

Ethanol

General information

Key Points

- Toxic via inhalation, ingestion, skin and eye exposure
- Chemical classification: highly flammable
- Inhalation causes irritation of the nose and throat, with choking and coughing at high concentrations
- Ingestion at low to moderate concentrations causes impaired reaction time, blurred vision, vomiting and blackouts
- Ingestion at high concentrations can cause convulsions, comas and breathing complications
- Skin and eye exposure can cause burning, stinging and lacrimation of the eyes

Background

Ethanol, also known as ethyl alcohol, is a clear colourless liquid with a mild and pleasant odour. It is widely used in various products such as alcoholic beverages, solvents, perfumes and toiletries, disinfectants, polishes, as a fuel additive and in the manufacture of plastics, rubber and drugs. It is also increasingly being used as a biofuel. Alcohol-based hand gels in the form of liquids, foams and gels can contain up to 95% ethanol.



The most likely source of ethanol in the environment is from emission from industries that manufacture or use it. Most of the ethanol that is released will enter water and evaporate into the air where it is broken down by sunlight. As a result, exposure to ethanol in air and water is very low.

Most people will be exposed to ethanol in the form of alcoholic beverages in which ethanol is found at varying concentrations from 4% to 45%. However exposure to higher concentrations may occur in an occupational setting such as in industry, where 100% ethanol is sometimes used. In such environments safe levels are enforced to protect workers.

If exposed to ethanol, the potential adverse health effects that may occur depend on the way people are exposed and the amount to which they are exposed. Exposure via breathing ethanol vapours can cause irritation of the nose and throat with choking and coughing at higher concentrations.



Drinking ethanol causes a range of symptoms which are dependant on the amount that is consumed. Symptoms range from impaired vision, reaction time and co-ordination to slurred speech, blackouts, nausea and vomiting. Drinking larger amounts may cause convulsions, coma and breathing problems. Skin exposure from spillages of ethanol can cause burning and stinging. Eye exposure to ethanol can also cause burning and stinging.

Children show adverse effects after being exposed to lower amounts of ethanol compared to adults. Ethanol may also affect the unborn child, causing foetal alcohol syndrome, which is characterised by organ abnormalities, lower birth weight, and behavioural problems. It can also cause adverse effects on the reproductive system in males and females and on fertility. However, such effects are only achieved following the consumption of alcoholic beverages, rather than occupational exposure or the use of consumer products containing ethanol.

Ethanol is classified by the International Agency for Research on Cancer (IARC) as causing cancer in humans following ingestion.

Frequently Asked Questions

What is ethanol?

Ethanol, also known as ethyl alcohol, is a clear colourless liquid with a mild and pleasant odour.

What is ethanol used for?

Ethanol is widely used in many different types of products such as alcoholic beverages, solvents, perfumes, toiletries, disinfectants, preservatives, polishes, as a fuel additive and in the manufacturing of plastics, rubber and drugs. It is also increasingly being used as a biofuel. Alcohol-based hand gels in the form of liquids, foams and gels can contain up to 95% ethanol.

How does ethanol get into the environment?

The most likely source of ethanol in the environment is from emission from industries that manufacture or use it.

How will I be exposed to ethanol?

Exposure to ethanol in air and water is very low as it is broken down by sunlight. Most people will be exposed to ethanol in the form of alcoholic beverages in which ethanol is found at varying concentrations from 4% to 45%. However exposure to higher concentrations may occur in an occupational setting such as in industry or a laboratory, where 100% ethanol is sometimes used.

If there is ethanol in the environment will I have any adverse health effects?

The presence of ethanol in the environment does not always lead to exposure. Clearly, in order for it to cause any adverse health effects you must come into contact with it. You may be exposed by breathing or drinking the substance, or by skin contact. 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 via breathing ethanol vapours can cause irritation of the nose and throat with choking and coughing at higher concentrations. Drinking ethanol causes a range of symptoms which is dependant on the amount that is consumed. Symptoms range from impaired vision, reaction time and co-ordination to slurred speech, blackouts, nausea and vomiting. Drinking larger amounts may cause convulsions, coma and breathing problems. Skin exposure from spillages of ethanol can cause burning and stinging. Eye exposure to ethanol can also cause burning and stinging.

Can ethanol cause cancer?

Ethanol is classified by the International Agency for Research on Cancer (IARC) as causing cancer in humans following ingestion.

Does ethanol affect children or damage the unborn child?

The level of intoxication from alcohol ingestion varies between adults and children. The consumption of alcoholic beverages by children may induce greater levels of intoxication as compared to adults who drink the same amount. Ethanol can cause adverse effects on the reproductive system in males and females and on fertility. It can also affect the unborn child, such as causing foetal alcohol syndrome which is characterised by organ abnormalities, lower birth weight, abnormal brain development and behavioural problems. However, such effects are only achieved due to the consumption of alcoholic beverages, rather than occupational exposure or the use of consumer products containing ethanol.

What should I do if I am exposed to ethanol?

You should remove yourself from the source of exposure.

If you have got ethanol on your skin, remove soiled clothing, wash the affected area with lukewarm water for at least 10-15 minutes and seek medical advice.

If you have got ethanol in your eyes remove contact lenses if necessary, wash the affected area with lukewarm water for at least 10 – 15 minutes and seek medical advice.

If you have inhaled or ingested ethanol seek medical advice.

This document will be reviewed not later than 3 years or sooner if substantive evidence becomes available.