



Sodium Hydroxide

General Information

Key Points

- sodium hydroxide (also known as caustic soda and soda lye) is a white, odourless solid at room temperature
- It is used in the production of other chemicals, in the pulp and paper industry and various household products including drain cleaners
- it does not persist in the environment
- people may be exposed to small amounts of sodium hydroxide in cleaning products
- sodium hydroxide causes irritation of eyes, nose and throat, cough, chest tightness, headache, fever and confusion
- ingestion causes immediate burning of the mouth and throat, breathing difficulty, drooling, difficulty swallowing, stomach pain and vomiting
- skin contact can cause pain, burns and ulcers
- eye contact causes pain, twitching of the eyelids, watering eyes, inflammation, sensitivity to light and burns
- individuals with breathing problems such as asthma may be more susceptible to the effects of inhaled sodium hydroxide

Public Health Questions

What is sodium hydroxide?

Sodium hydroxide is a white, odourless solid at room temperature. It is available in solid form as lumps, pellets or chips and as a solution. It is also commonly known as caustic soda and soda lye.

What is sodium hydroxide used for?

The main use of sodium hydroxide is in the production of other industrial chemicals. It may be used as an industrial cleaner and degreaser. It is also used in the pulp, paper, metal, food and textile industries, in water treatment processes and various household products including de-scalers and drain cleaners. Sodium hydroxide is also used in the production of soaps, mineral oils and rubber.

How does sodium hydroxide get into the environment?

Sodium hydroxide may enter the environment during its production and use. However it does not persist in the environment.

How might I be exposed to sodium hydroxide?

The general population may be exposed to very small amounts of sodium hydroxide due to its use in domestic cleaning products although these sources are unlikely to cause harm if used correctly.

Workers employed in industries that produce, or use, sodium hydroxide may be exposed to higher levels of sodium hydroxide than the general population. However, safe levels are enforced to protect employees who may be exposed to sodium hydroxide at work. Such levels are below those that are thought to cause harmful effects.

If I am exposed to sodium hydroxide how might it affect my health?

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

Low level exposure from the correct use of household products that contain sodium hydroxide would not be expected to cause adverse health effects.

Breathing in sodium hydroxide causes irritation of eyes, nose and throat, cough, chest tightness, headache, fever and confusion. In serious cases damage to the airways, a fast

heart rate and eye damage can occur. An accumulation of fluid in the lungs may occur and may take up to 36 hours to develop.

Ingestion causes immediate burning of the mouth and throat, breathing difficulty, drooling, difficulty swallowing, stomach pain and vomiting (there may be blood in the vomit). In serious cases there may be damage to heart, lungs, kidneys and blood.

Dilute solutions may not be corrosive to the skin but can be irritating. Skin contact with stronger solutions can cause pain, burns and ulcers. Eye contact causes pain, twitching of the eyelids, watering eyes, inflammation, sensitivity to light and burns.

Can sodium hydroxide cause cancer?

Sodium hydroxide is not thought to be a cancer causing chemical.

Does sodium hydroxide affect pregnancy or the unborn child?

Low level exposure from the correct use of products that contain sodium hydroxide would not be expected to harm to the unborn child.

There is limited information about over exposure to sodium hydroxide during pregnancy. The irritant/corrosive tends to occur at the point of contact e.g. irritation to the skin or eyes. The absorption of alkali compounds into the body is generally low and therefore they do not cause effects in other parts of the body. Therefore, sodium hydroxide is unlikely to have a direct effect on the unborn child. However, if the exposure sodium hydroxide the mother to become unwell this may affect the health of the unborn child.

How might sodium hydroxide affect children?

If children breathe, ingest or touch sodium hydroxide they will have similar effects to those seen in adults. Sodium hydroxide containing products in the home should be stored in an appropriate container and kept out of the reach of children.

Are certain groups more vulnerable to the harmful effects of sodium hydroxide?

Individuals with breathing problems such as asthma may be more susceptible to the effects of inhaled sodium hydroxide. This is because sodium hydroxide can cause irritation of the airways leading to chest tightness, wheezing and breathlessness.

What should I do if I am exposed to sodium hydroxide?

Low level exposure from the correct use of products that contain sodium hydroxide would not be expected to cause any adverse health effects.

Please see below for advice following all other exposures to sodium hydroxide:

You should remove yourself from the source of exposure.

If you have got sodium hydroxide on your skin, remove soiled clothing (not over the head), wash the affected area with lukewarm water and soap for at least 10 – 15 minutes and seek medical advice.

If you have got sodium hydroxide in your eyes, remove contact lenses, irrigate the affected eye with lukewarm water for at least 10 – 15 minutes and seek medical advice.

If you have inhaled or ingested sodium hydroxide, seek medical advice.

Additional sources of information

UKTIS. Best Use of Medicines in Pregnancy <http://www.medicinesinpregnancy.org/>

NHS Choices- Acid and chemical burns <http://www.nhs.uk/conditions/acid-and-chemical-burns/pages/overview.aspx>

This document from the PHE Centre for Radiation, Chemical and Environmental Hazards reflects understanding and evaluation of the current scientific evidence as presented and referenced here.

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