Potrooms, Pot Repair

DESCRIPTION AND PROPERTIES:

A semi-plastic mix containing coke, anthracite and both H & L softening pitch.

EXPLANATION OF HAZARDS:

Fumes containing phenol compounds are given off by hot mix. During baking of linings, carbon monoxide as well as phenol are evolved.

RECOMMENDED CONTROL:

Provide adequate ventilation during handling. Natural ventilation normally adequate.

USAGE - TRANSPORTATION - STORAGE:

Used in the soldering process to remove glass windows. Contained in bottles of which one per month is used. Bottles stored on shelves and transported by hand.

USING DEPARTMENTS:

Smelting Mechanical Maintenance, Electrical and Instrument Maintenance, Property Maintenance.

DESCRIPTION AND PROPERTIES:

Heavy gaseous hydrocarbon.
Explosive Limits = 2.4 to 9.5% by volume in air.
MAC = 1000 ppm

EXPLANATION OF HAZARDS:

Can cause irritation of eyes and respiratory tract, dizziness, muscular weakness. Skin burns can result from contact with liquid propane.

RECOMMENDED CONTROL:

Adequate ventilation and use of chemical goggles.

USAGE - TRANSPORTATION - STORAGE:

Instruments in Refining for measuring density.
Instruments in Gas and Oil for measuring tube wall thickness.

USING DEPARTMENTS:

Gas and Oil, Precipitation, Clarification, Instrument Maintenance

DESCRIPTION AND PROPERTIES:

Emitting radiation from atomic nucleus as radium, etc.

EXPLANATION OF HAZARDS:

Radiation.

RECOMMENDED CONTROL:

These items are identified with the radiation symbols and signs of yellow color. Unauthorized personnel stay out of contact with these items.

TRADE OR OTHER NAME:

Other reagents used in Laboratory analysis not listed in this manual are too numerous to list but are used in the Laboratory by trained personnel only.

USING DEPARTMENTS:

Laboratory

EXPLANATION OF HAZARDS:

Hazards are indicated on containers.

RECOMMENDED CONTROL:

Follow recommendations on containers.

TRADE OR OTHER NAME:

RAI, CAKED ALUMINA INSULATION

USAGE - TRANSPORTATION - STORAGE:

Reclaimed from pots with jackhammers or by breaking with paving breaker, and readded to reduction pots to produce bath after it has been processed.

USING DEPARTMENTS:

Electrolyte, Pot Repair

DESCRIPTION AND PROPERTIES:

Alumina, impregnated with fluoride constituents of bath, carbon and other impurities such as iron, silicon, and sodium carbonate. Alkaline in nature. Absorbs moisture readily. Gray to black in color.

EXPLANATION OF HAZARDS:

Ammonia, carbides and nitrides given off when in contact with moisture. May accumulate in confined areas and become a hazard. Because of alkaline nature, material will burn skin membranes. Any dust will irritate eyes and cause inflammation in the respiratory system. Fluorides will cause illness if sufficient material is ingested.

RECOMMENDED CONTROL:

Removed dust from source. Handle solid carefully. Prevent moisture from coming in contact with material. Prevent exposure of food to dust. Personal hygiene.

TRADE OR OTHER NAME:

SODERBURG POT SKIMMINGS, CRYOLITE

USAGE - TRANSPORTATION - STORAGE:

A material used as a pot addition in lieu of cryolite in Potrooms. Handled by R&M miscellaneous and Utility and Electrolyte. Handled in railcars, conveyed to storage, weighed as additions in paper bags, bags to pots. Loaded ship to barge.

USING DEPARTMENTS:

Electrolyte, Potrooms, Refining Raw Materials

DESCRIPTION AND PROPERTIES:

Fine granulated particles, chemically inert. Insoluble in water. Typical analyses 59% cryolite, 20% free alumina, 8% free carbon, 7% calcium fluoride and 6% oxides of iron, silicon and sodium.

EXPLANATION OF HAZARDS:

SEE CRYOLITE.

RECOMMENDED CONTROL:

SEE CRYOLITE.

TRADE OR OTHER NAME:

POLYESTER, HETRON 72.77, ATLAC NO. 283, STYRENE MONOVER COPON 105

USAGE - TRANSPORTATION - STORAGE:

Used for fusing plastic pipeline together.

USING DEPARTMENTS:

Paint and Insulation, Maintenance

DESCRIPTION AND PROPERTIES:

Ester formed by polymerization or condensation used especially in making fiber or plastic.

EXPLANATION HAZARDS:

Irritating to eyes and respiratory tract.

RECOMMMENDED CONTROL:

Provide good ventilation.
Personal hygiene - Eye Protection.

TRADE OR OTHER NAME:

SiO_2, QUARTZ, SILICA, GRAVEL

USAGE - TRANSPORTATION - STORAGE:

Used as grouting base. Contained in sacks and transported by truck. About 10 pounds per month used.

USING DEPARTMENTS:

Power, Paint & Insulation

DESCRIPTION AND PROPERTIES:

Hard crystalline substance brown or white in color. Dusts readily when dry. Foundry sand contains up to 40% minus mesh natural.

EXPLANATION OF HAZARDS:

Continued inhalation of fine particles (0.5-5.0 microns) may cause silicoses, a fibrosus of the lung tissue. Sandblasting particularly hazardous due to breaking down of particle sizes.

RECOMMENDED CONTROL:

Provide adequate ventilation. Avoid handling dry when possible. Sandblast in enclosure wearing protective equipment.

USAGE - TRANSPORTATION - STORAGE:

Airborne mixture of gases arising from decomposition of sanitary wastes.

USING DEPARTMENTS:

Plant wide.

DESCRIPTION AND PROPERTIES:

Most common components of sewer gas are methane, hydrogen sulfide, carbon monoxide, carbon dioxide, illuminants, gasoline vapors, nitrogen, hydrogen, and oxygen. In Smelting arease, fluoride fumes may be present. Sewer gases have an unpleasant odor.

Explosive Limits - from a lower range of 5.3 to 8.3% to an upper range of 16-19.3% by volume in air.

EXPLANATION OF HAZARDS:

In confined areas as in manholes, underground passageways, etc., a hazardous concentration is a possibility since oxygen is deficient and the gases themselves are toxic.

