

# Ethanol

## Answers to Frequently Asked Health Questions

### What is ethanol?

Ethanol is a clear, colorless liquid with fragrant odor and a "burning" taste. Ethanol, also called ethyl alcohol, is mainly used as a renewable fuel product made from the fermentation of corn but it can also be made from wheat, barley, sorghum and sugarcane.

Ethanol is often blended with gasoline to make a motor fuel. The below three terms are sometimes referred to as "ethanol" or "gasohol":

- "Ethanol" is the 100% pure ethanol coming from a production facility.
- "E85" is the blend of 85% ethanol and 15% gasoline.
- "E10" is the blend of 10% ethanol and 90% gasoline.



### What are some products that contain ethanol?

Ethanol is used in alcoholic beverages, as a food flavoring, a fuel additive, a solvent, in pharmaceuticals/medicines (rubbing compounds, liquid medicines and lotions), in perfumes/colognes, in the manufacture of denatured alcohol, and is also used to make other chemicals (organic synthesis).



### Where is ethanol found in nature?

Ethanol is naturally released from various plants, during the fermentation process, and as a break down product of organic wastes and sewage. Because of its use in alcoholic beverages, its agricultural use as a fungicide (mold preventer), and its use in many other consumer products, it is released into the environment through various waste streams.

### What does ethanol do in the environment?

Ethanol quickly volatilizes (turns from a liquid to a gas-vapor) when it is released to the air. Ethanol vapors quickly degrades (breaks down) in the air and has a half-life of five (5) days. Note that a half-life is the amount of time a product takes to break down from the original amount of the product to half the amount. Breakdown products of ethanol are acetic acid and formaldehyde.

If spilled on soil, ethanol is expected to be highly mobile. However, most of the ethanol will likely evaporate (turn from a liquid to a vapor). In the air, sunlight speeds the breakdown process. Ethanol is also expected to quickly volatilize from water surfaces such as rivers, lakes and streams. If spilled into a water body, ethanol is not expected to adsorb to the soils suspended in the water or to the sediments on the bottom. The estimated half-life of ethanol in the water range from 3 - 39 days, dependent upon the conditions. In groundwater environments in sandy soils, ethanol half-lives are measured in days.

## How can ethanol enter and leave your body?

- Ethanol can enter your body if you breathe contaminated air (inhalation)
- Ethanol can enter your body if you eat/drink food or water which contains ethanol (ingestion)
- Ethanol can also enter your body through the skin (dermal).

## Can you get sick from exposure to ethanol?

Yes, you can get sick. But getting sick will depend on the contact (exposure) you had with the chemical.

### Exposure:

- How much you were exposed to (dose).
- How long you were exposed (duration).
- How often you were exposed (frequency).
- General Health, Age, Lifestyle  
Young children, the elderly and people with chronic (on-going) health problems are more at risk to chemical exposures

## How does ethanol harm your health?

Acute (immediate) health effects: If you are exposed to high levels of ethanol for a short period of time, you may become dizzy, lightheaded and experience a loss in balance and coordination. High levels of ethanol vapors can also cause eye and upper respiratory tract (throat-esophagus) irritation. Other effects seen, especially in infants and children, include hypothermia (becoming cold), hypoglycemia (low blood sugar), acidosis (increased acidity), electrolyte (salt) imbalances, and an upset GI (stomach-intestine) with possible bleeding. Extremely high doses of ethanol can cause coma, respiratory failure, and even death. Ethanol can also cross the placenta and can cause intoxication of the newborn or teratogenic effects (birth defects), including fetal alcohol syndrome.

Chronic (long-term) health effects: Examples of chronic effects include physical dependence (alcoholism), malnutrition, neurological effects (sleepiness, amnesia, dementia), cardiac myopathy (heart muscle disease), hepatotoxicity (liver problems), GI bleeding (stomach-intestine), esophagus problems and pancreatitis (inflammation of the pancreas). Repeated dermal (skin) exposure can result in drying of the skin. Combined exposure to ethanol and certain other chemicals may result in increased toxic effects.

## Does ethanol cause cancer?

According to the National Toxicology Program, excessive consumption of alcoholic beverages is *known to be a human carcinogen* based on human study evidence that indicate a relationship between heavy drinking of alcoholic beverages and the development of mouth, larynx and esophagus cancers.

## References:

Household Products Database, U.S. Department of Health & Human Services <http://hpd.nlm.nih.gov/index.htm> (accessed August 2012)

NIOSH Pocket Guide to Chemical Hazards. Centers for Disease Control and Prevention. Available at: <http://www.cdc.gov/niosh/npg>.

Report on Carcinogens. 13<sup>th</sup> Edition. National Toxicology Program. 2014

WISER for Windows (Version 4.3.208, Database Version 4.3.7). HHS/NIH, National Library of Medicine. Available at: <http://wiser.nlm.nih.gov/>.

## Where Can I Get More Information?

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