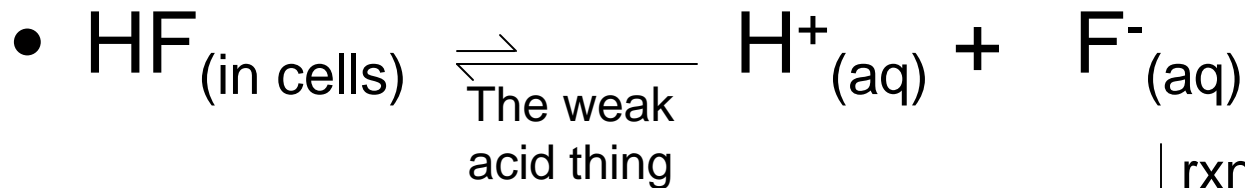
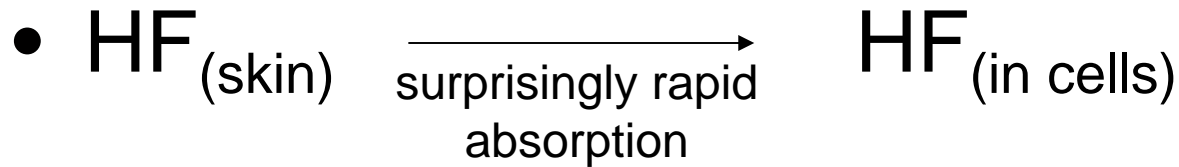


Some HF Facts

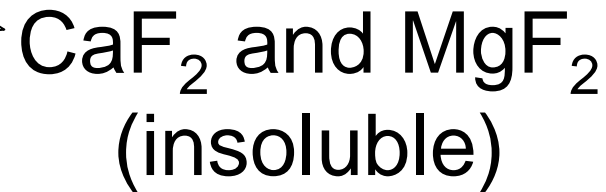
HF is not just a “weak acid”

- HF is used in freshman chemistry as a classic example of a weak acid ($pK_a = 3.17$, as contrasted with its apparently close relative HCl, $pK_a = -3$)
- But it is also hideously toxic, in a way that most people will not guess or suspect.

HF or HF_(aq) exposure



rxn with Ca²⁺ and Mg²⁺ in cells is rapid, not much reverse rxn



Summary: the Ca²⁺ and Mg²⁺ are sucked almost instantly out of your cells, sera, and interstitial fluids. Your tissues and metabolic pathways are messed with in a horrifying and nearly irreversible manner.

HF First Aid

- HF first aid treatment is not limited to simply washing it off the skin or out of the eyes
- HF penetrates (is absorbed) very rapidly through the skin and mucous membranes
- Deep tissue necrosis is fast. Amputation can be necessary to save life.



This is a small HF burn, from low concentration HF.

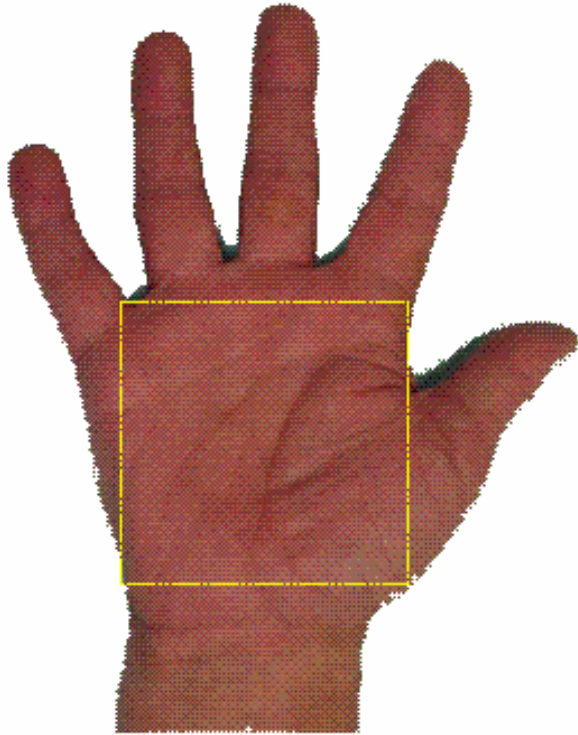
The time before onset of pain is concentration dependent

- | | |
|----------------|------------|
| • 0 - 20% HF | up to 24 h |
| • 20% - 50% HF | 1 - 8 h |
| • 50% - 70% HF | <1 h |
| • >70% HF | immediate |



PAIN is a very important symptom, but it's better not to wait for symptoms, in general.

First Aid must be immediate



- Aqueous 50% HF on 1% of the body surface area sometimes fatal even if immediate appropriate first aid is rendered.
- 1% of BSA (body surface area) is approx equal to palm surface or a bit more.
- 5% of BSA exposed to any concentration HF has similar effect.
- As little as 7 mL anhydrous HF can bind all of the free calcium in a normal sized adult male.