RECOMMENDED CONTROL:

Provide adequate ventilation. (Compressed air or manhole covers may be used depending upon the conditions.) There should be a second man present to protect an employee working in an enclosed area.

TRADE OR OTHER NAME:

SEE CLASS 080 IN CATALOG

USAGE - TRANSPORTATION - STORAGE:

Used by Paint Department as a protective coating. Received and handled in cans.

USING DEPARTMENTS:

Paint and Insulation

DESCRIPTION AND PROPERTIES:

A resinous substance produced by insects and then refined, cut and thinned with alcohol. The alcohol or other solvent evaporates when the shellac is used as a protective coating, leaving a hard, shiny surface.

EXPLANATION OF HAZARDS:

The alcohol or solvent fumes may be poisonous when used in closed, unventilated areas. Fire hazard.

RECOMMENDED CONTROL:

Adequate ventilation. Store in cool, well-ventilated area.

TRADE OR OTHER NAME:

G.E. FLUID SF-97

USAGE - TRANSPORTATION - STORAGE:

Used as an alloying element.

USING DEPARTMENTS:

Ingot Plant

DESCRIPTION AND PROPERTIES:

Hard, lustrous, crystalline solid of 6 inch lumps and smaller. Specific gravity 2.0-2.49. Melting Point 1420°C. Soluble in hydrofluoric acid and alkaline. Principle impurity is Ca.

EXPLANATION OF HAZARDS:

Silicon tetrafluoride is given off from pots.

RECOMMENDED CONTROL:

None

TRADE OR OTHER NAME:

SILICON FLUORIDE

USAGE - TRANSPORTATION - STORAGE:

Volatilized product of electrolytic reduction process in Potrooms and Aluminum Fluoride.

USING DEPARTMENTS:

Potrooms, Electrolyte

DESCRIPTION AND PROPERTIES:

Heavy, colorless gas with suffocating odor and having a density of 3.6 referred to air as 1. Fumes strongly in air and is absorbed readily in large quantities by water with partial decomposition.

EXPLANATION OF HAZARDS:

Hydrofluoric acid and silica fluoric acid are reaction products. Silicon tetrafluoride given off only in minor quantities relative to hydrogen fluoride. Hazard dependent on total quantities of fluoride as a gas rather than silicon tetrafluoride itself.

RECOMMENDED CONTROL:

Collect and remove gas at source.

USAGE - TRANSPORTATION - STORAGE:

Being used to replace hi-temp asbestos. Used for manifold gasket, insulation in metal transfer, welding protection and chalking.

USING DEPARTMENTS:

Potrooms, Pot Repair, Ingot, Power, Property Maintenance, Electrolyte, Smelting Maintenance

DESCRIPTION AND PROPERTIES:

Diatomite, frequently designated diatomaceous earth, diatamaceous silica.

EXPLANATION OF HAZARDS:

Possible demonstrable lung change after long exposure.

RECOMMENDED CONTROL:

Good ventilation - respirators - dust control.

USAGE - TRANSPORTATION - STORAGE:

Used in field paneling and for theostat material. Is stored in pieces and transported by truck.

USING DEPARTMENTS:

Power

DESCRIPTION AND PROPERTIES:

A finely grained sedimentary rock.

EXPLANATION OF HAZARDS:

None

RECOMMENDED CONTROL:

None

TRADE OR OTHER NAME:

SODA ASH, PCB-100, SBS-30, SBA-49, BAB-0

SEE CLASS 220 IN CATALOG

USAGE - TRANSPORTATION - STORAGE:

For janitorial purposes.

USING DEPARTMENTS:

Plant wide.

DESCRIPTION AND PROPERTIES:

Concentration of 8% to 30%; solutions over 30% concentrations contain alcohol. Some soaps may contain an abrasive while others have a special wetting agent, water softening agent, or special cleaning aid, such as borax.

EXPLANATION OF HAZARDS:

None as used.

RECOMMENDED CONTROL:

None as used.

TRADE OR OTHER NAME:

SODA ASH, SODA, SAL SODA

USAGE - TRANSPORTATION - STORAGE:

Used as electrolyte material. Neutralizing acid - Lab reagent. Received in 100 pound bags, transported by fork truck on pallets and manually placed on pots.

USING DEPARTMENTS:

Potrooms, Chlor-Alkali, Laboratory, Electrolyte, Instrument Maintenance

DESCRIPTION AND PROPERTIES:

Grayish-white powder or chunk; contains impurities of sodium chloride, sodium sulphate, calcium and magnesium carbonates and sulphur. Material is alkaline in nature.

EXPLANATION OF HAZARDS:

Material is irritating to mucous membranes and eyes from its dusty nature and taken internally poisonous.

RECOMMENDED CONTROL:

Hygiene measures to prevent personal contact and proper handling to prevent dusting.

USAGE - TRANSPORTATION - STORAGE:

In the pyrotitiation of bath samples.
Lab reagent.

USING DEPARTMENTS:

Potrooms, Laboratory

DESCRIPTION AND PROPERTIES:

White, water soluble powder.

EXPLANATION OF HAZARDS:

Poisonous if ingested. Since it is the most soluble of the fluorides and is dissolved in body perspiration, the likelihood of its being taken into the mouth from hands is increased as well as the likelihood of dermatitis. The fumes and gaseous fluorides formed in heating are dangerous.

RECOMMENDED CONTROL:

Adequate ventilation. Collect gas, fumes, and dust at source. When handling under dusty conditions, respirators should be worn. Prevent exposure of food to dust. Personal hygiene.

TRADE OR OTHER NAME:

SALT, SALT TABLETS

USAGE - TRANSPORTATION - STORAGE:

Produced from raw brine in Chlor-Alkali evaporators. Used in Chlor-Alkali process for making caustic and chlorine. Used plant wide as salt tablets.

USING DEPARTMENTS:

Chlor-Alkali

DESCRIPTION AND PROPERTIES:

White crystals - Sodium Chloride

EXPLANATION OF HAZARDS:

When exposed to high temperature vapors irritating to eyes.
Excess ingestion of salt causes stomach irritation.

