Public Health England

Protecting and improving the nation's health

Methyl Ethyl Ketone

General Information

Key Points

- methyl ethyl ketone is a colourless, volatile, highly flammable liquid with a fruity odour
- it is widely used as a solvent for protective coatings, paints, plastics, adhesives, printing inks and pesticides
- it may be released from industry but it is quickly broken down in the environment
- methyl ethyl ketone is produced naturally at low levels by many living things
- methyl ethyl ketone can be found in various food items including meat, fruit and vegetables
- people may be exposed to methyl ethyl ketone as an ingredient in some consumer products such as varnishes
- methyl ethyl ketone in the air can cause irritation of the skin, eyes, nose and throat and cause chest tightness
- ingestion can cause inflammation of the mouth and stomach upset
- skin contact may cause irritation with redness, dryness and swelling
- may irritate or injure the eyes on contact
- if absorbed into the body it can cause headache, dizziness, tiredness, balance problems, nausea, vomiting, slurred speech, low temperature, fitting and coma

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Public Health Questions

What is methyl ethyl ketone?

Methyl ethyl ketone (MEK) is a colourless, volatile, highly flammable liquid with a fruity odour similar to acetone. Other common names are butanone, 2-butanone and methyl acetone.

What is methyl ethyl ketone used for?

Methyl ethyl ketone is produced industrially in large quantities and is mainly used as a solvent in protective coatings. It is also used as a solvent for paints, plastics, adhesives, printing inks and pesticides. It is used in cosmetics, pharmaceuticals and as a flavour/fragrance agent.

How does methyl ethyl ketone get into the environment?

Methyl ethyl ketone is produced naturally at low levels by many living things.

Human activities can also lead to the release of methyl ethyl ketone into the environment. It can enter the environment during its production, transport and use. It may also be released from vehicle exhausts and during the breakdown of other chemicals.

On entering the environment methyl ethyl ketone is rapidly broken down therefore it does not build up in the environment.

How might I be exposed to methyl ethyl ketone?

Methyl ethyl ketone can be found in various food items including meat, fruit and vegetables. The level of exposure to methyl ethyl ketone anticipated as part of a normal diet is not a concern for health.

The general public may also be exposed to low levels of methyl ethyl ketone in the environment and from cigarette smoke. People may be exposed to small amounts due to its use in household products such as paints and varnishes.

Exposure to methyl ethyl ketone may also occur in the workplace although safe levels are enforced to protect the employees. Such levels are below those that are thought to cause harmful effects.

If I am exposed to methyl ethyl ketone 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.

Exposure to low levels of methyl ethyl ketone in the environment, as part of a normal diet or through proper use of consumer products would not be expected to cause adverse health effects.

Breathing in higher levels of methyl ethyl ketone in the air can cause irritation, eyes, nose and throat and cause chest tightness. Ingestion may cause inflammation of the mouth and stomach upset (with nausea and vomiting). If methyl ethyl ketone enters the airways, whilst being swallowed (or if vomit containing methyl ethyl ketone enters the airways), it can damage the lungs. Skin contact with methyl ethyl ketone may cause irritation with redness, dryness and swelling. It may irritate or injure the eyes on contact. Prolonged contact may result in permanent damage to the eye.

Methyl ethyl ketone can also be absorbed into the body following inhalation, ingestion or prolonged skin exposure. This can cause headache, dizziness, tiredness, balance problems, nausea, vomiting, slurred speech, low temperature, fitting and coma. Heart, blood and circulation problems may occur.

Can methyl ethyl ketone cause cancer?

Methyl ethyl ketone is not thought to be a cancer causing chemical.

Does methyl ethyl ketone affect pregnancy or the unborn child?

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

How might methyl ethyl ketone affect children?

Children exposed to methyl ethyl ketone would be expected to display similar symptoms to those seen in exposed adults.

Methyl ethyl ketone containing products stored at home should be kept out of the reach of children and in an appropriate container.

What should I do if I am exposed to methyl ethyl ketone?

Low level exposure from the environment, diet or from the correct use of products that contain methyl ethyl ketone would not be expected to cause adverse health effects.

Please see below for advice following all other exposures to methyl ethyl ketone:

You should remove yourself from the source of exposure.

If you have got methyl ethyl ketone 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 methyl ethyl ketone 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 methyl ethyl ketone, seek medical advice.

If you have ingested methyl ethyl ketone seek medical advice. Do **not** make yourself sick.

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

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

HSE- Solvents http://www.hse.gov.uk/construction/healthrisks/hazardous-substances/solvents.htm

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

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