

High Melting Explosive (HMX)

What is High Melting Explosive (HMX)?

High Melting Explosive (HMX) is a man-made, colorless liquid chemical. HMX will dissolve slightly in water. A small amount of HMX will turn into a vapor in the air. It can also attach to dust or particles in air. The taste and smell of HMX are not known. HMX is also known as 1,3,5,7-tetranitro-1,3,5,7-tetraazacyclooctane, octogen and cyclotetramethylene-tetranitramine.

Where can HMX be found and how is it used?

HMX does not occur naturally. It is a man-made chemical made from other chemicals. Since HMX explodes at high temperatures of 534 F° and above, it is used only by the military in certain applications. These include in nuclear devices, plastic explosives, rocket fuels, and booster charges. A small amount of HMX is also formed when cyclotrimethylene-trinitramine (RDX) is made. RDX is an explosive that is much like HMX in its structure. HMX is made at only one location in the United States.

How can people be exposed to HMX?

You could be exposed to HMX through:

- **Breathing** it if you work where HMX is made or used.
- **Drinking** water that has been contaminated with HMX. This could occur in ground water near a place where HMX is made or used. It could also occur near a hazardous waste site.
- **Skin contact** with HMX. This could happen if you shower with water that has been contaminated with HMX. This could occur if you live near a place where HMX is made or used. It could also occur near a hazardous waste site. You could come in contact with HMX if you work where it is made or used.

How does HMX work and how can it affect my health?

There is little information on the possible health effects of HMX on humans. Studies have been conducted only on animals. Studies in rats, mice, and rabbits indicate that HMX may be harmful to your liver and central nervous system if it is swallowed or gets on your skin.

How is HMX poisoning treated?

Depending on the type of exposure, a physician may use several methods of treatment. These include drugs, activated charcoal, and oxygen.

Poison Control Center 24/7 Emergency Contact Number: 1-800-222-1222
DPH 24/7 Contact Number: 1-888-295-5156



Frequently Asked Questions

What should I do if exposed to HMX?

If you believe you were exposed to HMX, seek medical attention. A physician will base treatment on the type and amount of exposure.

What factors limit use or exposure to HMX?

In the workplace, exposure can be limited through safe work practices. These include limiting HMX in the air through ventilation and dust control. Workers should also wear protective clothing and breathing protection. If you live where HMX may be in the groundwater or soil, use bottled water and avoid contact with the soil.

Is there a medical test to show whether I've been exposed to HMX?

You can have your blood, urine, or feces tested for HMX. Since HMX is poorly absorbed after it is swallowed, the levels of HMX in your blood and urine are likely to be lower than those in your feces.

Technical information for HMX

CAS Number: 2691-41-0

Chemical Formula: $C_4H_8N_8O_8$

Carcinogenicity (EPA): The EPA has determined that HMX is not classifiable as to its human carcinogenicity.

MCL (Drinking Water): There is no MCL for HMX. However, the EPA recommends that the concentration of HMX in an adult's drinking water be less than 0.4 milligrams per liter (0.4 mg/L).

OSHA Standards: There are no OSHA standards for HMX.

NIOSH Standards: There are no NIOSH standards for HMX.

Resources

Agency for Toxic Substances and Disease Registry (ATSDR). 1997. *Toxicological profile for HMX*. Atlanta, GA: U.S. Department of Health and Human Services.
<https://wwwn.cdc.gov/TSP/ToxProfiles/ToxProfiles.aspx?id=877&tid=171>

American Conference of Governmental Industrial Hygienists (ACGIH). 2003. *Guide to Occupational Exposure Values*. Cincinnati, OH.

NIOSH Pocket Guide to Chemical Hazards. 2003. Atlanta, GA: U.S. Department of Health and Human Services.

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