

This fact sheet answers the most frequently asked health questions (FAQs) about ammonia. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It is important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

**HIGHLIGHTS:** Ammonia is found throughout the environment in the air, soil, and water, and in plants and animals including humans. Exposure to high levels of ammonia can cause irritation and serious burns on the skin and in the mouth, throat, lungs, and eyes. At very high levels, ammonia can even cause death. Ammonia has been found in at least 137 of the 1,647 current or former National Priority Sites list identified by the Environmental Protection Agency (EPA).

### What is ammonia?

Ammonia occurs naturally and is produced by human activity. It is an important source of nitrogen which is needed by plants and animals. Bacteria found in the intestines can produce ammonia.

Ammonia is a colorless gas with a very distinct odor. This odor is familiar to many people because ammonia is used in smelling salts, many household and industrial cleaners, and window-cleaning products.

Ammonia gas can be dissolved in water. This kind of ammonia is called liquid ammonia or aqueous ammonia. Once exposed to open air, liquid ammonia quickly turns into a gas.

Ammonia is applied directly into soil on farm fields, and is used to make fertilizers for farm crops, lawns, and plants. Many household and industrial cleaners contain ammonia.

### What happens to ammonia when it enters the environment?

- Ammonia is found throughout the environment in air, water, soil, animals, and plants.
- Ammonia does not last very long in the environment. It is rapidly taken up by plants, bacteria, and animals.
- Ammonia does not build up in the food chain, but serves as a nutrient for plants and bacteria.

### How might I be exposed to ammonia?

- Everyone is exposed to low levels of naturally-occurring ammonia in air, food, water, and soil.
- You may be exposed to higher levels during use of cleaning products containing ammonia.
- You may be exposed to higher levels if you apply ammonia fertilizers or live near farms where these fertilizers have been applied.
- You may be exposed to high levels if you go into enclosed buildings that contain lots of animals (such as on farms).

### How can ammonia affect my health?

No health effects have been found in humans exposed to typical environmental concentrations of ammonia. Exposure to high levels of ammonia in air may be irritating to your skin, eyes, throat, and lungs and cause coughing and burns. Lung damage and death may occur after exposure to very high concentrations of ammonia. Some people with asthma may be more sensitive to breathing ammonia than others.

Swallowing concentrated solutions of ammonia can cause burns in your mouth, throat, and stomach. Splashing ammonia into your eyes can cause burns and even blindness.

**ToxFAQs™ Internet address is <http://www.atsdr.cdc.gov/toxfaq.html>**

### **How likely is ammonia to cause cancer?**

There is no evidence that ammonia causes cancer. The The Department of Health and Human Services (DHHS), the EPA, and the International Agency for Research on Cancer (IARC), have not classified ammonia for carcinogenicity.

### **How can ammonia affect children?**

Children are less likely than adults to be exposed to concentrated levels of ammonia because most exposures occur at work. The effects on children are likely to be the same as for adults. We do not know if exposure to ammonia causes birth defects, or if it can pass to the fetus across the placenta or to infants via breast milk.

### **How can families reduce the risk of exposure to ammonia?**

- Keep products that contain ammonia out of the reach of children.
- Make sure there is adequate ventilation when you use cleaners that contain ammonia, and wear proper clothing and eye protection.
- Never store cleaning solutions in containers that children might find attractive, like soda bottles.
- Avoid farm fields after they have been treated with ammonia or ammonia-containing fertilizers.
- Minimize exposure to ammonia in the workplace by wearing proper safety clothes and equipment, and by following safety rules.

### **Is there a medical test to show whether I've been exposed to ammonia?**

There are tests to measure ammonia in blood and urine. These tests can not definitely determine whether you have been exposed because ammonia is normally found in our bodies.

### **Has the federal government made recommendations to protect human health?**

The Food and Drug Administration (FDA) has determined that the levels of ammonia and ammonium salts typically found in foods do not pose a risk to human health.

The Occupational Safety and Health Administration (OSHA) has set an acceptable eight-hour exposure limit at 25 parts of ammonia per one million parts of air (ppm) and a short-term (15 minutes) exposure level at 35 ppm.

### **Reference**

Agency for Toxic Substances and Disease Registry (ATSDR). 2004. Toxicological Profile for Ammonia. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

**Where can I get more information?** For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs Internet address via WWW is <http://www.atsdr.cdc.gov/toxfaq.html>. ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

