GENERAL USE SOP FOR CORROSIVE MATERIALS

1. Process or Equipment Description

This standard operating procedure (SOP) is intended to provide general guidance on how to safely work with corrosive materials. This general use SOP only addresses safety issues specific to corrosive hazards of chemicals. In some instances, specific SOPs will need to be developed by the Principle Investigator (PI) for a specific chemical (i.e. for perchloric acid, both the general use SOP for corrosives and unstable reactives would apply). If you have questions concerning the applicability of any item listed in this SOP contact the PI, Laboratory Director or Supervisor of your lab or Environmental Health and Safety & Emergency Management (EHSEM).

2. Hazardous Chemicals/Class of Hazardous Chemicals

Corrosive materials cause destruction of tissue through chemical action at the point of contact. As corrosive chemicals can be liquids, solids, or gases, corrosive effects can affect the skin, eyes, and respiratory tract. Examples of corrosive chemicals include: liquids such as acids and bases, bromine, and hydrogen peroxide; gases such as chlorine and ammonia; and solids such as phosphorous and phenol.

For work with Hydrofluoric acid, view EHSEM's HF webpage at **http://www.umd.umich.edu/694746/**

3. Control of Hazards - General

Handling processes should be designed to minimize the potential for splash, splatter, or other likely scenarios for accidental contact.

- Do not pour water into acid. Slowly add the acid to the water and stir.
- Never empty carboys or drums of chemicals by means of air pressure. Use a tilting rack, a safety siphon, or a liquid pump.
- Use a mechanical aid or a pipette bulb for pipetting.
- Open bottles or carboys slowly and carefully and wear protective equipment to guard hands, face, and body from splashes, vapors, gases and fumes.
- Wipe drips from containers and bench tops. Be especially careful to wipe up visible residues of sodium hydroxide and potassium hydroxide from all surfaces. Skin contact with dry residue will result in burn.

3a. Engineering/Ventilation Controls

Use a properly functioning lab fume hood when handling strong acids/bases, or other chemicals that can form mists/vapors upon contact with air (often referred to as "fuming").

If the process does not permit the handing of such materials in a fume hood, contact EHSEM at x3-4914 to review the adequacy of ventilation measures.

3b. Personal Protective Equipment

At minimum, safety glasses, lab coat, long pants, and closed toed shoes are to be worn when entering laboratories having hazardous chemicals. When handling corrosive materials, safety goggles (not safety glasses) provide the appropriate eye protection. Additionally:

- A face shield should be worn when splash or spray is foreseeable (in addition to safety glasses).
- When handling hazardous chemicals or contacting potentially contaminated surfaces, protective gloves are to be worn. For proper selection of glove material, review **chemical MSDS** and **EHSEM's glove use webpage.**

- Additional protective clothing (i.e., apron, oversleeves) is appropriate where chemical contact with body and/or skin is foreseeable.

4. Special Handling Procedures and Storage Requirements

Ensure secondary containment and segregation of incompatible chemicals per guidance within the **UM-Dearborn Chemical Hygiene Plan**. Also, follow any substance-specific storage guidance provided in MSDS documentation.

Corrosives should never be stored above eye level.

Wherever hydrofluoric acid is used, ensure to have a calcium gluconate kit on-site. Contact EHSEM for further information (3-4914).

5. Spill and Accidental Procedures

Prompt response to chemical spills is critical to protect worker health & safety and to mitigate adverse affects to the environment. For further guidance, refer to **EHSEM's chemical spill response webpage**.

Laboratory personnel who work with hazardous chemicals are to be provided the opportunity to receive medical attention/consultation when:

- A spill, leak, explosion or other occurrence results in a hazardous exposure (potential overexposure).
- Symptoms or signs of exposure to a hazardous chemical develop.

6. Waste Disposal

Many corrosive liquids intended for disposal may likely be considered hazardous wastes. For general guidance regarding waste disposal, contact EHSEM at (3-4914).

7. Minimum Training Requirements

- Where hydrofluoric acid is used, training is to include **HF First Aid Instructions**.
- General Lab Safety Training
- Lab Specific Training
- Laboratory-specific training

8. Approval Required

9. Decontamination Procedures

Personnel: If immediate medical attention is required, call Public Safety at 911 from any campus phone for (313)593-5333 from a cell phone. Remove any contaminated clothing, and IMMEDIATELY flush contaminated skin with water for at least 15 minutes following any skin contact. For eye exposures, IMMEDIATELY flush eyes with water for at least 15 minutes.

Consult **MSDS** for guidance on appropriate first aid. Where medical attention is required, ensure to bring along **MSDS(s) of chemical(s)** to aid medical staff in proper diagnosis and treatment.

For exposures to hydrofluoric acid, immediately apply the calcium gluconate as directed in the **HF First Aid Instructions**.

All incidents involving exposure to hydrofluoric acid, phenol, or other severe skin contact hazards require immediate medical attention. Additionally seek medical attention if pain, numbness, redness, irritation or other health symptoms are apparent. **Check the MSDS** to see if any delayed effects should be expected.

Area: Decontamination procedures vary depending on the material being handled. The corrosivity of some materials can be neutralized with other reagents. Special neutralizing agents should be on hand to decontaminate areas.

10. Designated Area

For corrosives that are also considered particularly hazardous substances, a designated area shall be established per the other applicable SOP(s).