The Facts

OCCUPATIONAL AND ENVIRONMENTAL SAFETY

Hydrofluoric Acid Safe Work Practices

Safe use Practices

- Consult the SDS to identify the hazards and keep the SDS in the work area. Use alternative chemicals whenever possible.
- HF should only be handled inside a designated chemical fume hood. Verify the fume hood is functioning properly prior to use. Post a warning sign on the fume hood: "**Hydrofluoric Acid in use in this area**". The sash should be kept lower than 18 inches and below your face.
- Verify eyewash and shower are present in the lab.
- Non-expired 2.5% calcium gluconate gel and chemical spill kits **MUST** be available and easily accessible in the lab.
- Any HF user **MUST** receive training by OES and PI on the hazards of HF and **MUST** be familiar with the appropriate first aid in case of an exposure or spill. https://media.clemson.edu/research/oes/labsafety/Lab_Safety_Manual.pdf Appendix 1
- Develop HF Standard Operating Procedure (SOP). All users need to read and sign the SOP before use HF.
- Neoprene outer gloves with nitrile inner gloves must be worn while working with HF. Safety googles and a face shield are required. Rubber apron is highly recommended. All clothing & PPE that has been contaminated with HF should be managed as hazardous waste.
- Never use HF when working alone or after hours.

Storage

- HF should never be stored in glass or metal container.
- Keep container **TIGHTLY** closed in an approved corrosive cabinet. Label the cabinet with "Danger, Hydrofluoric Acid". HF cannot be stored with any incompatible chemicals (e.g., strong bases, Alkali metals).
- Locking the cabinet is recommended.

Disposal

- Label waste container of HF with words "Hazardous Waste, Hydrofluoric Acid, Corrosive, Danger".
- Keep the waste container **TIGHTLY** closed unless they are in use.
- HF waste containers **MUST** be kept in a chemically compatible secondary containment tray.
- Request a hazardous waste pickup online for disposal. https://www.clemson.edu/finops/oes/hazmaterials/wastepickupreq.html

Hydrofluoric acid (HF) is a highly corrosive inorganic acid and is extremely hazardous. The fluoride ion of HF easily penetrates the skin, and binds to calcium and magnesium, causing destruction of deep tissue layers, irreversible bone damage, and systemic toxicity. A brief exposure to 50 ppm HF may cause a fatal injury.

Working with HF requires special safety precautions!

Symptoms of exposure to HF may be delayed for several hours and pain may not be immediate, therefore immediate medical treatment is necessary even in the absence of any symptoms.

HF burns not evident until a day later

Emergency Responses

If you are exposed to HF, have someone call 911 immediately. You should get immediate and specialized first aid treatment and seek immediate medical evaluation.

Inhalation: Immediately leave the area with HF vapors and get medical attention immediately.
Skin and Hair: Remove the contaminated clothing immediately, flush/wash affected skin area with running water for 5 minutes. Apply 2.5% calcium gluconate gel with Neoprene gloves as soon as after the washing is done.
Eye: Flush continuously with running water for at least 15 minutes.
Minor and Large Spills: Call 911 immediately.

For more information see the OES webpage:
https://www.clemson.edu/finops/oes/index.html

Updated: 03/26/24