

Bayfield-Ashland Counties EMS TOXINS / ENVIRONMENTAL Chemical Exposure	EC-7 TOPICAL CHEMICAL BURN
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SITUATION: Patient who has sustained exposure to a chemical that can cause a topical chemical burn; may develop immediate or delayed clinical presentation.

HYDROFLUORIC ACID (HF) guideline page 2.

Assessment and Treatment

ALL LEVELS

1. Don the appropriate PPE providing both skin and respiratory protection, especially during decontamination.
2. Make sure patient has moved/been moved from the site of contamination.
3. Decontamination.
 - a. Take measures to prevent further contamination of the patient or others.
 - b. Remove the patient's contaminated clothing carefully to reduce further contamination if necessary. Place contaminated clothing in double bags.
 - c. If dry chemical, carefully brush off solid chemical prior to any flushing of the site as liquid may activate a chemical reaction.
 - d. If wet chemical, flush the patient's skin (and eyes, if involved) with copious amounts of water or normal saline.
 - e. For eye exposure, continuous eye irrigation.
4. Take measures to minimize hypothermia.
5. Calculate the estimated total body surface that is involved.
6. Evaluate for airway compromise.
7. Conduct assessment including documentation of vital signs.
8. Pay special attention to ocular and oropharyngeal exposure.
9. Gather information regarding the chemical while on scene – including SDS (Safety Data Sheet) if available.
10. Relay all data regarding the chemical to the receiving facility.
11. Consider expeditious transport or transfer to a designated burn center for burns that involve a significant percentage of total body surface area or burns that involve the eyes, face, hands, feet or genitals.

AEMT-R

12. Consider isotonic IV/IO fluid bolus 20 ml/kg normal saline.

AEMT-O

13. Consider isotonic IV/IO fluid bolus 20 ml/kg lactated Ringer's.

PARA-O

14. Morgan lens may facilitate administration of continuous eye irrigation.

Note: Since the severity of topical chemical burns is largely dependent upon the type, concentration, and pH of the chemical involved as well as the body site and surface area involved, it is imperative to obtain as much information as possible while on scene about the chemical substance by which the patient was exposed. The information gathering process will often include:

- Transport of the sealed container of the chemical to the receiving facility.
- Transport of the original or copy of the Safety Data Sheet (SDS, MSDS) of the substance to the receiving facility.
- Contacting the reference agency to identify the chemical agent and assist in management (e.g. CHEMTREC).

HYDROFLUORIC ACID (HF)

Description:

Hydrofluoric acid is a colorless, fuming liquid or gas with a strong irritating odor. It is a highly corrosive substance used for automotive cleaning products, rust removal, porcelain cleaners, etching glass, cleaning cement or brick or to remove impurities from various forms of steel. It readily penetrates intact skin and may cause underlying tissue injury.

SYMPTOMS:

- Low concentration HF is unlikely to cause an immediate acid-like burn. Delayed onset of pain to the exposed areas may occur.
- Higher concentration HF may cause immediate pain as well as more of a burn appearance that can range from mild erythema (reddening) to an obvious burn. An oral or large dermal exposure can result in significant systemic hypocalcemia (low calcium in the blood causing numbness, muscle spasms, seizure, confusion or cardiac arrest).

ALL LEVELS – Patient with confirmed or suspected HF exposure:

1. Don PPE providing both skin and respiratory protection.
2. Request victim move from the contaminated environment.
3. Ascertain what decon has already been done by patient and/or coworkers.
4. Take measures to prevent further contamination through decontamination.
 - a. Remove clothing as necessary by rolling contaminated side away from the victim.
 - b. Bag any contaminated clothing.
5. Vigorously irrigate all affected areas with water or normal saline for a minimum of 15 minutes.
6. Obtain vital signs.
7. Consider early activation of ALS for topical calcium preparation and/or pain management. (Calcium prevents tissue damage from HF.)

EMT-O

8. Apply ECG cardiac monitor for oral or large dermal HF exposures.

INT-R

9. Interpret ECG cardiac monitor.

PARA-R

10. Apply calcium preparation.
 - a. Commercially manufactured calcium gluconate gel
 - b. If commercial gel not available, combine 150 ML (5 ounces) of a sterile water-soluble gel with one of the following:
 - i. 35mL of calcium gluconate 10% solution
 - ii. 10g of calcium gluconate tablets (e.g. Tums®)
 - iii. 3.5g calcium gluconate powder or
 - iv. 20mL of calcium chloride 10% solution
11. Apply generous amounts of the calcium gluconate gel to the exposed skin sites to neutralize the pain.
 - a. Leave the gel in place for at least 20 minutes then reassess
 - b. This can be repeated as needed.
12. IV pain medication may be considered.
13. If fingers are involved, apply the calcium gel to the hand. Squirt additional calcium gel into a surgical glove and then insert the affected hand into the glove.
14. Consider IV calcium gluconate [Adult: 3grams IV/IO push over 2 min; Pediatric: 60mg/kg max dose 3 grams IV/IO push] if patient has ingested HF or had a large dermal exposure.