HEALTH HAZARDS OF HF EXPOSURE

Skin exposure
HF is corrosive and destroys tissue even as dilute solutions. It readily penetrates human skin, allowing it to destroy tissues, decalcify bone and interfere with nerve function. Skin exposure to highly concentrated HF (48% or greater) immediately results in serious and painful destruction of tissue.

Exposure to concentrated HF can be fatal if the exposure covers over 2% of the body (approximately eight square inches of skin). This acid reacts with the calcium in blood, which affects heart function. Skin contact with HF at lower concentrations may not produce pain until hours after the exposure. Because of this, all skin, eye, or tissue contact with HF should receive immediate first aid and medical evaluation even if no pain is felt.

Eye exposure
HF exposure to the eyes may result in blindness or permanent eye damage.

Inhalation exposure
HF vapors can seriously damage the lungs. Pulmonary edema (flooding of the lungs with fluids) may not be apparent for hours after the initial exposure. Avoid all exposures above 3 parts per million (ppm). Airborne exposures above 50 ppm can be fatal.

Long term exposure
Long term or chronic exposure to HF may result in fluorosis, a syndrome characterized by weight loss, brittle bones, anemia, and general ill health.

SAFE USE OF HF

Due to the extreme hazards of HF, take these precautions if possible:

- Avoid working with HF by eliminating the acid or substituting a less toxic alternative for HF.
- If that is not technically feasible, do not work alone when using HF.
- Ensure everyone in your work area is trained on HF and first aid measures.
- Follow standard operating procedures.
- Do not eat, smoke, or drink where HF is handled.
- Ensure that skin is fully covered on legs and feet when handling HF.
- Protect your eyes and face, by wearing goggles and a face shield.
- Wear a laboratory coat with a chemical splash apron of rubber, neoprene or Viton, and Tyvek sleeve covers, or a Tyvek suit.
- Wear 6 mil nitrile inner gloves and outer gloves of 22 mil (nominal) gauge neoprene or butyl rubber gloves or SilverShield. Nitrile gloves (6 mil) may also be used as a layer on top of SilverShield gloves for dexterity. Do not use latex gloves.
- Do not eat, smoke, or drink where HF is handled.
- Ensure that skin is fully covered on legs and feet when handling HF.
- Protect your eyes and face, by wearing goggles and a face shield.
-戴化学防护服，使用橡胶、耐油或Viton的实验室外套，或Tyvek袖套，或Tyvek套装。
- 使用6mil丁腈内手套和22mil(名义)厚度的丁腈或丁基橡胶手套或SilverShield。六mil丁腈手套也可以作为一层覆盖在SilverShield手套上以增加灵活性。不要使用乳胶手套。
- 回避含HF的任何区域。
- 确保皮肤完全覆盖在腿部和脚部。
- 保护眼睛和面部，戴上护目镜和面罩。
- 穿着实验室外套，使用化学防护服，使用橡胶、耐油或Viton的实验室外套，或Tyvek袖套，或Tyvek套装。
- 使用6mil丁腈内手套和22mil(名义)厚度的丁腈或丁基橡胶手套或SilverShield。六mil丁腈手套也可以作为一层覆盖在SilverShield手套上以增加灵活性。不要使用乳胶手套。
EMERGENCY PROCEDURES

Skin contact
In the event of skin contact with HF use the safety shower for 5 minutes. Remove clothing while in the shower being careful not to spread contamination to other skin areas. Double glove using SilverShield and nitrile gloves. Then, apply 2.5% calcium gluconate gel (Calgonate Corp.) to the affected area. Massage it into the skin. White specks in the contaminated area indicate that the reaction of calcium and fluoride is taking place. If the gel clouds or separates, then reapply the gel.

Call 9-1-1* as soon as possible. Reapply calcium gluconate gel every 10 to 15 minutes and continue to massage into the skin until medical assistance arrives. If calcium gluconate gel isn't available, wash area with water for at least 15 minutes and call 9-1-1*.

Eye contact
In the event of eye contact, call 911*. Rinse the eyes in the safety eyewash for 5 minutes, then apply a sterile 1% calcium gluconate Emergency Eyewash Solution (Calgonate Corp.). If you don't have the Calgonate Emergency Eyewash Solution, rinse the eyes in the safety eyewash for 15 minutes. Do not apply calcium gluconate gel in the eyes. Call 911*.

Inhalation
If HF is inhaled, call 9-1-1*. Move the exposed person to fresh air and wait for medical assistance.

*Call 9-1-1 on a UW Seattle campus phone; follow local emergency procedures for other locations.

In all cases, give written information about HF to emergency personnel, such as an SDS, SOP or this focus sheet. HF is not a common chemical and can be easily confused with other acids that are not as hazardous. Follow up with the Employee Health Center at 206-685-1026 and submit an incident report to EH&S via the Online Accident Reporting System.

INCIDENT REPORTING

Follow up with the Employee Health Center at 206-685-1026.

- Outside of business hours, call UWPD at 9-1-1 from a campus phone.
- At medical centers and other locations follow internal emergency procedures.

Any spill incident requires the involved person or supervisor to complete and submit an Online Accident Reporting System (OARS) form on the EH&S website within 24 hours (or eight hours if serious injury or hospitalization).

CLEANING UP SPILLS

Small spills
Clean up only small spills (less than 100 ml) of dilute HF (less than 1%) that spill in a fume hood using universal spill pads found in the UW Spill Kit.
> Wear goggles, and a face shield.
> Double glove using a nitrile inner glove and a SilverShield, butyl rubber or neoprene outer glove.
> Wear a Tyvek suit, or a chemical splash apron of natural rubber, neoprene or Viton.
> Use Tyvek sleeve covers if the apron doesn't cover the arms.
> After absorbing the spill, decontaminate surfaces and equipment with a 10% calcium carbonate solution, followed by soap and water.

Larger spills
HF spills inside or outside of a fume hood that are greater than 1% in concentration, or greater than 100 ml are very dangerous.
> Evacuate the area, close all doors to the area and post signs to prevent others from entering.
> Call EH&S during business hours at 206.543.0467 to arrange for a contractor to clean up the spill.
> Call 9-1-1* after business hours.

Disposal
Manage HF and all HF-contaminated spill debris as a hazardous waste.

Contact EH&S at 206.543.7262 or ehsdept@uw.edu for more information.