



## **Acetonitrile** (CAS #75-05-8) Information for the Public

### **What is acetonitrile?**

Acetonitrile is a toxic, colorless liquid with an ether-like odor and a sweet, burnt taste. It is an extremely dangerous substance and must be handled with caution as it can cause severe health effects and/or death. It is also known as cyanomethane, ethyl nitrile, ethanenitrile, methanecarbonitrile, acetronitrile cluster and methyl cyanide.

Acetonitrile is easily ignited by heat, sparks or flames and gives off highly toxic hydrogen cyanide fumes when heated. It dissolves easily in water. It can react with water, steam or acids to produce flammable vapors that can form explosive mixtures when exposed to air. The vapors are heavier than air and can travel to low or confined areas. Containers of the liquid can explode when heated.

### **How is acetonitrile used?**

Acetonitrile is used to make pharmaceuticals, perfumes, rubber products, pesticides, acrylic nail removers and batteries. It is also used to extract fatty acids from animal and vegetable oils. Before working with acetonitrile, employee training should be provided on safe handling and storage procedures.

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

Exposure usually occurs in the industries where acetonitrile is produced or used. Though unlikely, the general population may be exposed by breathing in the chemical, by drinking contaminated water from a facility using or storing acetonitrile, by skin or eye contact with the vapor or liquid, or by eating food that has been contaminated with acetonitrile. It is also found in cigarette smoke and automobile exhaust.

Exposure can occur by:

- **Breathing** – Inhalation of acetonitrile vapors can cause adverse health effects.
- **Eating/Drinking** – Ingestion of the substance can lead to adverse health effects. This is not a likely route of exposure due to its irritating effects.
- **Skin/Eye Contact** – Vapors and liquids can come into contact with the skin and/or eyes, causing adverse health effects. Acetonitrile can be absorbed through the skin or eyes.

### **How can exposure to acetonitrile affect my health?**

The reaction to any chemical depends on three main factors: the amount one is exposed to, the route of exposure (breathing, touching, ingestion), and the length of time and frequency of the exposure(s).

**Note: Adverse health effects may occur immediately or be delayed for 2-13 hours after exposure to acetonitrile depending upon the amount of exposure.**

### **Short term (acute) effects -**

The following **acute** effects can be noticed immediately or soon after exposure:

- Acetonitrile liquid and vapor can irritate the eyes, nose, throat and lungs.
- Exposure to acetonitrile can cause fatal cyanide poisoning as it changes to cyanide within the body. Symptoms of exposure look like cyanide exposure and can include pink coloring of the skin, dilated pupils, headache, nausea and vomiting, dizziness, weakness, stiffness of the lower jaw, anxiety, pain and tightness in the chest, rapid breathing and pulse, irregular heart beat, shortness of breath, convulsions, loss of consciousness and death.

### **Long term (chronic) effects -**

The following **chronic** health effects can occur after repeated exposures.

- Enlargement of the thyroid gland can last for months or years.
- Headaches, numbness, anorexia/lack of appetite, dizziness, weakness and tremor can occur.
- Inflammation of the skin can occur.
- Animal studies suggest that exposure to acetonitrile can cause increased birth defects and lower birth weight. No information is available on the reproductive effects in humans. However, pregnant women should avoid contact with acetonitrile.
- Exposure to acetonitrile can affect the liver, lungs, kidneys and the central nervous system.

### **What should I do if exposure to acetonitrile occurs?**

**Seek professional medical attention immediately. Fast medical support is very important for successful treatment!**

- **Eye contact** – Flush the eyes with large amounts of water and continue for several minutes, occasionally lifting the upper and lower lids. If possible, remove contact lenses.
- **Skin contact** – If skin contact has been made with the liquid, wash the skin with soap and large amounts of water, and rinse thoroughly. If contact has been made with clothing, remove the contaminated clothing. If necessary, cut the clothing off. Do not pull it over the head. Double bag and place contaminated clothing in closed containers until it can be decontaminated or disposed of properly.

- **Breathing** – Leave the area of the exposure immediately and move to a source of fresh air. Artificial respiration may be necessary if breathing has stopped. *To avoid cross-contamination, do not use the mouth-to-mouth rescue breathing method on another individual if they have ingested or inhaled acetonitrile.*
- **Ingestion** – Rinse the mouth with large amounts of water. Give the individual plenty of water to drink. Keep the individual warm and allow them to rest until medical professionals arrive.

**Are there medical tests to show whether I have been exposed to acetonitrile?**

If you think you've been exposed, contact your physician. If overexposure is suspected the following may be useful:

- Lung, liver, and kidney function tests all show if damage has taken place.
- For repeated exposures or for high-dose, sudden exposures, a blood cyanide test and/or urine thiocyanate test may be useful
- Symptoms may be delayed due to the slow release of cyanide from absorbed acetonitrile. On-going medical monitoring may be necessary.

**How can I prevent or minimize exposure to acetonitrile?**

- Under normal working conditions, use proper handling and storage methods. Be sure to follow posted hazard and warning information. Enclose operations and/or use local exhaust ventilation. Personal protective equipment and respiratory protection may be required. Wash hands before eating, drinking or smoking. Wash thoroughly at the end of the work shift.
- In the event of accidental or intentional release, leave the area immediately. If the release is indoors, leave the building. If the release is outdoors, move away from the cloud or smell.

**Note: Do not rely on sight or smell to indicate an exposure to a chemical release. Some individuals do not have the ability to smell an odor or see a chemical cloud. Acetonitrile has been known to cause “olfactory fatigue,” a condition in which the nose, after exposure to certain odors, is no longer able to detect the odor.**

**For more information on acetonitrile, contact:**

- Michigan Department of Community Health Toxics and Health Hotline:  
1-800-648-6942
- Contact your local public health department. Check <http://www.malphp.org/page.cfm/108/> for your jurisdiction.
- Michigan Occupational Health and Safety Administration (MIOSHA): 517-322-1814
- The Agency for Toxic Substances and Disease Registry: 1-888-422-8737
- The Centers for Disease Control and Prevention Public Response Service Hotline:  
English: 1-888-246-2675  
Español: 1-888-246-2857  
TTY: 1-866-874-2646

**For immediate assistance, call the Poison Control Center hotline: 1-800-222-1222.**