



Sodium Chlorate

General Information

Key Points

- sodium chlorate is a colourless, odourless and crystalline solid
- sodium chlorate was previously sold and used as a pesticide in the EU but this use is now banned
- sodium chlorate is toxic to the environment
- it is irritating to the skin, eyes and airways
- nausea, vomiting, stomach pain and diarrhoea may follow ingestion of sodium chlorate
- ingestion may also cause a blood disorder (methaemoglobinaemia) which limits the blood's ability to transport oxygen
- this can result in the skin becoming blue/grey, blood clots and damage to the kidneys

Public Health Questions

What is sodium chlorate?

Sodium chlorate is a colourless, odourless and crystalline solid. It is also known as chlorate of soda.

What is sodium chlorate used for?

In the past, the main use of sodium chlorate was as a pesticide, largely to kill weeds and undesirable foliage. Sodium chlorate is harmful to both humans and the environment. Therefore, the sale and use of sodium chlorate in plant protection products and pesticides in the EU is banned. Such products may still be produced however, for transport and sale outside of the EU.

Sodium chlorate is also used to make other chemicals including chlorine dioxide.

How does sodium chlorate get into the environment?

Sodium chlorate may be released into the environment during its production and use. It may also be released through use of old herbicide stocks.

How might I be exposed to sodium chlorate?

Despite being banned for use as a pesticide people may still have old stocks of sodium chlorate herbicide. This may be a source of exposure for the general population.

Exposure to sodium chlorate is more likely also occur in an occupational setting during its production and use.

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

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.

Sodium chlorate is irritating to the skin, eyes and airways. The health effects of sodium chlorate exposure are from ingestion.

Within 2 hours of ingesting sodium chlorate there may be nausea, vomiting, stomach pain and diarrhoea. Ingestion may also lead to a condition called methaemoglobinaemia in which changes to the shape of red blood cells reduces their ability to deliver oxygen around the body. This can result in the skin becoming blue/grey, blood clots and damage to the kidneys. There may also be weakness, tiredness, dizziness, confusion, headache, mood changes, breathing changes, chest pains, fitting and coma. Symptoms may be delayed for up to 12 hours after the exposure.

Can sodium chlorate cause cancer?

Sodium chlorate is not believed to be a cancer causing chemical.

Does sodium chlorate affect pregnancy or the unborn child?

There are limited data available on the direct effects of exposure to sodium chlorate on pregnancy and the unborn child. Effects on the unborn child are more likely to occur if the exposure to sodium chlorate causes the mother to become unwell.

How might sodium chlorate affect children?

Children exposed to sodium chlorate are expected to show similar adverse health effects to those seen in exposed adults. However, the effects are expected to be more severe in children as they are particularly susceptible to development of a condition called **methaemoglobinaemia** which can be caused by exposure to sodium chlorate.

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

You should remove yourself from the source of exposure.

If you have got sodium chlorate 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 chlorate 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 ingested sodium chlorate, seek medical advice.

Additional sources of information

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

NHS Choices- Poisoning <https://www.nhs.uk/conditions/poisoning/>

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.

First published: January 2019

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