

## THE FACTS ABOUT AMMONIA

### GENERAL INFORMATION

**Note to reader:** This fact sheet is intended to provide general awareness and education on a specific chemical agent. For information on preparedness and response (e.g., for first responders and emergency medical personnel), please refer to the following Department resources:

Chemical Terrorism Preparedness and Response Card

([http://www.health.state.ny.us/nysdoh/bt/chemical\\_terrorism/pdf/chemical.pdf](http://www.health.state.ny.us/nysdoh/bt/chemical_terrorism/pdf/chemical.pdf))

Chemical Terrorism Wall Chart

([http://www.health.state.ny.us/nysdoh/bt/chemical\\_terrorism/pdf/poster.pdf](http://www.health.state.ny.us/nysdoh/bt/chemical_terrorism/pdf/poster.pdf))

#### **What is ammonia?**

Ammonia is one of the most widely produced chemicals in the United States. In pure form, it is known as anhydrous ammonia. Ammonia is also produced in the human body and is commonly found in nature. It is essential in the body as a building block for making proteins and other complex molecules. In nature, ammonia occurs in soil from bacterial processes. It is also produced when plants, animals and animal wastes decay.

#### **What are the properties of ammonia?**

Ammonia is a colorless highly irritating gas with a sharp suffocating odor. It dissolves easily in water to form ammonium hydroxide solution which can cause irritation and burns. Ammonia gas is easily compressed and forms a clear, colorless liquid under pressure. It is usually shipped as a compressed liquid in steel cylinders. Ammonia is not highly flammable, but containers of ammonia may explode when exposed to high heat.

#### **How is ammonia used?**

About 80% of the ammonia produced in industry is used in agriculture as fertilizer. Ammonia is also used as a refrigerant gas, to purify water supplies, and in the manufacture of plastics, explosives, fabrics, pesticides, dyes and other chemicals. It is found in many household and industrial-strength cleaning solutions. Cleaning solutions for industrial use contain higher concentrations of ammonia and can quickly cause irritation and burns.

#### **How can people be exposed to ammonia?**

Most people are exposed to ammonia from breathing its gas or vapors. Since ammonia exists naturally and is also present in cleaning products, exposure may occur from these sources. The widespread use of ammonia on farms and in industrial and commercial locations means that exposure can also occur from an accidental release or from a deliberate terrorist attack.

Ammonia gas is lighter than air and will rise, so that generally it does not settle in low-lying areas. However, in the presence of moisture, ammonia can form vapors that are heavier than air. These vapors can spread along the ground or other low-lying areas.

**How does ammonia act in the body?**

When ammonia enters the body as a result of breathing, swallowing or skin contact, it reacts with water to produce ammonium hydroxide. This chemical is very corrosive and damages cells in the body on contact.

**What are the specific signs and symptoms of ammonia poisoning?**

Ammonia is corrosive. The severity of health effects depends on the route of exposure, the dose and the duration of exposure. Exposure to high concentrations of ammonia in air causes immediate burning of the eyes, nose, throat and respiratory tract and can result in blindness, lung damage or death. Inhalation of lower concentrations can cause coughing, and nose and throat irritation.

Swallowing ammonia can cause burns to the mouth, throat and stomach. Skin or eye contact with concentrated ammonia can also cause irritation and burns.

**What can you do if you think you may have been exposed to a large release of ammonia?**

If you have been exposed to a large release of ammonia such as from a tanker truck rollover or from a leaking tanker rail car, take the following steps:

- Quickly move away from the area where you think you were exposed. If the release was indoors, go outside.
  - If you are near a release of ammonia, emergency coordinators may tell you to either evacuate the area or to "shelter in place." To "shelter in place" means to remain indoors to avoid being exposed to the chemical. While indoors, shut and lock all doors and windows; turn off air conditioners, fans and heaters; and close fireplace dampers.
  - For more information on evacuation during a chemical emergency, see *Facts About Evacuation*. For more information on sheltering in place during a chemical emergency, see *Facts About Sheltering in Place*.
- Quickly remove any clothing that may have ammonia on it. If possible, clothing that is normally removed over the head (like t-shirts and sweaters) should be cut off the body to prevent additional contact with the agent.
  - Place your clothing inside a plastic bag and seal the bag tightly.
  - Do not handle the plastic bag, and wait for instructions on proper disposal.
  - Disposing of your clothing in a sealed bag helps protect you and other people from any additional exposure.
  - Store the bagged clothing in a secure location away from people, especially children.
- Quickly wash any ammonia from your skin with large amounts of soap and water, and flush your eyes with large amounts of water.
  - Remove and dispose of contact lenses.
  - Wash eyeglasses with soap and water before wearing.
  - Do not use bleach to remove ammonia from your skin.
- If needed, seek medical attention right away.

**How is ammonia poisoning treated?**

To reduce the effects from exposure to ammonia, it is important to wash eyes and skin as quickly as possible with large amounts of water.

There is no antidote for ammonia poisoning, but ammonia's effects can be treated, and most victims recover. People who experience serious signs and symptoms (such as severe or constant coughing, or burns in the throat) may need hospital care.

**Will laboratory testing assist in making treatment decisions if someone has been exposed to ammonia?**

Laboratory testing for ammonia exposure will not be useful in making emergency treatment decisions. There are tests that can detect ammonia in blood and urine. However, these tests cannot definitely determine if someone has been exposed to ammonia from an outside source because ammonia is also normally found in the body. A person exposed to harmful amounts of ammonia will notice it immediately because of the strong, unpleasant smell; strong taste; and likely irritation to the skin, eyes, nose and throat.

**How can I get more information about ammonia?**

Call the following numbers, or visit the websites listed among the "Sources."

- Centers for Disease Control and Prevention Public Response Hotline (1-888-246-2675)
- Agency for Toxic Substances and Disease Registry (1-888-422-8737)
- Regional Poison Control Center (1-800-222-1222)

**Sources:**

Agency for Toxic Substances and Disease Registry. 2004. ToxFAQs for Ammonia. Division of Toxicology, U.S. Department of Health and Human Services. Public Health Service: Atlanta, GA. Accessed May 6, 2004.

<http://www.atsdr.cdc.gov/tfacts126.html>

Agency for Toxic Substances and Disease Registry. 2004. Medical Management Guidelines (MMGs) for Ammonia. Division of Toxicology, U.S. Department of Health and Human Services. Public Health Service: Atlanta, GA. Accessed May 6, 2004.

<http://www.atsdr.cdc.gov/MHMI/mmg126.html>

Centers for Disease Control and Prevention. 2003. Public Health Emergency Preparedness and Response Sheets. U.S. Department of Health and Human Services. Public Health Service: Atlanta, GA. Accessed May 6, 2004.

<http://www.bt.cdc.gov/agent/ammonia/index.asp>

This fact sheet is based on the most current information. It may be updated as new information becomes available.

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