**Standard Operating Procedure for Laboratories**

**HYDROGEN FLUORIDE**

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| Department: | Click here to enter text. |
| Principal Investigator(s): | Click here to enter text. |
| Lab Manager/Coordinator: | Click here to enter text. |
| Location of Experiment:  (Building/Room Number) | Click here to enter text. |
| Lab Phone: | Click here to enter text. |
| Office Phone: | Click here to enter text. |
| Emergency Contact: (Name/Phone) | Click here to enter text. |

**Reviewed and Approved by**:

|  |  |  |
| --- | --- | --- |
| PI: (Typed Name) | Click here to enter text. | |
| PI: (Signature and Date) |  | Click here to enter a date. |
| Lab Manager: (if PI unavailable) |  | Click here to enter a date. |

**Hazardous Material Use and Management**

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| Hazardous Material(s) Used: (wt./volume) | Hydrogen Fluoride:  Maximum amount allowed without PI approval: |
| Hazardous Material Storage Location: | Store in a cool, dry, well-ventilated area away from oxides, organic chemicals, bases or metals. Do not store in direct sunlight.  Designated Storage Area: |
| Experimental Procedure and Lab Techniques to be Used: | Laboratories should buy only smallest quantities needed.  Lab must have written procedure for cylinder purge, set up and swap. |
| Hazard Identification: (i.e., physical/health hazards) | **CAS # 7664-39-3**  **GHS Classification: Gas under pressure. Acutely Toxic. Corrosive to skin. Cause serious eye damage.**   * A human poison by inhalation. * Corrosive irritant to skin, eyes, and mucous membranes. * Reacts explosively with cyanogen fluoride, glycerol, nitric acid and sodium. * Violent reaction with acetic anhydride, ammonia, bismuthic acid, calcium oxide, mercury oxide. * Reacts with water or stream to produce toxic and corrosive fumes. * When heated to decomposition it emits highly corrosive fumes of fluorine gas.   OSHA PEL: TWA 3ppm, STEL 6ppm  ACGIH TLV: C 3ppm  NIOSH REL: TWA 2.5mg/m3  Review MSDS/SDS prior to working with chemical. |
| Engineering Controls: (chemical fume hood, biosafety cabinet, glove box) | Use in chemical fume hood with adequate exhaust ventilation.  Distillation methods direct from the cylinder is not recommended. Where hydrogen fluoride is discharged from the cylinder into other liquids, the delivery tube must not be passed below the surface of the liquid. Check valve should be inserted between the liquid and the cylinder. If suckback into the cylinder occurs, dangerous pressure may be formed within the cylinder. Liquid or gaseous hydrogen fluoride may be withdrawn at moderate rate from a cylinder above 19.4C and below 51.7C.  Safety shower and eyewash must be readily available. |
| Protective Equipment: | Handle with gloves. Butyl-rubber or neoprene gloves are recommended.  Wear tightly fitting safety goggles with plastic lenses.  Wear full length lab coat to prevent skin exposure.  Always check with glove manufacturer for more info. |
| Waste Collection/Disposal Method: | Empty gas cylinders should be returned to the compressed gas distributer. Make sure that valve protection cap is in place.  All other waste should be collected in tightly closed one-quart container, in secondary containment and in a designated location inside a fume hood. Store waste away from incompatible waste. Affix and complete hazardous waste label. Contact REHS for waste pick up.  <https://halflife.rutgers.edu/forms/hazwaste.php> |
| Spill Management: | All spills should be flushed promptly with water. Excessive quantities of hydrogen fluoride should be neutralized with soda ash or lime.  If a spill happened outside fume hood, on floor, on bench or outside the lab contact REHS for clean up or call 911. |
| First Aid: | Symptoms may be delayed up to 24 hours depending on the concentration of HF.  Eyes: Flush the eyes with water for 10-15 minutes. Seek immediate medical attention.  Skin: Remove contaminated clothing. Immediately flush with lukewarm water for 5-10 minutes. Seek immediate medical attention.  Inhalation: Move person to fresh air. If breathing is difficult administer oxygen. Seek immediate medical attention.  Ingestion: Rinse mouth thoroughly with water. Do not induce vomiting. Seek medical attention. |

**Training**

* Prior to conducting any work with hydrogen fluoride gas, designated personnel must be provided training specific to the hazard involved in working with the substance.
* The PI must provide his/her lab personnel with a copy of the SOP and a copy of the SDS provided with the manufacturer.
* The PI must ensure that his/her lab personnel have attended and are up to date on the appropriate laboratory safety training within the last year.

I have read and understood the content of this SOP and the SDS:

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| Lab Personnel  (Running the Experiment) | Date of Hands-on Training from Department | Signature of Lab Personnel |
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**HYDROGEN FLUORIDE**

**Gas under pressure. Acutely Toxic. Corrosive to skin. Cause serious eye damage.**

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**FIRST AID**

**Eyes**: Flush the eyes with water for 10-15 minutes. Seek immediate medical attention.

**Skin**: Remove contaminated clothing. Immediately flush with lukewarm water for 5-10 minutes. Seek immediate medical attention.

**Inhalation**: Move person to fresh air. If breathing is difficult administer oxygen. Seek immediate medical attention.

**Ingestion**: Rinse mouth thoroughly with water. Do not induce vomiting. Seek medical attention.

**DIAL 911 Call REHS for more information 848-445-2550**