

AU Lab Safety Sheets

Hydrofluoric Acid Overview

The information presented in this overview is intended to provide general guidance regarding the hazards associated with hydrofluoric acid. It is not intended to be a specific written safety procedure for your laboratory. Specific written procedures are the responsibility of the Principle Investigator. If you have questions concerning the applicability of any item listed in this overview, contact Risk Management & Safety (RMS) at 334-740-9711, or the Principal Investigator of your laboratory.

Hydrofluoric acid (HF), a solution of hydrogen fluoride gas in water, is one of the most corrosive and dangerous chemicals encountered in the laboratory. Exposure to HF can cause severe tissue damage and even death. Deaths have been reported from concentrated acid burns (i.e., 50% or stronger solutions) to as little as 2.5% Body Surface Area. In lower concentrations, symptoms may be delayed. The following special safety precautions are necessary when using this chemical, regardless if using dilute or concentrated HF.

Before Working With HF

Standard Operating Procedure (SOP):

- Develop a SOP that covers necessary safety precautions, local lab procedures, and emergency actions (first aid, spill response).
- Plan the operation to eliminate risk of HF splash/ spray.

Health & Safety Training:

- Lab personnel must be trained on the hazards of HF, safety precautions, and emergency procedures.
- The written SOP along with a Material Safety Data Sheet (MSDS) can be used for such training.
- Keep training records for at least one year.

Safety Equipment:

- ANSI recommends that the emergency equipment can be reached in no more than 10 seconds and range in distance from 50-100 feet. If using a highly corrosive chemical, the emergency shower and eyewash station should be within 10-20 feet of the hazard.
- Ensure chemical fume hood has been certified within the last 12 months (check sticker on fume hood).

Risk Management & Safety

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First Aid Procedures and First Aid Kits:

- Post AU HF First Aid Procedures in labs that keep or use HF gas or solutions; see back page.
- First aid kit must contain calcium gluconate gel for use in emergencies.
 - 2.5% calcium gluconate gel can be purchased through many lab safety supply vendors.
 - Ensure gel is intended for HF “dermal exposures” and has an effective shelf life of at least one year.
 - Create a system to refresh your supply of gel before the expiration date.

Working with HF Solutions

Personal Protective Equipment (PPE): Wear appropriate PPE, which includes:

- Lab coat, long pants, and closed-toe shoes.
- Goggles and face shield.
- Neoprene long-sleeve apron if splash/spray is possible.
- Butyl rubber or neoprene gloves.

Work Practices:

- Label work area with sign: “HF Use Area.”
- Work in a fume hood with the sash opening minimized—sash must not be opened beyond the stickered arrow.
- Avoid using glass, metal, and ceramic containers. HF will etch and degrade glass. Use only containers that are chemically compatible, such as polyethylene or Teflon.
- Store HF on lower shelving and according to chemical compatibility.

Emergencies

Personnel Exposures: See the Hydrofluoric Acid First Aid Instructions on the following page for personnel exposures. Call 911.

Spills: Auburn University categorizes spills as either simple or complicated and lab personnel should respond to the spill according to the definitions below.

Simple spill – Can be safely cleaned up by properly trained lab personnel, using appropriate spill cleanup materials. No immediate danger to personnel, property, or the environment.

Complicated spill – Cannot be safely or effectively cleaned up by lab personnel due to large volume of spill, or highly hazardous characteristics of chemical. An immediate or potential danger to personnel, property, or the environment exists. Call 911.

Hydrofluoric Acid First Aid Instructions

Post these first aid instructions in the room where the hydrofluoric acid is used or handled.

Location of calcium gluconate gel:

Building and Room: _____

Exact location in Room: _____

Background on HF

Hydrofluoric acid (HF) exposure is very toxic and can be fatal if not treated immediately. HF is absorbed quickly; however, damage/symptoms can occur hours to days later. **Any person exposed to HF must have immediate first aid, followed by immediate medical treatment from a physician.** When seeking medical attention **bring a copy of the HF Material Safety Data Sheet to the Emergency Room.** As always, if you need emergency assistance, call 911.

Skin Exposure

1. Immediately flush affected area with water for 15 minutes under emergency eyewash/shower station or other water source. Remove all contaminated clothing while flushing with water.
2. After flushing, apply calcium gluconate to burn site with clean, gloved hand. Continue massaging gel into the burned area of skin for up to 20 minutes.

Eye Exposure

Immediately flush eyes with water for at least 15 minutes under emergency eyewash or other water source. If only one eye is affected, be careful not to flush contaminated water into the other eye.

Inhalation

Inhalation exposure does not always present symptoms. If you have been suspect you may have been exposed, you should seek medical assistance immediately.

Ingestion

1. Rinse mouth with cold water. Do not induce vomiting.
2. If the victim is conscious, have them drink lots of water to dilute the acid.

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