RECOMMENDED CONTROL:

Avoid high temperature.
Avoid excessive ingestion.

TRADE OR OTHER NAME:

CAUSTIC, CAUSTIC SODA, LYE, WILCO ETCHANT, PENNSALT AE-16

USAGE - TRANSPORTATION - STORAGE:

Used in powder form in water treatment as demineralized. In Ingot, it is contained in reclaimed tabular alumina. Stored in steel cans or bins. Produced at Chlor-Alkali in liquid form. Refining utilizes it as major portion of their liquor stream. Lab for regeaneration of deironizer. Power use it for boiler cleaning. A portion produced at Chlor-Alkali is loaded on ships for other plants.

USING DEPARTMENTS:

Ingot Plant, Refining, Power, Chlor-Alkali, Laboratory

DESCRIPTION AND PROPERTIES:

White solid, either lumps or flakes. Melting Point of 318°C. Absorbs water and CO_2 from the air. Soluble in water. Reaction products from caustic dip are sodium aluminate and hydrogen gas.

EXPLANATION OF HAZARDS:

All forms of this material will burn skin membranes and cause conjunctivitis of the eyes. The mist liberated during caustic dipping will irritate skin membranes. MAC set at 2 mg per cubic meter of sodium hydroxide for dust or mist.

RECOMMENDED CONTROL:

Avoid contact with skin. Provide rubber gloves and eye protection. Flush areas immediately with cold water where material comes in contact with the body.

USAGE - TRANSPORTATION - STORAGE:

Produced by seeding and precipitating a portion of Refining spent liquor stream. Removed by press filter. Stored in Precipitation. Disposed of by burning in kilns or pumped to abandon mud lake.

USING DEPARTMENTS:

Refining Operations

DESCRIPTION AND PROPERTIES:

Transparent colorless crystals.

EXPLANATION OF HAZARDS:

Has caustic effect to mouth and skin.
Dangerous when heated to decomposition.

RECOMMENDED CONTROL:

Don't take internally.
Take precaution for handling caustic.

TRADE OR OTHER NAME:

WATER GLASS, LIQUID GLASS

USAGE - TRANSPORTATION - STORAGE:

Used in potlining as coating. Stored in drums.

USING DEPARTMENTS:

Potrooms, Property Maintenance, Pot Repair

DESCRIPTION AND PROPERTIES:

Semi-viscous liquid. Almost colorless.

EXPLANATION OF HAZARDS:

Almost none as used. On prolonged contact with skin, could cause irritation and dermatitis.

RECOMMENDED CONTROL:

Use of rubber gloves when handling. Personal hygiene. Eye protection.

TRADE OR OTHER NAME:

HALF AND HALF, ALCOA 802, HI TEMP ALLOY SOLDER, SILFAS SOLDER, SILVER SOLDER, 50 SN - 50 ZN

USAGE - TRANSPORTATION - STORAGE:

Used in bonding electrical connections and metal to metal. Stored in rolls and transported by hand. About 180 pounds per month used.

USING DEPARTMENTS:

Power, Gas and Oil, Machine Shop, All Maintenance

DESCRIPTION AND PROPERTIES:

Solders are solid alloys of two or more metals with generally low melting points. Usual metals are lead, tin, cadmium, zinc, copper, silver, and phosphorous.

EXPLANATION OF HAZARDS:

Vapor and fumes may cause metal poisoning if inhaled. Ordinary use by mechanical and electrical groups should present no health hazard.

MAC - Cadmium vapor 0.1 mg/m^3

Zinc fumes 5.0 mg/m^3 oxide

RECOMMENDED CONTROL:

Adequate ventilation.

ʌ NO. 64, OXWELD - CAST IRON

ɜTORAGE:

ring process as an adhesive. Stored in jars or cans.

ɔp, Gas and Oil, All Maintenance

ɜ:

ɔns. Typically contains Hcl, HF, H_3PO_4 acids, Zn,
ʌlso rosin, animer and oils.

ɪse skin burns if flux contains acid.

l required.

SORBENT

TRADE OR OTHER NAME:

DICA, SORB

USAGE - TRANSPORTATION - STORAGE:

Used to clean up oil spillage. Received in 18# bags. Used with a sorbent boom and pillow. Bought from Grefco, Inc. 60 bags at a time.

USING DEPARTMENTS:

Power

DESCRIPTION AND PROPERTIES:

Dicalite - a mixture of expanded perlite and cellulosic fiber that is treated to render product extremely hydrophobic.

EXPLANATION OF HAZARDS:

Non-toxic

RECOMMENDED CONTROL:

Personal hygiene.

TRADE OR OTHER NAME:

H_2SO_4, OIL OF VITRIOL, OLEUM

USAGE - TRANSPORTATION - STORAGE:

For water treatment, pH control, and as a process raw material. For heater tube cleaning. Unloaded from barge to storage. Unloaded from railroad car to storage. Lab for analysis and cleaning. 63,000 pounds per month used.

USING DEPARTMENTS:

Electrolyte, Ingot Plant, Gas and Oil, Chlor-Alkali, Digestion, Refining Raw Materials, Clarification, Labratory, Refining Power and Pipe Maintenance

DESCRIPTION AND PROPERTIES:

Corrosive, dense, oily liquid.
Specific gravity 1.0342
Boiling Point -210 to -338°C
MAC = 1 part per million for fumes or mist

EXPLANATION OF HAZARDS:

Contact with skin membranes causes severe burns. When mixed with water, heat is generated and spattering occurs. Reacts with various metals to liberate hydrogen gas. This gas combining with oxygen of air may result in an explosion.

RECOMMENDED CONTROL:

Care in handling of the liquid. Provide rubber gloves and eye protection. Wash off skin membranes at once with water. When mixing, always add to acid to the water.

TRADE OR OTHER NAME:

PEARL, CORN STARCH

USAGE - TRANSPORTATION - STORAGE:

Used as a settling or filter aid in Clarification and Cryolite. 1,200,00 pounds used per month. Receive bulk by truck. Receive bag by railroad car and transfered to storage by Utility.

USING DEPARTMENTS:

Digestion, Clarification, Electrolyte, Potroom Utility

DESCRIPTION AND PROPERTIES:

White odorless, tasteless, grandular or powdery carbohydrate.

