

Print-And-Go Sheet: Hydrofluoric Acid Post-Exposure Guidance



This information sheet identifies immediate first aid actions that should be taken following a Hydrofluoric Acid (HFA) exposure.

Seek medical assistance immediately after a Hydrofluoric Acid (HFA) exposure, and take this document to the medical staff providing treatment. Be sure also to display your Weill Cornell Medicine employee ID card when visiting the medical provider.

Note: This guidance document provides information that medical personnel can reference but does not give individualized medical care or treatment protocols.

How to Seek Medical Assistance

If you're exposed to HFA, go to the NewYork-Presbyterian Emergency Room (NYP-ER) immediately.

- **WCM Upper East Side Employees and Students:** Go to the NYP Emergency Room at **525 East 68th Street** or call **212-472-2222**.
- **Lower Manhattan Employees:** Go to the NYP Lower Manhattan Hospital Emergency Room at **170 William Street** or call **212-312-5070**.

Give this sheet to the physician so they understand that you may have been exposed to HFA, and that this is a medical emergency.

Please note, HFA exposure symptoms usually have a delayed onset. Monitor for conditions such as hypocalcemia, hypomagnesemia and cardiac arrhythmias, since they can occur after exposure.

You can contact the NYP ER at 212-472-2222 or by dialing 2-2222 from any campus phone.

Hazard Summary

Hydrofluoric acid (CAS#7664-39-3) is a mineral acid that is miscible in water. **HFA can absorb through the skin and damage internal body tissues such as organs and bone. Its ability to deplete calcium levels can cause hypocalcemia leading to organ failure and potentially death.**

- Low concentrations of Hydrofluoric Acid (HFA) such as 0.1M will exhibit a pH of 1.0. Dermal exposures to HFA may not be immediately noticeable but will appear within 1 – 8 hours, depending on concentration. However, the full extent of tissue damage may not present itself for 12-24 hours after exposure.
- Concentrations >40% may produce fumes presenting significant inhalation hazards.

HFA must be stored in polyethylene-based containers and secondary containment as it is corrosive to glass and rubber over prolonged periods.

Signs and Symptoms of Exposure

- **Skin Exposure:** The onset of exposure may be delayed from dilute concentrations but may eventually include redness, swelling, and blistering. Concentrations of HFA >50% will cause severe pain and whitish coloration of the skin escalating to blister formation.
- **Eye Contact: Severe or untreated exposure may result in blindness.** Destruction or opacification of the Cornea can result from HFA exposure.
- **Inhalation** – Individuals with suspected HFA inhalation should be observed for pulmonary effects. Acute symptoms may include coughing, choking, chills, fever, chest tightening, and cyanosis of the lips and skin.
- **Ingestion** – **Severe burns to the mouth, esophagus, and stomach may occur. Ingestion in small amounts has resulted in death.**

Post-Exposure Medical Evaluation and Treatment

A. FIRST AID – DERMAL

1. **Immediately rinse affected areas before removing contaminated clothing. Flush the affected area for 5 minutes.**



**Weill Cornell
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Environmental Health and Safety

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2. Apply and continuously massage **2.5% calcium gluconate** (Calgonate ®) or iced **0.13% benzalkonium chloride** (Zephiran®) solution soaks/compresses. Reapply gel every 15 minutes until professional medical assistance is available. EHS carries a stock of calcium gluconate available on the main campus. **Note: the individual applying the treatment must wear HFA protective gloves (nature latex/chloroprene).**
3. Avoid secondary HFA exposures. If the victim is capable, they should wash the area and apply the calcium gluconate gel themselves.

B. FIRST AID – EYE CONTACT

1. Flush the eyes for 5 minutes with copious amounts of water.
2. Ice water compresses may be applied to the eyes when moving the victim to professional medical attention.
3. For minor exposures with very dilute HFA, mix 10 mL of 10% Calcium gluconate with 100 mL of normal saline. With a syringe, rinse the eye intermittently for a period of 15 to 30 minutes or until relief of pain occurs.
4. For more serious HFA burns, mix 50 mL of 10% Calcium gluconate with 500 mL of normal saline.

C. FIRST AID - INHALATION

1. The victim should be moved to fresh air. **All victims of suspected inhalation should seek medical attention for observation of pulmonary effects.**
2. Administer a 2.5% Calcium gluconate solution as nebulized treatment with Oxygen.

D. FIRST AID – INGESTION

1. **Do not induce vomiting.**
2. If conscious, drink large amounts of water to dilute the acid. Do not give anything by mouth if unconscious.
3. If conscious, drink several glasses of milk or several ounces of milk of magnesia (Mylanta®, Maalox®) or antacid tablets.
4. Provide endoscopic examination to the victim if needed.

Next Steps

- **If evaluated at the ER, follow up with your respective campus provider** (WHS or Student Health) the following business day and complete an accident report there.
- **Notify your supervisor of the incident.**
- **Notify Environmental Health and Safety** so the appropriate reports can be submitted to the Institutional Biosafety Committee and National Institutes of Health Office of Science Policy (NIH-OSP). This is required by law for all accidents that result in overt exposure to materials containing recombinant or synthetic nucleic acid molecules. EHS will handle subsequent reporting.

Products

- Calgonate ® - 2.5% Calcium Gluconate gel - <https://us.vwr.com/store/product/4758181/calgonate-hydrofluoric-acid-burn-relief-gel-calgonate>
- 0.13% benzalkonium chloride towelettes - https://medcentralsupply.com/product/d35185/?gclid=CjwKCAiA65iBBhB-EiwAW253W8F7GKH7O0_fMYF1eK5WOfSCwgh-cxfcVZBH_SoHCDnW83bbHJME2xoCZMoQAvD_BwE

Contact Information

- EHS: 646-962-7233, ehs@med.cornell.edu
- NYP-ER: 212-472-2222
- Security: 212-746-0911
- Workforce Health and Safety: 212-746-4370 (NYP-Weill Cornell), 212-312-5249 (NYP Lower Manhattan)
- Student Health Services: 646-962-6942

References

- “Hydrogen Fluoride post-exposure guidance.” Columbia University Environmental Health and Safety. <https://research.columbia.edu/sites/default/files/content/EHS/Homepage/HFPrintAndGo.pdf>
- “Safety Data Sheet – Hydrofluoric Acid” Sigma Aldrich