

**School of Earth and Environment**

**Faculty of Environment**

**HYDROFLUORIC ACID**

These notes should accompany any casualty to the Hospital Accident and Emergency Department.

**Name of patient: Date of birth:**

**Address:**

The patient\* (a) received skin burns from hydrofluoric acid

 (b) had hydrofluoric acid in his eye/eyes

 (c) inhaled fumes of hydrofluoric acid

 (d) ingested hydrofluoric acid

At am/pm\* (\* delete where as necessary) on 2

This is a unique and dangerous acid for which the specific treatment detailed below is required. It has the following characteristics.

1. Skin burns cause intense pain, onset of which may be delayed for between 2 and 24 hours – this is particularly likely in cases of splashes of less than 50% solution such as used within Cohen Laboratories. In the absence of treatment the pain may persist for several days. The injuries are more serious than is first apparent because of **deep penetration** by the acid, the action of which is progressive, causing destruction of subcutaneous tissue over a period of several days.
2. Because of the penetrating characteristics of the acid, eye damage is likely to be more extensive than is first apparent.
3. Inhalation of fumes may cause tracheitis, bronchitis and pulmonary oedema, which can be delayed up to 48 hours and may prove fatal.

**INITIAL MEDICAL TREATMENT**

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| **Skin:** | Immediate immersion in cold water for up to 5 minutes. Remove contaminated clothing. Massage into the burn calcium gluconate gel (2.5%) until 15 minutes after the pain has subsided. This may take several hours. |
| **Eyes:** | Irrigation with copious amounts of isotonic saline or water. Do not use calcium gluconate gel. Treat symptomatically. |
| **Inhalation:** | Rest and oxygen therapy. |
| **Ingestion:** | Large quantities of liquid, lime-water, milk or water. |

**FURTHER TREATMENT**

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| **Skin:** | If pain present or recurs continue to massage calcium gluconate gel into the base of the burn. If the burn fails to respond, injection of a 5% solution of calcium gluconate around and under the injured area should be considered – relief of pain indicates sufficient solution has been injected. Where there is a thick necrotic coagulum, this should be excised and where fingers and toes are burnt – the nails may require to be split or removed. Local anaesthetic should not be used unless absolutely necessary. The use of general anaesthetic requires careful consideration because of potential respiratory and cardiac complications. Continue dressing with calcium gluconate gel. |
| **Eyes:** | Corneal burns may be very severe – consult an ophthalmologist who may consider the use of calcium gluconate eye drops. If ophthalmic advice is unavailable, continue symptomatic and supportive treatment only. |
| **Inhalation:** | Expect onset of pulmonary oedema up to 48 hours after exposure. |
| **Ingestion:** | Gastric aspiration may be required. Treat symptomatically. |
| **Electrolyte imbalance:** | With burns of over 1% body area, after inhalation or ingestion, there may be an electrolyte imbalance due to removal of calcium and/or magnesium from the serum. General supportive measures may be required and in particular one should closely monitor the ECG and electrolyte levels (particularly calcium and potassium). Absorption of calcium from the digestive tract is too slow, so a slow intravenous calcium gluconate (10%) infusion should be used where necessary until serum calcium levels stabilise within the normal range. |