**Standard Operating Procedure for Hazardous Chemicals Use**

**Chemical name: Hydrofluoric Acid**

**Synonyms: Fluoric Acid; Fluohydric Acid**

**CAS Number: 7664-39-3**

**Principal Investigator(s)       PI e-mail**

For chemical processes use only, return completed form sections 1-8 and Appendix to the Shemical Safety Committee (CSC) / US&A ([sop-approval@uwm.edu](mailto:sop-approval@uwm.edu))

IACUC Hazardous Chemical procedures return completed sections 1-9 and Appendix to the Animal Care program ([acp@uwm.edu](mailto:acp@uwm.edu))

**Information on Chemical Purchasing Procedures are located on our website:** [**University Safety and Assurances Chemical Purchasing Procedure**](https://uwm.edu/safety-health/chemical-purchasing-process/)

1. **Submit a copy of the Safety Data Sheet(s) [SDS] with this form**

**The SDS is stored in the room in this location:**

1. **Chemical Concentration (as purchased)** **and Health and Physical Hazards:**

|  |  |
| --- | --- |
| **Concentration. As purchased** | >=30-<50% |
| **List all health and Physical Hazards** | **Found on the SDS section 2**  Corrosive to metals, acute oral toxicity, acute dermal toxicity, acute inhalation toxicity - vapors, skin corrosion/irritation, serious eye damage/irritation, specific target organ toxicity - respiratory system |
| **Known Incompatibilities** | Metals, Cyanide, Sulfides, Bases, Fluorine |
| **Hazardous Decomposition Products** | Gaseous hydrogen fluoride (HF) |

1. **Authorized Use:**

|  |
| --- |
| Principal Investigator  Laboratory Manager  Post Doc  Employees  Graduate Students  Technical Staff  Undergraduate Student  Adult Volunteer  Other |

1. **Storage Information:**

|  |  |  |
| --- | --- | --- |
| **Chemical Storage Location** | Where will the chemical be used (building and room number) | **Storage**  **Requirement** |
| Area inspected regularly by US&A |  | Refrigerator  Explosion Proof  Non-Explosion Proof  Flammable storage  Corrosive storage  Shelf  Locked cabinet  Secondary containment  Closed, & labeled container  Other HF must be always be stored in its original container and placed in Nalgene/polypropylene secondary containment. Easily dissolves glass. Store below eye level and label as an acute toxicant. |

1. **Personal Protective Equipment [PPE]**

|  |  |
| --- | --- |
| **Personal Protective Equipment Use** | **During Chemical Preparation** |
| Gloves  \*Check integrity of gloves before each use. | **Type** (Specify): **Arm-length natural rubber or heavy duty nitrile gloves over inner Butyl Viton gloves or disposable nitrile gloves Full contact Material : Chloroprene Minimum layer thickness: 0.6 mm. Note: Avoid skin contact when removing gloves** |
| Safety glasses (impact) |  |
| Safety goggles (splash) |  |
| Lab Coat |  |
| Apron |  |
| Dust Mask | Specify: N95  N100  Other |
| Respirator |  |
| Hearing Protection: |  |
| Other: (i.e. double glove, barrier cream) | SpecifyNatural rubber apron MUST be worn over the top of traditional lab coat |
| Describe how you will employ PPE, Engineering and Administrative controls |  |

1. **Engineering Controls**

|  |
| --- |
| Fume Hood  Laminar Flow Hood  Biosafety Cabinet  Snorkel/ Elephant Trunk  Glove Box  Vented Gas Cabinet  Other (includes but is not limited to; pressure relief valves, intrinsically safe hot plates. Automatic shut -offs) |

1. **Chemical Spill Procedure**

**Describe the spill cleanup protocol for the maximum volume of the chemical that would be in use at any one time. Refer to the SDS or guidance from University Safety and Assurances for procedures.** [**http://uwm.edu/safety-health/emergency/**](http://uwm.edu/safety-health/emergency/)