EXPLANATION OF HAZARDS:

Flameable dust - highly explosive.

RECOMMENDED CONTROL:

No smoking - lights - open flames.
Good ventilation. Good Housekeeping.

TRADE OR OTHER NAME:

Insulation, Polyurethane Resin

USAGE - TRANSPORTATION - STORAGE:

Tank insulation.

USING DEPARTMENTS:

Paint & Insulation, Clarification, Chlor-Alkali

DESCRIPTION AND PROPERTIES:

Diisocyanate Resins.
Look like white cork when applied.

EXPLANATION OF HAZARDS:

Inflameable when being applied.
Irritating to skin.

RECOMMENDED CONTROL:

Keep away from open flames when mixing or applying.
Avoid contact when applying.

TRADE OR OTHER NAME:

140° ASPHALT, 190° ASPHALT

See PITCH

USAGE - TRANSPORTATION - STORAGE:

As an additive to anode material.

USING DEPARTMENTS:

Potrooms, P.L.

DESCRIPTION AND PROPERTIES:

Bituminous substance, usually a solid until heated. Similar in composition to low softening pitch.

EXPLANATION OF HAZARDS:

During melting the fumes given off will contain phenolic compounds, toluene and benzene. Melting and application should be performed outside so that the hazard is reduced to a minimum.

RECOMMENDED CONTROL:

Provide adequate ventilation. Preferable to do work outside.

USAGE - TRANSPORTATION - STORAGE:

As an alloying material

USING DEPARTMENTS:

Ingot Plant

DESCRIPTION AND PROPERTIES:

Dark gray amorphous powder.

Melting Point = 1800° C
Boiling Point = 3000° C and above

EXPLANATION OF HAZARDS:

None as used.

RECOMMENDED CONTROL:

None as used.

TRADE OR OTHER NAME:

C_2HCl_3, TRI, TRICLENE D, BLACOSOLV, WESTROSOL

USAGE - TRANSPORTATION - STORAGE:

Used as a degreasing agent in the cleaning of machinery. Lab reagent. Handled in drums and containers filled from drums.

USING DEPARTMENTS:

Maintenance Departments, Laboratory PL

DESCRIPTION AND PROPERTIES:

Chlorinated hydrocarbon, colorless liquid, sweet characteristic odor. Boiling point -188°F. Relative density to air - 4.5. Decomposes eventually in the presence of moisture to hydrochloric acid and posgene. Insoluble in water. Non-flammable and non-corrosive to common metals. Triclene D is the degreasing grade used in the plant.

MAC = 200 ppm

EXPLANATION OF HAZARDS:

Non-flammable, non-explosive except at high temperature. Toxic when ingested orally. Avoid inhalation.

RECOMMENDED CONTROL:

Personal protective equipment. Personal hygiene.

ARD 040064

USAGE - TRANSPORTATION - STORAGE:

Used for thinning paints and cleaning in various departments.

USING DEPARTMENTS:

Maintenance Departments, Paint and Insulation

DESCRIPTION AND PROPERTIES:

Mixture of resin and volatile oils in various proportions, obtained from coniferous trees.

MAC = 100 ppm

EXPLANATION OF HAZARDS:

Acts as a skin irritant and may contribute to dermatitis. Small amount of fumes irritate lungs and eyes, continued inhalation causes inflammation of kidneys and leads to pneumonia. Mixture is also flammable.

MAC = 100 ppm

RECOMMENDED CONTROL:

Adequate ventilation and dilution with fresh air in confined areas. Should be immediately washed off skin after contact.

TRADE OR OTHER NAME:

"STEAMALL"

USAGE - TRANSPORTATION - STORAGE:

Compound used in the steam cleaning of equipment. Is stored in barrels and trucked to job site. About 100 pounds per month used.

USING DEPARTMENTS:

Power

DESCRITPION AND PROPERTIES:

White powder - dissolves best in hot water. Use 1-2 pounds with 50-gallons water. Does not attach aluminum or any other metal.

EXPLANATION OF HAZARDS:

Possible dermatitis. Same hazards as any soap or cleansers.

RECOMMENDED CONTROL:

Personal hygiene.

TRADE OR OTHER NAME:

CELL ANODES AND DECOMPOSER CARBON

USAGE - TRANSPORTATION - STORAGE:

Used carbon from Chlor-Alkali. Stored in waste bins and transported by truck to waste pit.

USING DEPARTMENTS:

Chlor-Alkali

DESCRIPTION AND PROPERTIES:

Carbon blocks and pieces

EXPLANATION OF HAZARDS:

May be contaminated with brine, caustic, and mercury. If dry can be dusty.

RECOMMENDED CONTROL:

Handle with gloves and wear protective respirator.

USAGE - TRANSPORTATION - STORAGE:

Dug from smelting pot using jack hammer or paving breaker. Unloaded from ship to pad. Reprocessed at Cryolite Plant.

USING DEPARTMENTS:

Potrooms, Pot Repair, Utility, Refining Raw Materials, Electrolyte

DESCRIPTION AND PROPERTIES:

A solid containing alumina, fluoride, soda ash, cryolite, sodium hydroxide, fluorspar and carbon. Color varies from white to black, sometimes has a very mottled appearance.

EXPLANATION OF HAZARDS:

Dust contains fluorides and other bath materials which are very irritating to nose and throat. Sometimes contain free alkali up to 15%. This can irritate skin and may cause burns.

RECOMMENDED CONTROL:

Provide adequate ventilation, collect dust at source. Avoid prolonged skin contact.

TRADE OR OTHER NAME:

GUM RUBBER - GOODYEAR, GUM RUBBER - GOODRICH

See Class 170.

USAGE - TRANSPORTATION - STORAGE:

For conveyor belt repairs. Stored in Storeroom or R-137 or trucked as needed. Used in cell service.

USING DEPARTMENTS:

R-136 Mechanical Maintenance, Chlor-Alkali, Vehicle Repair

DESCRIPTION AND PROPERTIES:

Materials consist of rubber patches, rubber cements, solvents, etc.

