



STANDARD OPERATING PROCEDURE

Corrosives

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1.0 PURPOSE

The purpose of this standard is to set forth guidelines for handling corrosive materials. Consult the MSDS for specific information about a particular corrosive.

2.0 DEFINITIONS

Corrosive - A chemical that causes visible destruction of or irreversible alterations in living tissue by chemical action at the site of contact. For example, a chemical is considered to be corrosive if, when tested on the intact skin of albino rabbits by the method described by the U.S. Department of Transportation in appendix A to 49 CFR part 173, it destroys or changes irreversibly the structure of the tissue at the site of contact following an exposure period of four hours.

Examples of corrosive materials are illustrated below:

Strong Acids: Nitric, perchloric, hydrochloric, and hydrofluoric acid.

Strong Bases: Hydroxides of sodium, potassium, and barium.

Strong Dehydrating Agents: Sulfuric acid, phosphorus pentoxide and calcium oxide.

Strong Oxidizing Agents: Concentrated hydrogen peroxide, sodium hypochlorite.

CHP – Chemical Hygiene Plan**3.0 POTENTIAL HAZARDS**

Corrosives may:

- a. React with each other (acid and base) and evolve heat.
- b. React with organic material to generate heat and possible conflagration.
- c. Become highly unstable when dry.

4.0 EXPOSURE HAZARDS**4.1 Contact/Absorption**

Corrosive liquids have a high potential to cause external injury to the body and are especially dangerous because their effect on the tissue takes place very rapidly.

4.2 Inhalation

Corrosive gases are readily absorbed into the body through skin contact & inhalation. They damage the lining of the lungs, leading, after a delay of several hours, to the fatal buildup of fluid known as pulmonary edema.

Corrosive solids can create a dust which, if inhaled, can cause serious damage to the respiratory tract. Because corrosive solids dissolve rapidly in moisture on the skin and in the respiratory system, the effects of corrosive solids depend largely on the duration of contact.

4.3 Ingestion

Ingestion may cause the following:

- a. Gastrointestinal irritation with nausea, vomiting and diarrhea.
- b. Gastrointestinal tract burns.
- c. Methemoglobinemia.
- d. Cyanosis (bluish discoloration of skin due to deficient oxygenation of the blood).
- e. Convulsions
- f. Death

5.0 PERSONAL PROTECTIVE EQUIPMENT

Use chemical splash goggles for eye protection; for operations that may involve splashing, include a face shield. Thick butyl rubber, neoprene, nitrile, or polyethylene gloves may be appropriate. Check glove manufacturer for recommendations on a suitable glove for the specific chemical.

Wear a lab coat and closed-toed shoes (non-fabric) with non-slip soles.

If a respirator is needed, then user must follow guidelines of the Respiratory Protection Program.

6.0 ENGINEERING AND VENTILATION CONTROLS

All procedures involving corrosive materials must be conducted in a fume hood or inert atmosphere chamber to protect against exposure.

7.0 SPECIAL HANDLING PROCEDURES

1. CONDUCT PROCEDURES IN A FUME HOOD.
2. When diluting acids (especially sulfuric acid), always pour the concentrated acid into water.
3. During the addition of reagents, decant the acid so that it runs down the side of the container and therefore, mixes slowly.
4. Wipe the outside reagent bottles containing corrosives before and after use.
5. Wash hands promptly after using corrosives.
6. Reactions involving acids and bases are often very exothermic; use only heat resistant glassware.

8.0 LABELING REQUIREMENTS

Corrosive storage cabinets housing acids or bases will be labeled with the following: **CORROSIVE: ACID (BASE)**.

9.0 STORAGE REQUIREMENTS

1. Store acids separately from bases.
2. Store in cool, dry well-ventilated areas, away from sunlight. The storage area should not be subject to rapid temperature change.
3. Store corrosive liquid containers in secondary containment such as a high density polyethylene tub. The secondary containment volume must exceed the combined volume of stored containers by at least 10 %.
4. Strong acids will corrode most metal cabinets. Non-metallic or epoxy painted cabinets are available and will provide a better service life with these types of chemicals.
5. Hydrochloric acid should not be stored in any metal cabinet. Perchloric acid should not be stored in a wooden cabinet.

10.0 FIRST AID

See CHP 7.9.2 Chemical Exposure.

11.0 SPILL AND ACCIDENT PROCEDURES

See CHP 7.9.1 Chemical Spill Clean Up.

12.0 WASTE DISPOSAL

See Hazardous Waste Management and Disposal.

13.0 PROGRAM APPROVAL AND REVIEW

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