



Ethanol

General Information

Key Points

- ethanol (ethyl alcohol) is a clear colourless liquid with a characteristic alcohol odour
- ethanol is the type of alcohol used in alcoholic beverages
- it is also found in solvents, perfumes, toiletries, disinfectants, hand sanitisers, preservatives, as a fuel and in the manufacturing of other chemicals
- ethanol does not build up in the environment
- exposure for most people is via alcoholic beverages where it is found at varying concentrations
- inhaling ethanol can irritate the nose and throat causing chocking and coughing
- ingesting ethanol can cause mood changes, slower reaction time, uncoordinated movements, slurred speech and nausea
- higher exposures may cause blurred vision, confusion and disorientation, movement problems, vomiting and sweating
- ethanol may irritate the skin; with pain, redness and swelling
- it can also cause tearing, burning and stinging in the eyes
- drinking alcohol increases a person's risk of developing certain types of cancer
- It is not advised to consume any amount of ethanol during pregnancy
- people with liver conditions may be more sensitive to the harmful effects of ethanol

Public Health Questions

What is Ethanol?

Ethanol, also known as ethyl alcohol, is a clear colourless liquid with a characteristic alcohol odour. Ethanol occurs naturally and may also be man-made.

What is Ethanol used for?

Ethanol is the type of alcohol that is used in alcoholic beverages. It is used in various other products including solvents, perfumes, toiletries, disinfectants, preservatives and 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. The majority of ethanol released into the environment is broken down by sunlight. Therefore the levels of ethanol in the environment would be expected to be very low.

How might I be exposed to Ethanol?

Most people will be exposed to ethanol in the form of alcoholic beverages in which ethanol is found at varying concentrations, usually from 4% to 40%.

Exposure to higher concentrations may occur in an occupational setting such as in industry, where 100% ethanol is sometimes used. However safe levels are enforced to protect employees who may be exposed to ethanol at work. Such levels are below those that are thought to cause harmful effects.

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

The presence of ethanol in the environment does not always lead to exposure as you must come into contact with the chemical. You may be exposed by breathing, drinking or by skin contact with it. Following exposure to any hazardous chemical, the adverse health effects you may encounter depend on several factors, including the amount to which you are exposed (dose), the duration of exposure, the way you are exposed and if you were exposed to any other chemicals.

Inhaling ethanol can irritate the nose and throat, causing chocking and coughing. At high levels it can cause inebriation.

Ingesting ethanol can cause mood changes, slower reaction time, uncoordinated movements, slurred speech and nausea. Higher exposures may cause blurred vision, confusion and disorientation, movement problems, vomiting and sweating. Severe effects

include double vision, coma, low temperature and fitting. In the worst cases there may also be breathing problems, low blood pressure, incontinence heart problems, blood problems, liver damage and death.

Ethanol may dry out and irritate the skin; there may be pain, redness and swelling. Eye exposure to ethanol can also cause tearing, burning and stinging.

Can ethanol cause cancer?

Drinking alcohol (any kind) increases a person's risk of developing certain types of cancer. The more a person drinks the greater their risk becomes. These cancers are of the mouth (oral cavity) and throat (pharynx), voice box (larynx), gullet (oesophagus), large bowel (colorectum), liver, breast cancer in women and probably also cancer of the pancreas.

For further information on the link between drinking alcohol and an increased risk of cancer please see

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/490584/COC_2015_S2__Alcohol_and_Cancer_statement_Final_version.pdf

Does ethanol affect pregnancy or the unborn child?

It is not advised to consume any amount of ethanol during pregnancy. For more advice please visit: <http://www.medicinesinpregnancy.org/Medicine--pregnancy/Alcohol/>.

Alcoholic beverages may affect the unborn child, causing foetal alcohol syndrome (or fetal alcohol spectrum disorders), which is characterised by organ abnormalities, changes in facial appearance, lower birth weight and growth problems throughout life, abnormal head and brain development and behavioural problems. It may also increase the risk of death of the unborn child. Such effects are only expected following consumption of alcohol, rather than occupational exposure or the use of consumer products containing ethanol. Ethanol is also transferred to breast milk from the mother.

Alcoholic beverages may reduce the fertility of both men and women.

How might ethanol affect children?

Children and young people are more vulnerable to the effects of drinking alcohol because they are smaller, not used to drinking it and their brains are still developing.

Are certain groups more vulnerable to the harmful effects of ethanol?

People with liver conditions may be more sensitive to the harmful effects of drinking alcohol because the liver cannot process it very well.

What should I do if I am exposed to ethanol?

The level of risk to those following the UK drinking guidelines is considered to be low - <https://www.gov.uk/government/publications/alcohol-consumption-advice-on-low-risk-drinking>

Please see below for advice following exposure to other sources of ethanol:

You should remove yourself from the source of exposure.

If you have got ethanol 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 ethanol seek medical advice.

Additional sources of information

NHS- Drinking and Alcohol <https://www.nhs.uk/Livewell/alcohol/Pages/Alcoholhome.aspx>

Gov.UK- Alcohol Consumption: advice on low risk drinking

<https://www.gov.uk/government/publications/alcohol-consumption-advice-on-low-risk-drinking>

Bumps- Alcohol. <http://www.medicinesinpregnancy.org/Medicine--pregnancy/Alcohol/>

COC- Statement on the consumption of alcoholic beverages.

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/490584/COC_2015_S2_Alcohol_and_Cancer_statement_Final_version.pdf

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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