



CASE DEFINITION

Hydrofluoric Acid

Clinical description

Depending on the concentration of a dermal exposure, affected skin can initially look completely normal but often will become painful and appear pale or white, possibly leading to necrosis. Inhalational poisoning might result in dyspnea, chest pain, stridor, and wheezing. Oral poisoning can result in vomiting (possibly bloody), abdominal pain, and bloody diarrhea (1-3).

Systemic poisoning might occur after oral, dermal, or inhalational exposure. Systemic signs and symptoms include hypocalcemia and hyperkalemia, which leads to dysrhythmias, seizures, and possibly death. Laboratory criteria for diagnosis.

- *Biologic*: No specific test for hydrofluoric acid is available; however, hypocalcemia, hyperkalemia, and an elevated concentration of fluoride in the serum might indicate that an exposure has occurred. Normal serum fluoride levels are <20 mcg/L, but levels vary substantially on the basis of dietary intake and environmental levels.
- *Environmental*: Detection of hydrofluoric acid in environmental samples, as determined by NIOSH.

Case classification

- *Suspected*: A case in which a potentially exposed person is being evaluated by health-care workers or public health officials for poisoning by a particular chemical agent, but no specific credible threat exists.
- *Probable*: A clinically compatible case in which a high index of suspicion (credible threat or patient history regarding location and time) exists for hydrofluoric acid exposure, or an epidemiologic link exists between this case and a laboratory-confirmed case.
- *Confirmed*: A clinically compatible case in which laboratory tests have confirmed exposure.

The case can be confirmed if laboratory testing was not performed because either a predominant amount of clinical and nonspecific laboratory evidence of a particular chemical was present or a 100% certainty of the etiology of the agent is known.

Additional resources

1. Seamens CM, Seger DL, Meredith T. Hydrofluoric acid. In: Ford MD, Delaney KA, Ling LJ, Erickson T, eds. Clinical toxicology. Philadelphia, PA: W.B. Saunders; 2001:1019-26.
2. Lepke S, Passow H. Effects of fluoride on potassium and sodium permeability of the erythrocyte membrane. J Gen Physiol 1968;51(suppl):365--72S.
3. McIvor ME, Cummings CE, Mower MM, et al. Sudden cardiac death from acute fluoride intoxication: the role of potassium. Ann Emerg Med 1987;16:777-81.

This document is based on CDC's best current information. It may be updated as new information becomes available. For more information, visit www.bt.cdc.gov/chemical, or call CDC at 800-CDC-INFO (English and Spanish) or 888-232-6348 (TTY).

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