**Check all that apply and explain below:**

|  |
| --- |
| A spill kit or cleanup materials are present in each lab.  Specify special materials required for the chemical cleanup. **Hydrofluoric (HF) acid burns require immediate and specialized first aid and medical treatment. After decontamination with water, further damage can occur due to penetration/absorption of the fluoride ion. Treatment should be directed toward binding the fluoride ion as well as the effects of exposure. Skin exposures can be treated with a 2.5% calcium gluconate gel repeated until burning ceases.**  Personnel are trained on spill cleanup procedure of each chemical and emergency contacts.  Proper personal protective equipment (PPE) available for spill cleanup. See #5 for PPE.  Emergency eyewash and/or safety shower located nearby (within 10 seconds) and unobstructed.  Personnel trained on eyewash/ shower location and operation  Eyewash/ shower inspected annually and activated weekly to verify operability.  Explain spill procedure: **Immediately notify others in the area of the spill, including your supervisor. Evacuate the location where the spill occurred. Call 9-911 from any campus phone (or 229-9911 from a cell phone). Remain on-site (at a safe distance) to provide detailed information to first responders. Do not try to clean up spills of any size. All HF spills require emergency response. Hydrofluoric (HF) acid burns require immediate and specialized first aid and medical treatment. symptoms may be delayed up to 24 hours depending on the concentration of HF. After decontamination of the person with water, further damage can occur due to penetration/ absorption of the fluoride ion. Treatment should be directed toward binding the fluoride ion as well as the effects of exposure. Skin exposures can be treated with a 2.5% calcium gluconate gel repeated until burning ceases. More serious skin exposures may require subcutaneous calcium gluconate except fordigital areas unless the physician is experienced in this technique, due to the potential for tissue injury from increased pressure. Absorption can readily occur through the subungual areas and should be considered when undergoing decontamination. Prevent ion of absorption of the fluoride ion in cases of ingestion can be obtained by giving milk, chewable calcium carbonate tablets or Milk of Magnesia to conscious victims. Conditions such as hypocalcemia, hypomagnesemia and cardiac arrhythmias should be monitored for, since they can occur after exposure. Consult a physician. Show the safety data sheet to the doctor in attendance. Consult a physician. Show this safety data sheet to the doctor in attendance.** |

1. **Chemical Use Process**

**List each step of the procedure including the hazards associated with the step and controls that will be used to ensure safety. Be as specific as possible.**

**NOTE: Identify potential methods of human exposure to the chemicals during sample preparation. Also identify health hazard or routes(s) of entry into the body and explain how they affect the body.**

|  |  |  |
| --- | --- | --- |
| **Process Step** | **Hazards** | **Safety Controls** |
| *ex.) Transfer 5 ml of hydrofluoric acid to a plastic 50 ml beaker.* | *Corrosive, splash, fluoride ion*  *readily penetrates skin and bonds to calcium ions* | *Lab coat, splash goggles, face*  *shield, nitrile gloves- initial thin glove inside gauntlet glove* |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

1. **Animal Care and Use of Chemicals**

**Fill out this section *only* if you have an accompanying IACUC Procedure.**

1. **IACUC Procedure**

**Protocol Title:**       **Protocol Number(s):**

1. **Describe any Special Chemical and Carcass Disposal Requirement**

**Refer to the Waste Disposal Guidelines** [**http://uwm.edu/environmental-protection/disposal-guide/**](http://uwm.edu/environmental-protection/disposal-guide/) **or contact Environmental Protection (**[**hazwaste@uwm.edu**](mailto:hazwaste@uwm.edu)**) for guidance. (Check all that apply)**

|  |  |
| --- | --- |
| **Chemical Disposal** | **Hazardous Chemical** |
| **Routine scheduled hazardous waste pickup**  **No special disposal requirements** |  |
| **Neutralization** |  |
| **Sanitary Sewer** |  |
| **Other disposal: (Specify):** |  |
|  |  |
| **Carcass** |  |
| **Animal facility freezer and disposal service** |  |
| **Scheduled Hazardous waste pickup** |  |
| **Other disposal (Specify):** |  |
|  |  |
| **Excretion-contaminated Materials**  **(hazardous)** |  |
| **Disinfection (Specify):** |  |
| **Autoclave** |  |
| **Sanitary Sewer** |  |
| **Other Decontamination Method (Specify)** |  |

**Explain disposal methods: Contact Hazardous waste for pick up**

1. **IACUC Training**

**List personnel and indicate the type of training the person has received related to the use of the chemical. Also specify the date the person was trained and by whom, as well as the experience that person has with the chemical or procedure.**

