Skin in contact with hydrofluoric acid (HF) can result in serious burns as well as potentially fatal systemic toxicity. In 1999, 2,245 cases of HF exposure were reported to the APCC Toxic Exposure Surveillance System (TESS) in the USA(1). Of these, the majority (1,711/2,245; 76%) were in adults and most were unintentional (2,002/2,245; 90%); 69% (1,559/2,245) were evaluated in a health care facility (HCF) and 86% (1,463/2,245) developed symptoms ranging from minor to major. There were 7 deaths. Hexafluorine®, produced by the Laboratoire PREVOR in France, is a specific first aid rinsing solution for the decontamination of eye/skin hydrofluoric acid (HF) burns. Because of its amphoteric, hyperionic and chelating properties, Hexafluorine® is able to actively bind both the hydrogen (H+) and fluoride (F-) ions. It has been shown to be efficacious for decontamination of HF-exposed workers (2).

The emergency treatment of chemical splashes is aimed at stopping the action of the chemical product before the burn has started. Two studies on emergency treatment of an HF burn have shown that for decontamination after a 3 minute exposure time and a 50% HF concentration, burns appeared similar but for decontamination after a 3 minute exposure time and a 50% HF concentration, burns appeared similar and Hexafluorine® was found not any more effective than water (6). The pig has been previously found to be one of the best animal models for the study of HF burns (7). The 8th aim of this preliminary study was to develop an in vivo domestic pig model for 1) determination of a 49% HF skin exposure duration that would allow for a sufficient period of time to intervene with decontamination before a visible skin lesion develops. Also, to prevent the delayed effects, a definitive study will be performed to assess efficacy of Hexafluorine® decontamination versus tap water using different HF concentrations and exposure times.

Skin was washed with Betadine surgical scrub after clipping to prevent infection. A depilatory agent - Hexafluorine® - Water decontamination - No decontamination, Application sites were compared as follows:

- No decontamination,
- Water decontamination
- Hexafluorine® decontamination.

**Results**

All HF-exposed skin sites with no decontamination developed severe HF burns. For HF-exposed skin sites receiving decontamination, those treated with Hexafluorine® resulted in less severe burns than those treated with tap water, but tap water resulted in less severe burns than no decontamination. Efficacy (reducing the extent of HF burns) was best demonstrated when skin was exposed to 49% HF for 10 seconds followed by decontamination with Hexafluorine® after a 30-second delay. Conclusion: These first results have shown that following a 10 second skin exposure to 49% HF and additional 30 second delay to decontamination, the degree of burns decontaminated with Hexafluorine® were less severe than those decontaminated with water.

**Conclusion**

These first results have shown that following a 10 second skin exposure to 49% HF and additional 30 second delay to decontamination, the degree of burns decontaminated with Hexafluorine® were less severe than those decontaminated with water. This preliminary study shows that the delay to intervene and the chemical activity of the Hexafluorine® decontaminant plays a very important role in comparison to water. Once the model is completely qualified, a definitive will be performed to assess efficacy of Hexafluorine® decontamination versus tap water using different HF concentrations and exposure times.

**References**