


Hydrofluoric Acid (Aqueous HF)



Solutions of HF are called hydrofluoric acid. They range in concentration from less than 1% to as much as 70%. Hydrofluoric acid is used in laboratories and in products mainly used in metal treatment or cleaning, fabric rust removal, floor and wall treatment, glass etching and ceramics. The public also uses some of these products.

Because of the similarity of names, hydrofluoric acid is often confused with hydrochloric acid. The two chemicals are quite different.

NICNAS conducted a preliminary assessment of HF in June 2001. A full risk assessment may be carried out in the future. Here are the main findings of the assessment.

HEALTH EFFECTS

HF is corrosive and toxic. Health effects occur when HF is taken in by swallowing, through the skin, or by breathing in fumes or vapours. Higher concentrations of HF are more dangerous and produce more fumes than lower concentrations.

Higher concentrations of HF cause severe burns on contact with the skin or eyes. If more than a small area is burnt, serious harm or death can result. Lower HF concentrations can cause burns which may not be noticed immediately but will be felt later. Burns from HF heal slowly.

Accidentally inhaling high concentrations of HF can be fatal. Breathing low concentrations of HF causes itching and soreness of the airways and irritates the eyes.

Long-term low level exposure to HF causes bone abnormalities.

PHYSICAL HAZARDS

HF is corrosive. Contact with metals, in some situations, produces hydrogen gas that can cause explosions in contact with air. Mixing HF with water can produce heat.

RECOMMENDATIONS

The major finding of the report is that existing standards governing HF are not well applied. The assessment found that incidents and injury from HF are occurring to workers and the public.

If possible, avoid using HF. If not, use at the lowest possible concentration with strict control measures.

In case of accidents, treat quickly and use calcium gluconate as an antidote. Make sure everyone knows the correct emergency procedures in advance.

Packing and transport regulations must be checked and carefully followed.

Industry needs to know when HF is being used and produced so that risks can be identified and managed. Hydrofluoric acid can also be formed if fluoride or bifluoride salts are mixed with acid or when bifluoride salts are dissolved in water.

Suppliers and those using or producing HF should implement the recommendations contained in Chapter 12 of the assessment report. Relevant regulatory agencies should conduct compliance reviews of information requirements for HF.

Recommendations cover several areas including MSDS, labels, staff training and emergency procedures.

The Poisons Schedule has recently been revised, and lower concentrations of HF now require licensing.

More information on HF can be found in the Material Safety Data Sheet available from the supplier.

A comprehensive source of information in Australia is the preliminary assessment of HF published by the National Industrial Chemicals Notification and Assessment Scheme (NICNAS). This is available free of charge on the NICNAS website or by calling 1800 638528. More information on the use of industrial chemicals can be found at the NICNAS website: www.nicnas.gov.au

