

# NPWA & UKCAF

## Dangerous Goods Advisory Notice

Bulk quantities of **Hexafluorosilicic Acid ( $H_2SiF_6$ )** are being transported to United Utilities plc. Water treatment facilities at Ennerdale and Cornhow in Cumbria, UK. **The product is used by UU plc. solely for the purpose of drinking water fluoridation schemes.**

$H_2SiF_6$  is a highly toxic Class 8 Corrosive substance requiring that it be shipped in specially lined tanks or unbreakable plastic drums.

Vehicles carrying  $H_2SiF_6$  are required to have an identifying signage with the number '8' visible. Generally, the sign will be diamond shaped.



### IN CASE OF A SPILL OR LEAK

**Emergency Action:** Keep unnecessary people away. Stay about 300 meters upwind, keep out of low areas. Isolate hazard area and deny entry. Upon contact with most substances,  $H_2SiF_6$  can generate corrosive and toxic gaseous fluoride vapours. Its potential impact on human health is severe and demands urgent consideration with regard to emergency response in the event of an accident.

**$H_2SiF_6$  reacts with many metals to produce flammable and explosive hydrogen gas.**

**$H_2SiF_6$  liquid or vapours can cause severe irritation and burns which may not be apparent for hours.**

$H_2SiF_6$  vapours are extremely destructive to the tissue of the mucous membranes and upper respiratory tract, eyes and skin. Inhalation of vapours may result in spasm, inflammation and oedema of the larynx and bronchi, chemical pneumonitis and pulmonary oedema.

**Symptoms of exposure to  $H_2SiF_6$  or its vapours** may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea and vomiting.

### Symptoms may be delayed up to 24 hours

**Inhalation:** Remove the exposed person to an uncontaminated area immediately. If breathing has stopped, start artificial respiration at once. Oxygen should be provided for an exposed person having difficulty breathing (but only by an authorized person) until exposed person is able to breathe easily by themselves. **Exposed persons should be examined by a qualified physician as soon as possible.**

**Eye Contact:** Flush eyes for at least 15 minutes with large amounts of water. Eyelids should be held apart during the flushing to ensure contact of water with all accessible tissue of the eyes and lids. Both liquid and vapours can cause permanent eye damage. **Medical attention should be given as soon as possible.**

**Skin Contact:** The exposed person should be removed to an uncontaminated area and subjected immediately to a drenching shower of water for a minimum of 15 to 20 minutes. Remove all contaminated clothing while under shower. **Medical attention should be given as soon as possible for all burns, regardless of how minor they seem.** Calcium gluconate gel should be applied to exposed areas.

On 3 February 2005, there was a spill of 110 gallons of hydrofluosilicic acid from a leaking tanker lorry in downtown Phoenix, Arizona. Sixteen people were sent to hospital, including eleven policeman and three firemen.

9,554 people were notified by a reverse 911 emergency service phone system to stay indoors or in some type of protective shelter.

The fire chief issued a statement to the press saying that, because of the nature of the spill, inhalation exposure was a minimal risk; however skin contact with the hexafluorosilicic acid could be deadly.

In 1994, an accident occurred in central Florida. A lorry carrying 4,500 gallons of hydrofluosilicic acid split apart on the motorway.

- 50 people went to hospital.
- Some police and emergency workers were in hospital for up to six weeks.
- In a one mile radius, 2,700 people were evacuated from their homes for up to 24 hours.
- Clean up required about four days with crews working round the clock.
- 300 tonnes of contaminated soil was trucked to a hazardous waste landfill.
- The USEPA advised residents not to drink well water until it had been tested for contamination.
- All ground water in the area was tested for contamination.
- 600 feet of motorway had to be resurfaced.

In 2001, in Avonmouth, Bristol, UK, a portable tank of  $H_2SiF_6$  was damaged in transit from Bilboa, Spain. Upon discovering the damaged container, the Bristol Port Company declared a "Port Emergency" and a "Major Incident". Much of the port was effectively shut down for about 30 hours.

The tank had three patches on the liner. Two were faulty and the third was made of an incompatible material. The two faulty patches began to leak. **Within 72 hours, the  $H_2SiF_6$  ate through an 8.0 mm steel shell and the tank sprang two leaks.**

### **What can you do to protect yourself in the case of an accidental spill.**

1. **If you cannot afford hydrogen fluoride rated respirators, you can soak paper dust masks in a solution of baking soda and let them dry.**
  - **Keep treated masks in a plastic bag and available in case of an emergency.**
  - **If there is a spill, dampen the mask and the baking soda will neutralise some of the acid vapours. this should offer minimal protection from inhalation exposure.**
2. **Cover as much of your body as possible.**
3. **Try to evacuate at least 300 meters upwind of the spill – if not stay, indoors with the windows and doors shut until help arrives.**