

# Hydrofluoric Acid

## 1. Fermilab Uses

- Hydrofluoric Acid (HF) is used at Fermilab to polish Superconducting Radio Frequency Cavities (SCRF) to remove impurities and decrease surface roughness.
  - Buffered Chemical Polish – BCP
  - Electropolishing Process – “BCP with Current”



## 2. Properties

- Colorless liquid with strong irritating odor
- Very strong corrosive inorganic acid
- Nonflammable, very soluble in water

## 3. Health Concerns

- HF is one of the most acutely toxic chemicals used at Fermilab.
- HF is readily absorbed into skin and binds to the calcium and magnesium in the body to form insoluble salts. Insoluble salts interfere with cellular metabolism causing cellular death and possible cardiac arrest.
- **There is no concentration of HF which can be relied upon as safe!**

## 4. Types of Exposure

- Liquid exposure (splash)
- Gas exposure (lungs, skin & eyes)
- Most HF exposures occur by inhalation of the gas or absorption of the liquid
- Employees exposed to HF via inhalation do not pose substantial risks of secondary contamination
- Employees whose clothing or skin are contaminated are risks of secondary contamination (direct contact or off-gas)

## 5. Safe Work Practices

### DO's

- Do review the Hydrofluoric Material Safety Data Sheet (MSDS) prior to handling boxes containing Hydrofluoric Acid.
- Do follow the Shipping/Receiving hazardous material handling procedures for delivering Hydrofluoric Acid to Technical Division's Material Development Technical Laboratory (MDTL).
- Do presume that any discoloration on Hydrofluoric Acid shipment containers (boxes) is Hydrofluoric Acid, and contact your supervisor and Environmental Safety and Health (ESH) Representative immediately.
- Do call the Fermilab Emergency Number at 3131 if you think you have come into contact with Hydrofluoric Acid or involved in a vehicular accident when transporting HF onsite. Be sure to give your exact location.
- Do contact your supervisor if you have any questions or concerns about moving boxes which contain Hydrofluoric Acid.

### DON'TS

- Don't move, cleanup or dispose of any discolored containers (boxes) that contain(ed) Hydrofluoric Acid.

## 6. FIRST AID PROCEDURES

- Immediately go to eyewash/safety shower, and rinse for a maximum time of 5 minutes.
- Start self application of 2.5% calcium gluconate gel every 15 minutes.
- Let Fire Department (3131) and Medical Department (3232) know you have an HF exposure and give the exact location.
- A copy of the MSDS and Recommended Medical Treatment for HF Exposure must go to the hospital.
- Relief of pain is an indication of the efficiency of the antidote.
- Note the time of initiation of the application.