EXPLANATION OF HAZARDS:

None

RECOMMENDED CONTROL:

None

WEED KILLER

TRADE OR OTHER NAME:

2, 4-D, AMMATE, DOLGE SS, NALCO H-170, PORINITOL

USAGE - TRANSPORTATION - STORAGE:

Used by Plant Labor Department as a weed killer on lawns, brush. Railroad right-of-way. Received in 55 gallon drums. Small amount drawn off as needed, mixed with prescribed amount of water before spraying.

USING DEPARTMENTS:

Property Maintenance, Gas and Oil

DESCRIPTION AND PROPERTIES:

All except Ammate basically a water soluble salt of 2, 4 - Dichlorophenoxyacetic acid usually abbreviated 2, 4-D. Ammate is an ammonium sulfate. These compounds may also contain arsenical compounds.

EXPLANATION OF HAZARDS:

Poisonous if taken internally. Contact with the skin will cause irritation. May be absorbed through the skin.

RECOMMENDED CONTROL:

Personal hygiene. Avoid breathing spray. Provide rubber gloves and eye protection during handling.

TRADE OR OTHER NAME:

EUTECTOR FLUX, NO. 15, 210, 18, 21, 14, 190, 190B, 185, 195, KASENITE NO. 1, FERRO FLUX, BRAZO FLUX, CLIMAX WELDING COMPOUND, FLUXING BRAZING AND WELDING COMPOUNDS

USAGE - TRANSPORTATION - STORAGE:

Used as adhesive in the welding process. By far the most is used in the Machine Shop (800 lbs./mo.) for spike welding. Stored there on pallets of 100 lbs. each - elsewhere in cans.

USING DEPARTMENTS:

Machine Shop, Mechanical Maintenance, Electrical Maintenance, Power, Gas and Oil

DESCRIPTION AND PROPERTIES:

Composition of the flux varies with the metal upon which the work is being done. Innumerable type having various trade names - flux, may contain silicates, carbonates, fluorides, oxides or nitrates.

EXPLANATION OF HAZARDS:

Coated rods release iron oxide and fume. No harmful amounts released except in confined quarters. Welding on aluminum or stainless steel introduces a fluoride exposure from the flux. Prolonged inhalation of the fluoride fumes will lead to irritation of the nasal passages and continued exposures might result in Fluorosis.

RECOMMENDED CONTROL:

Local exhaust ventilation advisable. Forced ventilation when welding in enclosed tanks.

USAGE - TRANSPORTATION - STORAGE:

A product resulting from welding operations.

USING DEPARTMENTS:

All Maintenance Departments

DESCRITPION AND PROPERTIES:

MAC = 15 mg/m^3

EXPLANATION OF HAZARDS:

Very toxic due to the various oxides which may result.

RECOMMENDED CONTROL:

Adequate ventilation. Respirators or gas masks in enclosed areas. Goggles.

WELDING RODS

TRADE OR OTHER NAME:

FERROWELD, WEAR WELD, STAIN WELD, SUREWELD "D", ACRISWELD, ELECTWELD NO. 5, 7, 11, HARDWELD, COLMONOY, MARQUETTE SOFTWELD, WELDING ALLOYS AND PURE Al, ALCOA 25, STABLE ARC, SHIELD - ARC 85, NICKEL ARC.

USAGE - TRANSPORTATION - STORAGE:

Used in equipment repairs and general welding. About 4500 lbs./mo. used. Stored in bins, ovens, cabinets and cans.

USING DEPARTMENTS:

R-136 Mechanical Maintenance, Machine Shop, Electrical Maintenance, Ingot Plant, Gas and Oil, Power, Vehicle Repair Rolling, PL

DESCRIPTION AND PROPERTIES:

Made in various sizes and of various metals. Usually coated with a fluxing material.

EXPLANATION OF HAZARDS:

Using steel electrodes with inadequate ventilation may cause bronchial cough. Welder's lungs may have sufficient deposition of iron oxide to show siderosis. Coated rods release iron oxide and fumes which may be harmful only in confined quarters with no ventilation. Aluminum rod or welding on aluminum introduces fluoride exposure which causes nasal irritation. Zinc coated surfaces coated with lead paints will release zinc oxide or lead oxide which can cause metal fume fever.

RECOMMENDED CONTROL:

Adequate ventilation or local exhaust systems. Protective goggles, clothing, etc. Rotation of workers welding in confined areas.

ARD 040073

WHITE LEAD

TRADE OR OTHER NAME:

DUTCH BOY - 1 POUND CAN

USAGE - TRANSPORTATION - STORAGE:

For identification purpose, drilling, and surface primer. Stored in cans.

USING DEPARTMENTS:

Ingot Plant, Machine Shop, Paint & Insulation, Power

DESCRIPTION AND PROPERTIES:

Usually in powder form. Red Lead is oxide. White lead is carbonate.

EXPLANATION OF HAZARDS:

Poisonous when inhaled. Can cause severe disturbances in upper respiratory tract.

MAC = 1.5 mg/cu.meter

RECOMMENDED CONTROL:

Use extreme care when handling. Personal cleanliness after using a lead base paint.

USAGE - TRANSPORTATION - STORAGE:

Used as an alloying element.
Used in R-73 Ball Mill

USING DEPARTMENTS:

Ingot Plant, R-136 Mechanical Maintenance

DESCRIPTION AND PROPERTIES:

Readily oxidizes at temperatures above melting point.
Melting Point - 419°C
Boiling Point - 918°C
MAC = 15 mg/m^3

EXPLANATION OF HAZARDS:

No hazard with pure zinc. $ZnCl_2$ used in soldering flux may cause burns if spattering occurs. Zinc compounds can be harmful because of state of subdivision. Fumes will cause metal fume fever but danger considered slight.

MAC of zinc oxide is 5 mg/m^3.

RECOMMENDED CONTROL:

Personal hygiene - adequate ventilation.

