Public Health England

Protecting and improving the nation's health

Pyridine

General Information

Key Points

- pyridine is a colourless flammable liquid with a strong and unpleasant fish-like odour
- it is used as a solvent for paints, rubber, dyes and resins
- a small amount of pyridine may occur naturally in the environment; there may be more as a result of human activities
- food and cigarette smoke are the biggest sources of exposure to pyridine for the general population
- the level of exposure to pyridine anticipated for a normal diet would not be expected to cause adverse health effects
- breathing in pyridine may cause irritation of the eyes, nose and throat with vomiting, headache and dizziness
- ingestion can cause sickness, abdominal pain and diarrhoea
- pyridine can cause irritation, swelling and redness to the skin
- exposure to pyridine can cause drowsiness, mood changes, weakness and insomnia
- repeated exposure over a long period of time may cause damage to the liver and kidneys
- it is very unlikely that the general population will be exposed to a level of pyridine high enough to cause adverse health effects

PHE publications gateway number: 2014790

Published: January 2019

Public Health Questions

What is pyridine?

Pyridine is a colourless flammable liquid with a strong and unpleasant fish-like odour. Other names for pyridine include azabenzene and azine.

What is pyridine used for?

Pyridine is produced from natural sources such as coal tar or by chemical synthesis. It is used as a solvent for paints, rubber, dyes and resins. It is also used to produce a variety of different products including other industrial chemicals, pesticides, herbicides, fungicides, medicines, adhesives and waterproofing for fabrics.

How does pyridine get into the environment?

Levels of pyridine in the environment would be expected to be low. It may be released from industrial facilities that produce and use it, such as coke-oven works and oil-shale processing facilities.

How might I be exposed to pyridine?

Food and cigarette smoke are the biggest sources of exposure to pyridine for the general population. Small amounts have been detected in some foods including fried chicken, fried bacon and cheese. The level of exposure to pyridine anticipated from a normal diet would not be expected to cause adverse health effects.

People who work in industries making or using pyridine, for instance where it is used as a solvent, used to make other chemicals or at coke-oven and oil-shale processing facilities, may be exposed to higher levels than the general public. Exposure may be from inhalation or skin contact. 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 pyridine how might it affect my health?

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 you are exposed, the duration of exposure, the form of the chemical and if you were exposed to any other chemicals.

Exposure to low levels of pyridine in the environment or as part of a normal diet would not be expected to cause adverse health effects.

Breathing in pyridine may cause irritation of the eyes, nose and throat. It may also lead to vomiting, headache and dizziness. Ingestion can cause sickness, abdominal pain and diarrhoea.

Skin contact with pyridine can lead to irritation, swelling and redness which may be triggered by light.

Pyridine can also be absorbed into the body following inhalation, ingestion or prolonged skin contact. This can cause drowsiness, mood changes, weakness, insomnia and in severe cases breathing problems, liver and kidney damage, and coma.

Repeated exposure over a long period of time may cause damage to the liver and kidneys.

Can pyridine cause cancer?

Due to inadequate evidence in humans and limited evidence in animals, the International Agency for Research on Cancer (IARC) have stated that pyridine is not classifiable as to its ability to cause cancer in humans.

Does pyridine affect pregnancy or the unborn child?

There are limited data available on the direct effects of exposure to pyridine during pregnancy. Therefore, is not possible to draw any definitive conclusions. Effects on the unborn child are more likely to occur if the exposure to pyridine causes the mother to become unwell.

How might pyridine affect children?

There is little information on the effects of pyridine on children. It is likely that children exposed to pyridine would experience similar symptoms to those seen in exposed adults.

What should I do if I am exposed to pyridine?

It is very unlikely that the general population will be exposed to a level of pyridine high enough to cause adverse health effects. However, if you have any health concerns regarding exposure to pyridine seek guidance from your GP or contact NHS 111.

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.

First published: January 2019

For queries relating to this document, please contact: chemcompendium@phe.gov.uk

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