|  |  |  |
| --- | --- | --- |
| **Personnel\*\*** | **Type of Training** | **Experience**  (Yrs., Type work) |
|  | **CHP and Lab Safety**. Date trained      **Conducted By**  Lab Specific CHP Date trained     **Conducted By**  Spill clean-up Date trained     **Conducted By**  **Hazardous Waste**. Date trained      **Conducted By**  **Other(Specify)** Date trained     **Conducted By** |  |
|  | **CHP and Lab Safety**. Date trained      **Conducted By**  Lab Specific CHP Date trained     **Conducted By**  **Hazardous Waste**. Date trained      **Conducted By**  **Other(Specify)** Date trained     **Conducted By** |  |
|  | **CHP and Lab Safety**. Date trained      **Conducted By**  Lab Specific CHP Date trained     **Conducted By**  **Hazardous Waste**. Date trained      **Conducted By**  **Other(Specify)** Date trained     **Conducted By** |  |
|  | **CHP and Lab Safety**. Date trained      **Conducted By**  Lab Specific CHP Date trained     **Conducted By**  **Hazardous Waste**. Date trained      **Conducted By**  **Other(Specify)** Date trained     **Conducted By** |  |
|  | **CHP and Lab Safety**. Date trained      **Conducted By**  Lab Specific CHP Date trained     **Conducted By**  **Hazardous Waste**. Date trained      **Conducted By**  **Other(Specify)** Date trained     **Conducted By** |  |
|  | **CHP and Lab Safety**. Date trained      **Conducted By**  Lab Specific CHP Date trained     **Conducted By**  **Hazardous Waste**. Date trained      **Conducted By**  **Other(Specify)** Date trained     **Conducted By** |  |
|  | **CHP and Lab Safety**. Date trained      **Conducted By**  Lab Specific CHP Date trained     **Conducted By**  **Hazardous Waste**. Date trained      **Conducted By**  **Other(Specify)** Date trained     **Conducted By** |  |
|  | **CHP and Lab Safety**. Date trained      **Conducted By**  Lab Specific CHP Date trained     **Conducted By**  **Hazardous Waste**. Date trained      **Conducted By**  **Other(Specify)** Date trained     **Conducted By** |  |
|  | **CHP and Lab Safety**. Date trained      **Conducted By**  Lab Specific CHP Date trained     **Conducted By**  **Hazardous Waste**. Date trained      **Conducted By**  **Other(Specify)** Date trained     **Conducted By** |  |

\*\*For approved IACUC procedures notify US&A to update this information when new individuals not listed above will be working with the hazardous chemicals

1. **IACUC SOP Reviewed and Approved (initialed) by:**

|  |
| --- |
| **Animal Care Program:**  **Laboratory Safety:**  **Environmental Protection:** |

**University Safety & Assurances Web Guidance for**

**Hazardous Chemical SOPs**

**Use the following links to go to web page.**

* + Laboratory Safety <http://wwwdev.uwm.edu/safety-health/lab-safety/>
  + Biosafety <http://wwwdev.uwm.edu/safety-health/biosafety/>
  + Carcinogens <http://wwwdev.uwm.edu/safety-health/rtk-health-hazards/>
  + Eyewash/ Safety Shower <http://wwwdev.uwm.edu/safety-health/laboratory-equipment/>
  + Flammable Liquid Storage <http://wwwdev.uwm.edu/safety-health/chem-safety/>
  + Fume Hood Procedures <http://wwwdev.uwm.edu/safety-health/laboratory-equipment/#General>
  + Hazardous Communication <http://wwwdev.uwm.edu/safety-health/chemrtk/>
    - Material Safety Data Sheets (source) <http://uwm.edu/safety-health/chemrtk/>
  + On-Line Safety Training <http://uwm.edu/safety-health/laboratory-training/>

Including:

* + - Laboratory Safety
    - Bloodborne Pathogens
    - Hazard Communication
    - Hazardous Waste Orientation
    - Mercury Spill Clean-up Procedures
  + Personal Protective Equipment <http://uwm.edu/safety-health/general-ppe/>
  + Sharps Disposal <http://uwm.edu/environmental-rotection/non-hazardous-waste/#a7>

**Appendix**

**Documentation of Training**

The individuals listed below have read and fully understand this Standard Operating Procedure. The individuals have received training from their Supervisor, Group Safety Representative (GSR) or Laboratory Manager/Graduate Student and are aware of all potential hazards and countermeasures related to this Standard Operating Procedure.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Name | Signature | E-Mail | Date | Trainer Initials |
| 1 |  |  | **@uwm.edu** |  |  |
| 2 |  |  | **@uwm.edu** |  |  |
| 3 |  |  | **@uwm.edu** |  |  |
| 4 |  |  | **@uwm.edu** |  |  |
| 5 |  |  | **@uwm.edu** |  |  |
| 6 |  |  | **@uwm.edu** |  |  |
| 7 |  |  | **@uwm.edu** |  |  |
| 8 |  |  | **@uwm.edu** |  |  |
| 9 |  |  | **@uwm.edu** |  |  |
| 10 |  |  | **@uwm.edu** |  |  |
| 11 |  |  | **@uwm.edu** |  |  |
| 12 |  |  | **@uwm.edu** |  |  |
| 13 |  |  | **@uwm.edu** |  |  |
| 14 |  |  | **@uwm.edu** |  |  |
| 15 |  |  | **@uwm.edu** |  |  |
| 16 |  |  | **@uwm.edu** |  |  |
| 17 |  |  | **@uwm.edu** |  |  |
| 18 |  |  | **@uwm.edu** |  |  |
| 19 |  |  | **@uwm.edu** |  |  |
| 20 |  |  | **@uwm.edu** |  |  |