



## HYDROGEN FLUORIDE

Hydrogen Fluoride (HF) is an extremely corrosive clear and colorless liquid. Contact with skin or other tissues can cause severe burns. The material should be considered extremely hazardous. HF can also dissolve and destroy many materials including enamels and metals.

In addition to burns electrolyte-imbalance, arrhythmia and death may occur as a result of exposure. Symptoms after exposure may be delayed up to several hours.

### IMMEDIATE DECONTAMINATION AND MEDICAL ATTENTION MUST BE PROVIDED TO INDIVIDUALS WITH EXPOSURE TO HYDROGEN FLUORIDE

[www.ehs.columbia.edu/HFPolicy.html](http://www.ehs.columbia.edu/HFPolicy.html)

### HF USE AT COLUMBIA

- Fabrication of electronic components
- Biological staining
- Glass etching
- Mineral processing
- Various other uses

<http://www.ehs.columbia.edu/HFPOLICY.html>

### SAFE USE OF HF

#### Fume Hoods

HF must be used under a fume hood, even small amounts. The fume hood must be certified and working properly.

#### Gloves

Use of a fume hood will not protect against skin contact with HF. The hands remain vulnerable to exposure.

**Because hydrogen fluoride can penetrate natural rubber gloves you must use only neoprene or nitrile gloves.**

Personal protective clothing should be worn in case of a spill cleanup. These include long sleeved shirt, long pants and closed shoes. A resistant apron and sleeves should be worn.

To protect against splashes eye protection must be worn.

### SAFE WORK PRACTICES

- Limit HF use
- Do not work with HF alone
- All employees must be fully trained and familiar with the HF policy and procedures
- Do not eat or smoke where HF or other chemicals are used
- Wash hands thoroughly after working with HF
- Calcium gluconate should be available in case of skin exposure
- Expired calcium gluconate should be replaced. The expiration date should be checked every 6 months

<http://www.ehs.columbia.edu/OccupationalSafety.html>

### STORAGE

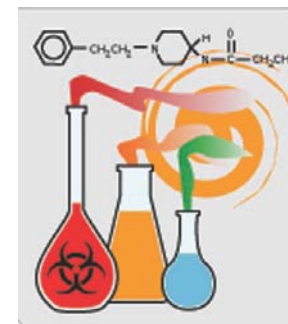
- **Never store HF in a glass container**
- Avoid contact with glass, concrete, metals, water, other acids, oxidizers, reducers, alkalis, combustibles, organics and ceramics as it reacts with these materials
- Storage must have adequate ventilation
- HF should be stored in a cool dry place, separate from other chemicals
- Hydrofluoric acid should be stored in tightly closed polyethylene or fluorocarbon plastic lead or platinum containers
- Place storage bottles in polyethylene secondary containment trays



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## Hydrogen Fluoride

### Environmental Health & Safety



### VISION STATEMENT

*We provide expert guidance and timely service to the University Community through our commitment to health and safety. Employing best practices and collaboration, and by building long term relationships, we promote a productive and safety conscious work environment.*

<http://www.ehs.columbia.edu>

Medical Center  
601 West 168<sup>th</sup> Street, Suite 63  
630 West 168<sup>th</sup> Street, Box# 8  
New York, NY 10032  
212.305.6780

Morningside  
S.W. Mudd Building, Suite 350  
500 W. 120<sup>th</sup> Street, Mailbox 2215  
New York, NY 10027  
212.854.8749



## WASTE DISPOSAL

- Drain disposal of HF is not permitted
- Spent HF is hazardous waste and MUST be disposed of through EH&S
- Call EH&S with any questions  
MS : 212-854-8749  
CUMC: 212-305-6780  
LDEO: 845-365-8865



## SPILL MANAGEMENT

- All labs must have a spill control kit.
- Small spills can be managed using the spill kit.
- EHS must be notified immediately of all spills.  
[www.ehs.columbia.edu/fs.html](http://www.ehs.columbia.edu/fs.html)

## MEDICAL SURVEILLANCE

- Columbia University has a policy regarding medical surveillance for workers using HF. The policy can be viewed at

[www.ehs.columbia.edu/hf/Policy.html](http://www.ehs.columbia.edu/hf/Policy.html)

- EH&S can answer questions regarding medical surveillance or emergency response.



## EMERGENCY RESPONSE

- All HF exposures are medical emergencies and require immediate attention
- Remember that contact with HF may not produce immediate pain but may result in severe burns hours later.
- If skin contact occurs that area should be washed with copious amounts of water
- Immediately contact campus security and arrange for Emergency Responders
- Calcium gluconate should be applied to the affected skin area
- If inhalation occurs the individual should be immediately transported to fresh air
- In case of eye exposure the eyes should be washed for at least 15 minutes with large amounts of water

<http://www.ehs.columbia.edu/VolTraineesPolicy.html>

## INFORMATION FOR RESPONDERS

Emergency measures for exposure are outlined in the Columbia University Hydrofluoric Acid policy. Employees should always provide responders with a copy of the policy. An MSDS for substances utilized should also be provided to the responders.



## FIRE AND EXPLOSION HAZARDS

- Hydrogen fluoride is non-combustible, but may create irritating and corrosive fluoride fumes. when heated or in combination with steam or water. Since hydrogen fluoride does not burn, use an extinguishing agent suitable for surrounding fire.
- Use water to absorb fumes and keep containers cool.
- Heat released when water or steam combines with hydrogen fluoride or hydrofluoric acid could be hazardous.
- For fires involving hydrofluoric acid, apply water in flooding quantities.
- Hydrofluoric acid and various metals may form hydrogen (extremely flammable gas) creating a fire hazard.

