



Formic Acid

General Information

Key Points

- formic acid is a clear, colourless liquid with a pungent odour
- it is used as a pesticide in hay and animal feed, in wart removal, as a preservative and in household descalers
- formic acid may be found at very low levels in the environment
- the stings of some ants and nettles may contain a small amount of formic acid
- ingestion causes immediate burning of the mouth and throat, breathing difficulty, drooling, difficulty swallowing, stomach pain and vomiting
- skin contact with formic acid 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 asthmatics may be more sensitive to the effects of inhaling formic acid

Public Health Questions

What is formic acid?

Formic acid is a clear, colourless liquid with a pungent odour.

What is formic acid used for?

Formic acid is mainly used as a preservative and antibacterial agent in livestock feed. It is sprayed on animal feed or fresh hay to reduce the rate of decay and is used as a pesticide to treat and control mites that infest honey bee hives. It is also used to manufacture other chemicals, in wart removal treatments and may be found in household descalers.

How does formic acid get into the environment?

Formic acid can enter the environment during its production and use in industry. It may leach into water and soil where it biodegrades and vapours in the air will be degraded by sunlight. As a result, there are very low levels of formic acid in the environment.

How might I be exposed to formic acid?

The general population may be exposed to low levels of formic acid in consumer products such as wart removers and descaling products. Exposure from the correct use of these products would not be expected to cause adverse health effects.

The stings of some ants and stinging nettles may contain a small amount of formic acid, which may be a source of low level exposure.

Exposure to formic acid may occur in workplaces in which it is used or manufactured. Safe limits are enforced to protect the employees. Such levels are below those that are thought to cause harmful effects.

If I am exposed to formic acid how might it affect my health?

The presence of formic acid 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 formic acid 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 consumer products that contain formic acid would not be expected to cause adverse health effects.

Strong solutions of formic acid are corrosive and can cause burns to any part of the body it comes into contact with. Ingestion of formic acid can result in burns to the mouth, throat and stomach, drooling, difficulty swallowing and vomiting (there may be blood in the vomit).

Breathing in formic acid can cause irritation of eyes and nose, sore throat, cough, chest tightness, headache and confusion. In severe cases it can cause breathlessness and wheezing.

Skin contact with formic acid can cause pain, burns and ulcers. Eye contact causes pain, twitching of the eyelids, watering eyes, inflammation, sensitivity to light and burns.

Can formic acid cause cancer?

Formic acid is not thought to be a cancer causing chemical.

Does formic acid affect pregnancy or the unborn child?

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

How might formic acid affect children?

If children breathe, ingest or touch formic acid they will have similar effects to those seen in adults. Formic acid 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 formic acid?

Individuals with breathing problems such as asthmatics may be more sensitive to the effects of inhaling formic acid. This is because it can cause irritation of the airways leading to chest tightness, wheezing and breathlessness.

What should I do if I am exposed to formic acid?

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

Advice on stings and bites can be found at the following link:

NHS Choices- Insect bites and stings <https://www.nhs.uk/conditions/insect-bites-and-stings/>

Please see below for advice for all other exposures to formic acid:

You should remove yourself from the source of exposure.

If you have got formic acid 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 formic acid 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 formic acid, 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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For queries relating to this document, please contact: chemcompendium@phe.gov.uk

For all other enquiries, please contact: phe.enquiries@phe.gov.uk

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