



Hydrogen Sulphide

General Information

Key Points

Fire

- Very flammable
- Reacts with metals, metal oxides and strong oxidising agents. Heating may cause violent combustion
- Emits toxic fumes of sulphur oxides when heated to decomposition
- In the event of a fire involving hydrogen sulphide, use fine water spray and gas tight kit with breathing apparatus

Health

- Toxic by inhalation
- Very toxic
- Inhalation of high concentrations may lead to collapse, inability to breathe and death within minutes.
- Following single or repeated exposure to high concentrations a range of effects on the nervous and cardiovascular system may occur.
- Skin exposure causes skin discolouration, pain, itching, skin redness and local frostbite if exposed to liquefied hydrogen sulphide gas
- Eye effects may be delayed and include irritation, inflammation, tearing, sensitivity to light and conjunctivitis

Environment

- Dangerous for the environment
- Inform Environment Agency of substantial incidents

Background

Hydrogen sulphide is a colourless, flammable gas with a characteristic odour of rotten eggs. It is produced both naturally and through human activity.

Hydrogen sulphide is one of the key compounds in the natural cycle of sulphur in the environment. It is produced during the decay of plant and animal protein and it occurs in volcanic gases. Some natural gas fields and geothermally active areas have found significant concentrations of hydrogen sulphide.

Hydrogen sulphide is usually produced as an undesirable by-product, such as in the production of coke from sulphur-containing coal, the refining of sulphur-containing crude oils and from producing wood pulp. However in some processes it is an important reagent or intermediate such as in the manufacture of sulphuric acid, inorganic sulphides and as an agricultural disinfectant.



Exposure to hydrogen sulphide usually occurs as a result of an accidental spill or leak during transportation, manufacturing or disposal. Occupational exposure may occur in oil, gas and petrochemical industries.

Hydrogen sulphide is a gas therefore it is most likely to be breathed in. Skin and eye contact may also occur. The nervous system and cardiovascular system are most affected by hydrogen sulphide, leading to a range of symptoms. Single exposures to high concentrations may rapidly cause breathing difficulties and death.

Skin exposure may also occur, which may cause discolouration, pain, itching, redness of skin and local frostbite. Eye exposure may cause irritation, inflammation, tearing, sensitivity to light and conjunctivitis.

Frequently Asked Questions

What is hydrogen sulphide?

Hydrogen sulphide is a colourless, flammable gas with a characteristic odour of rotten eggs.

How does hydrogen sulphide get into the environment?

Hydrogen sulphide occurs both naturally and through human activity. It may be released from a number of human activities such as production of coke from sulphur-containing coal, the refining of sulphur-containing crude oils and from producing wood pulp.

How will I be exposed to hydrogen sulphide?

You may be exposed to hydrogen sulphide by breathing it in, or skin and eye contact.

If there is hydrogen sulphide in the environment will I have any adverse health effects?

The presence of hydrogen sulphide in the environment does not always lead to exposure. Clearly, in order for it to cause any adverse health effects you must come into contact with it. You may be exposed by breathing it in, or by skin and eye contact. Following exposure to any chemical, the adverse health effects you may encounter depend on several factors, including the amount to which you are exposed (dose), the way in which you are exposed, the duration of exposure, the form of the chemical and if you were exposed to any other chemicals.

Health effects following inhalation of high concentrations of hydrogen sulphide may include collapse, inability to breathe and death within minutes. A range of effects on the nervous and cardiovascular system may occur following single or repeated exposures to high hydrogen sulphide concentrations. Skin discolouration, pain, itching, skin redness and local frostbite may occur if skin is exposed to compressed hydrogen sulphide liquid. Eye exposure may cause irritation, inflammation, tearing, sensitivity to light and conjunctivitis.

Can hydrogen sulphide cause cancer?

There is no evidence to suggest that exposure to hydrogen sulphide would cause cancer in humans.

Does hydrogen sulphide affect children or damage the unborn child?

Children will be affected by hydrogen sulphide in the same way as adults, however because hydrogen sulphide is heavier than air and children are shorter than adults, children may be exposed to higher concentrations than adults. There is no evidence to suggest that exposure to hydrogen sulphide can affect the health of the unborn child.

What should I do if I am exposed to hydrogen sulphide?

It is very unlikely that the general population will be exposed to a level of hydrogen sulphide high enough to cause adverse health effects.

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