Material (Trade or other name)	Plant Usage - Transportation - Handling	Description & Properties	Explanation of Hazards	Recommended Control
ML-835 Dry flake graphite.	Dry lubrication throughout the plant. Small cans to work.	Form of carbon, soft, greasy-feeling flakes.	None.	
ML-836 Dry powdered graphite.	Dry lubrication throughout the plant.	Form of carbon, soft, greasy-feeling, dry powder.	None.	
ML-909 White Gasoline (Lead free)	Fuel in blow torches, some gasoline lift trucks and as cleaning agent in various departments of plant. Tank trucks to storage tanks, cans to job or pumped from tanks.	Mixture of paraffin hydro-carbons higher than butane. B.P. range 20-200° C. 10% boiling below 65° C and at least 90% boiling below 200° C. Explosive limits in air 1.4-6.0% by volume.	Possible dermatitis. Carbon monoxide is a by-product of incomplete combustion. Vapors act as anesthetic producing dizziness. Refer to data on Carbon Monoxide.	Personal hygiene. Adequate ventilation to remove by-product Substitution of a safe solvent.
ML-910 Gasoline (Regular)	Fuel for internal combustion engines throughout the plant. Tank trucks to storage tanks, pumped into vehicles or 5-gallon safety cans for use throughout the plant.	Same as ML-909 but with tetraethyl lead as an 'anti-knock' additive.	Same as ML-909 plus added effect of additive's decomposition products.	Same as ML-909.
ML-912 Kerosene - Coal Oil	Lubricant, solvent or fuel in various depts. of plant. Tank trucks to storage also 55 gal. drums. May be piped to work or in cans as needed.	Low viscosity petroleum distillate composed of a mixture of hydro-carbons. B.P. 150-300° C.	Possible dermatitis. Incomplete combustion produces carbon monoxide. When used hot, the vapors irritate skin and mucous membranes.	Personal hygiene. Adequate ventilation. Protect exposed skin if handled hot.
ML-916 OS-16	Hydraulic fluid. 55 gallon drums, cans to work.	A synthetic fluid containing no halogenated hydrocarbons. A clear blue, oily liquid. Fire resistant 50-60 SSU/100° F.	Possible Dermatitis.	Personal Hygiene.
ML-920 Stoddard Solvent	Used in many locations as a fuel, solvent, cleaner, and as a vehicle. 55 gal. drums, cans to work. Maybe swabbed on or parts parts to be cleaned are dipped.	Volatile petroleum distillate similar to kerosene only further purified. 100° F minimum flash point.	Possible dermatitis. Incomplete combustion produces carbon monoxide. When used hot, the vapors irritate skin and mucous membranes. MAC 500 ppm.	Personal hygiene. Adequate ventilation. Protect exposed skin if handled hot.
ML-921 Safety solvent Cleaning mixture No.49	Used as a cleaner and degreaser throughout the plant. 55 gal. drums, cans to work. Maybe swabbed on or parts to be cleaned are dipped.	Mixture of 70% Stoddard Solvent, 25% methylene chloride, 5% perchlorethylene. Boiling range 103-390° F. No flash point up to the boiling point of mixture, after 20% of mixture evaporates flash point 132° F, from 20-30% evaporation, flash point 132° - 113° F.	Repeated contact with skin may cause excessive dryness and dermatitis. Toxicity of this solvent depends upon the toxicity of its components: MAC for Stoddard solvent, 500 ppm; for Methylene Chloride, 500 ppm; Perchlorethylene 200 ppm.	Adequate ventilation. Avoid prolonged contact with skin.
ML-923 Pydraul F-9	Used as a hydraulic fluid in some systems where there is danger of fire. 55 gallon drums, cans to work.	A synthetic amber colored oily liquid with mild pleasant odor. Sp. Gr. 1.27 at 75° F, 225 SSU/100° F. Fire resistant. Oil dissolves in Pydraul F-9 and cannot be removed, thus increasing flammability.	Possible dermatitis if oil present. If splashed into eyes, irritation will result, but no permanent injurious effects. Contamination with oil will increase flammability and may affect packings.	Personal hygiene. Eye protection.
PL-169 No. 130 Cool Wax	Lubricant and/or coolant.	Water soluble wax.	None	None
PL-198 Paraffin Wax	Small amounts on some electrical contacts by Electrical Departments. 1 Lb. cans.	White translucent, tasteless solid. Sp. Gr. 0.30 - 0.92 M.P. 42-60° C.	None	None

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I N D E X

(TRADE OR OTHER NAMES)

-A-

Acrisweld	See Welding Rods
Airco	Helium, Oxygen, Nitrogen
Alamo 28 Day Type	Cement (Portland)
Alcoa No. 2 Joint	Alcoa Joint Compound
Alcoa No. 25	Welding Rods
Alcoa No. 64	Soldering Flux
Alcoa No. 802	Solder
Aldox	Oakite
Alnox Joint	Alcoa Joint Compound
Aloxite	Abrasives
Alumilastic C & CB	Glazing Compound
Alumilastic C & CB Parr Paint	Kaulking Compounds
Alundum	Abrasives
Ammate	Weed Killer
Ammonia	Ammonium Hydroxide
Ammonium Hydrate	Ammonium Hydroxide
Anodes	Carbon
Aqua Fortis	Nitric Acid
Asbestos	Marinite
Asphalt	Tar
Auto-Clean	High Voltage Elect. Insulator Cleaner (dry powder)

-B-

Bab-O	Soaps & Cleansers
Benzene	Naphtha
Beryllium	Alloy
Best Test Paper Cement	Adhesives
Bituminous	Coal

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Blacosolu	Trichlorethylene
Boiler Cleaner Acid	Chromic Acid
Borax No. 2	Soldering Flux
Brazo Flux	Welding Flux
Briquetts	Pitch and Coke
Brixment	Mortar
Bug-A-Boo	Insecticides
Burn-Offs	Butts

-C-

Calcium Fluoride	Spar
Calcium Hydrate	Hydrated Lime
Calcium Hydroxide	Hydrated Lime
Carbon Tet	Carbon Tetrachloride
Carbona	Carbon Tetrachloride
Carbonic Acid	Carbon Dioxide
Carborundum	Abrasives
Cary No. 7M	Asbestos
Castoling	Brazing Alloy
Caustic	Sodium Hydroxide
Caustic Soda	Sodium Hydroxide
Chemical Lime	Hydrated Lime
Chlorathane-Nu	Perclorethylene
Chrome Green	Chromic Oxide
Chromic Acid	Chromic Anhydride
Chromic Trioxide	Chromic Anhydride
Chromium Oxide	Chromic Oxide
Climax Welding Compounds	Welding Fluxes
CRC	Electrical Solvent
Coast Paint	Epoxy

Colmondy	Welding Rods
Copallite	Pipe Joint Compounds

-D-

Deep Eze	Multilith Printing Materials
Deoxit	Multilith Printing Materials
Diamond	Abrasives
Diamond Alkali	Caustic Soda
Dichloro Difluoromethane	Freon
DK -- 4, 50, 72	Photographic Developers
Dolge SS	Weed Killer
Dolph's	Epoxy
Draino	Drain Solvent
Dry Ice	Carbon Dioxide
Duplimat Platex	Multilith Printing Materials
DuPont Plastic	Adhesives
Dutch Boy	White Lead
du Verre Catalyst	Methyl Ethyl Ketone Peroxide

-E-

Eastman Photographic Developer	Photographic Developer
Easy Flow	Brazing Alloy
Electrodes	Carbon
Electrolyte	Bath
Electweld Nos. 5, 7, 11	Welding Rods
Emery	Adhesives
Ether	Ethylether
Ethine	Acetylene
Ethyl Alcohol	Alcohol
Ethylene Glycol	Antifreeze
Eutector Fluxes (various nos.)	Welding Fluxes

-F-

F-12	Freon
Fel-Pro	Pipe Joint Compounds
Ferro Flux	Welding Fluxes
Ferroweld	Welding Rods
Fiber Glass	Fiber Glass Cloth
Filter Handi-Coater	Aerosol
Fish	Butts
Flint	Insecticides
Fluoride	Aluminum Fluoride
Fluorite	Fluorspar
Fluxing Brazing & Welding Compounds	Welding Fluxes
Fly Spray	Insecticides
Formica	Electrical Insulating Material
Foxboro L & N	Inks
Fuller Shineall	Polishes

-G-

Garnet	Abrasives
G.E.	Electrical Insulating Material
G.E. Fluid SF-97	Silicon
Glycerol	Glycerin
Glycylalcohol	Glycerin
Glyptol	Electrical Insulating Material
Graphite	Carbon; Lubricants
Gravel	Sand
Grog	Gannister
Ground Brick	Gannister
Ground Corn Cobs	Abrasives
Gum Rubber	Vulcanizing Materials

-H-

Half and Half	Solder
Hallemite	Cement (Refractory)
Hardweld	Welding Rods
Heiser	Cryolite
Hep Aerosol Bomb	Insecticides
Hi Temp Alloy	Solder
Horwolo Bond	Cement (Refractory)
Hydrogen	Gas
Hydrogen Chloride	Hydrochloric Acid
Hytempite	Cement (Refractory)

-I-

Inhibitor	NEP-22
Insulation	Calcium Silicate
Insulating Board and Rail	Micarta
Insulating Varnish G.E.	Glyptol

-J-

J. M. Duxseal	Electrical Insulating Material
Johns-Manville No. 450	Asbestos

-K-

Kasenite No. 1	Welding Fluxes
Kerosene	Diesel or Lubricants
Kodak Varifax	Photographic Developers
Kodalith	Photographic Developers
Krylon Paint	Aerosol
Kryoflux	Cryolite
Kryolite	Cryolite
Kuhn's No. 731	Paint Removers

-L-

LePage's Glue	Adhesives
Liquid Glass	Sodium Silicate
Lithium Fluoride	Lithium Carbonate
Litharge and Glycerin	Pipe Joint Compound
Lubricants	See listings in back of Manual
Luminite	Cement (Refractory)
Luppersol DDM	Methyl Ethyl Ketone Peroxide
Lye	Sodium Hydroxide

-M-

Magnalgo	Dye
Marquett Softweld	Welding Rods
MEK	Methyl Ethyl Ketone
Mercury -X-	Calcium Sulfide Compond
Methyl Acetyl	Acetone
Methyl Alcohol	Methanol I
Micarta	Electrical Insulating Material
Miricle Type M	Adhesives
ML	See listings in back of Manual
Muratic Acid	Hydrochloric Acid
Mylar Sheets	Mica

-N-

Nalco	Nalco Water Treating Products
Nalco H-170	Weed Killer
National Starch Load Lock	Adhesives
Nickel Arc	Welding Rods
Non-Flaming Brazing No. 25	Brazing Alloys

-O-

Oil of Vitrio	Sulfuric Acid
Oleum	Sulfuric Acid
Okonite	Electrical Insulating Material
Oxweld - Cast Iron	Soldering Flux

-P-

PCB-100	Soaps and Cleansers
Pecora Caulking Compounds	Caulking Compounds
Pen Blue	Dye
Pennsalt AE-16	Sodium Hydroxide
Permax	Insecticides
Pet	Coke
Petroleum Coke	Coke
Pipe Klenzo	Drain Solvent
Pitch	Coke - Tar
PL	See listings in back
Plain Cleaner	Sorbent
Preservative Solution	Multilith Printing Materials
Prestolite	Acetylene
Prestone	Antifreeze
Propane	Acetone
Prurrian Blue	Dye
Pyrene	Carbon Tetrachloride

-Q-

Q Seal Joint Compound	Pipe Joint Compound
Quicksilver	Mercury
Quartz	Sand

-R-

Radioactive Materials	Radiation
Recorder	Inks
Red Glyptal	Pipe Joint Compound
Resin	Polyester

-S-

Sal Soda	Sodium Carbonate
Sand	Abrasives
Sandpaper	Abrasives
Sani-Flush	Bowl Cleaners
SBS 30, 40	Soaps and Cleaners
Semi-Parte Copon No. 1182	Paint Removers
Shell Oil	Methyl Ethyl Ketone (Butanone)
Shell Arc - 85	Welding Rods
Silfas Solder	Solder
Silica	Sand
Silicon Fluoride	Silicon Tetrafluoride
Silver Solder	Solder
Skamol	Insulation
Soda	Sodium Carbonate
Soda Ash	Soaps and Cleansers; Sodium Carbonat
Sodium Chloride	Salt
Sodium Oxalate	Oxalate
Sodium Silicate	Adhesives
Sorbent	Dica-Sorb
Spar	Fluorspar
Spotcheck Cleaner	Dye
Spotcheck Developer	Dye
Spotcheck Penetrant	Dye
Stable Arc	Welding Rods

Stain-Weld	Welding Rods
Standard Bronz	Brazing Alloys
Starch	Cron - Maize
Steamall	Turco
Styrafoam	Insulation
Super 300	Cement (Refractory)
Supervix X-Ray Developer	Photographic Developer
Sureweld	Welding Rods
Sylvania	Mercury Vapor Lamp
Synthetic	Cryolite
-T-	
Tetra	Carbon Tetrachloride
Tetraflouro Methane	Carbon Tetra Fluoride
Thermolith	Cement (Refractory)
Tite Seal	Pipe Joint Compound
Tolvne	Dye
Tri	Trichlorethylene
Triclene D	Trichlorethylene
-U-	
Used Carbon	Decomposed Cell Anodes
-V-	
Vani-Sol	Bowl Cleaners
Varsol	Stoddard Solvent (Humble)
Vaposector	Insecticides
Vinyl-Rust Veto	Aerosol
-W-	
Wagner Electric	Brake Fluid
Water Glass	Sodium Silicate
WD-40	Aerosol

Wear Weld	Welding Rods
Welding Alloys	Welding Rods
Westchum Tredcate	Polishes
West Insulating Varnish - Epoxy	Electrical Insulating Materials
Westinghouse	Epoxy
Westrosol	Trichlorethylene
Whez Anti Seize	Pipe Joint Compound
White Lead	Glazing Compound
Wilco Etchant	Sodium Hydroxide
Wood-Lac Glue	Adhesives

-X-

-Y-

-Z-

Material (Trade or other name)	Plant Usage - Transportation - Handling	Description & Properties	Explanation of Hazards	Recommended Control
ML-501 SAE 10 Motor Oil	A lubricating oil for internal combustion engines throughout the plant. 55 gal. drums and 1 qt. cans.	200 SSU/100° petroleum distillate, Additives: anti-oxidant, organic amine; anti-corrosives metal salt thiophosphoric acid; detergent, metallic sulfonate of phenolate.	Possible dermatitis.	Personal Hygiene.
ML-503 SAE 30 Motor Oil	A lubricating oil for internal combustion engines throughout the plant. 55 gal. drums and 1 qt. cans.	500 SSU/100° F petroleum distillate, balance same as ML-501.	Possible dermatitis.	Personal Hygiene.
ML-510 SAE 90 Gear Oil	Enclosed gear drives throughout the plant. 55 gal. drums, cans to work.	1000 SSU/100° F petroleum distillate. Phosphorous or sulphur containing compounds added as extreme pressure agent.	Possible dermatitis.	Personal Hygiene.
ML-512 SAE 60 Gear Oil	Enclosed gear drives throughout the plant. 55 gal. drums, cans to work.	500 SSU/100° F petroleum distillate. Balance same as ML-510.	Possible dermatitis.	Personal Hygiene.
ML-514 SAE 140 Gear Oil	Enclosed gear drives throughout the plant. 55 gal. drums, cans to work.	3,000 SSU/100° F petroleum distillate. Balance same as ML-510.	Possible dermatitis.	Personal Hygiene.
ML-516 Open Gear Lube	Open gear, wire, rope, cable and chain drives throughout the plant. 100-400 lb. drums, sprayed or paddled on work.	Grease, extreme pressure agent the same as ML-510, tackiness agent is Para-tack.	Possible dermatitis.	Personal Hygiene.
ML-522 - 523 Rust and Oxidation Inhibited Oil.	Hydraulic systems and enclosed bearing systems throughout the plant. 55 gal. drums, cans to work.	875-1200 SSU/100° F petroleum distillate. Additives: anti-oxidant agent, organic amines; anti-corrosive metal salt of thiophosphoric acid.	Possible dermatitis.	Personal Hygiene.
ML-575 Sultran 15 A	General thread cutting and machining oil in Machine Shops, Pipe Shops, etc. 55 gal. drums, cans to work.	125-175 SSU/100° F non-corrosive sulphur, chlorine or sulphur chlorinated type oil.	Possible dermatitis.	Personal Hygiene.
MLX-575 Oster Bestoil	General thread cutting and machining oil in Machine Shops, Pipe Shops, etc. 55 gal. drums, cans to work.	125-175 SSU/100° F non-corrosive sulphur, chlorine or sulphur chlorinated type oil.	Possible Dermatitis.	Personal Hygiene.
ML-605, -606 Rust and Oxidation Inhibited Oil.	Enclosed circulating systems where rusting is a problem throughout the plant. 55 gal. drums, cans to work.	125-175 SSU/100° F petroleum distillate, balance same as ML-522.	Possible Dermatitis.	Personal Hygiene.
ML 679, -630 Rust and Oxidation Inhibited Oil.	Same as ML-605, -606.	250-400 SSU/100° F petroleum distillate, balance same as ML-522.	Possible Dermatitis.	Personal Hygiene.
ML-767 N.L.G.I. No. 6 Sodium Base Grease.	High temperature bearing lubricant. Cartons of blocks to job.	Very hard No. 6 soda soap grease.	Possible Dermatitis.	Personal Hygiene.
ML-792 N.L.G.I. No. 2 Lithium Base Grease.	Bearing lubricant throughout the plant. 400 Lb. drums, grease guns to work.	Soft No. 2 Lithium soap grease.	Possible Dermatitis.	Personal Hygiene.
ML-817 Steam Cylinder Oil.	Steam engines at Boiler Houses, flying shears, Tugs, and 12 inch continuous Mill. 55 gal. drums, cans to work.	1750-2500 SSU/100° F compounded oil.	Possible Dermatitis.	Personal Hygiene.
ML-855 Penetrating Oil.	For loosening rusted or corroded parts anywhere in the plant. Gallon cans, small squirt cans to work.	A low viscosity petroleum distillate with a surface wetting agent.	Possible Dermatitis.	Personal Hygiene.
ML-865 Rust Preventative Unobe A2	Principal use as a core wire rust preventative. 400 Lb. drums.	A semi-solid wax type grease.	Possible Dermatitis.	Personal Hygiene.

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