

# Impact Area Groundwater Study Program

## Chemical Fact Sheet – HMX

Fact Sheet 2001-04

This fact sheet is a part of a series of chemical fact sheets to address community concerns on public health and environmental issues associated with the Massachusetts Military Reservation (MMR).

### What is HMX?

HMX (Octahydro-1,3,5,7-Tetranitro-1,3,5,7-Tetrazocine) also is known as High Melting Explosive. HMX is produced at military arsenals and is used as an explosive in military munitions. It may be found mixed with other explosives, specifically trinitrotoluene (TNT) and Royal Demolition Explosive (RDX). It is a manmade chemical not occurring naturally in the environment.

### How is HMX used at MMR?

No training with HMX is currently taking place at MMR. In the past, the Army National Guard used artillery shells and mortars for training purposes that contained HMX mixed with RDX and/or TNT.

### Where is HMX found at MMR?

HMX has been found at MMR in both soil and groundwater at the following general locations: the impact area, the explosive training and disposal areas known as Demolition Areas 1 and 2, the contractor and military training ranges located southeast of the impact area (Southeast Ranges), and in several other areas where munitions containing this explosive were utilized.

HMX has been detected in groundwater outside of the base, near the northern area of Snake Pond. It is believed that the detections in this area originated from sources in the Southeast Ranges. None of the detections of HMX found at MMR exceed the current lifetime Health Advisory guidance level for HMX in drinking water.

#### Where can I get more information about this chemical?

For additional technical information and review of current research, contact EPA's Safe Drinking Water Hotline at (800) 426-4791, the Massachusetts Office of Research and Standards at (617) 556-1160, or see the Agency for Toxic Substance and Disease Registry's (ATSDR) Toxicological Profile for HMX.

Information about obtaining this profile is available by calling ATSDR's 24-hour Toxicology Information Service at 888-422-8737. Or at <http://www.atsdr.cdc.gov/toxfaq.html>

To order toxicological profiles contact the National Technical Information Service at (800) 553-6847.

The Impact Area Groundwater Study Program has been working on an investigation and cleanup of groundwater-related contamination on the upper 15,000 acres at Camp Edwards on the Massachusetts Military Reservation since 1997. The goals of the program are to protect public health and safety through their investigation and cleanup actions.

## How may HMX affect my health?

If you are not exposed to HMX, it does not pose a risk to your health. If there is exposure to HMX, several factors will determine whether harmful effects may occur and what the type and severity of those health effects may be. These factors include:

- The dose (how much)
- The duration (how long)
- The route or pathway by which you are exposed (breathing, eating, drinking, or skin contact)
- Other chemicals to which you are exposed

Various other personal factors (e.g. age, sex, family traits, lifestyle, personal habits, state of health).

There is no information available as to whether or not HMX can cause cancer in animals or in people. Information on adverse health effects is limited. In one human study, no adverse effects were reported in workers who breathed HMX. However, concentrations of HMX in the workplace air were not reported in this study and only a small number of workers with effects were investigated. Studies in rats, mice and rabbits indicate that HMX may be harmful to the liver and central nervous system if it is swallowed or gets on the skin.

It is not known if HMX can affect the ability to have children or if it can cause birth defects.

### Is exposure to HMX likely to cause cancer?

The EPA has concluded that there is not enough information to determine whether HMX is a potential human carcinogen.

### How might I be exposed to HMX?

You can be exposed to HMX only when you come in contact with it by drinking, breathing, eating or touching it. Examples include:

- Drinking contaminated water
- Eating plants grown in soil contaminated by HMX
- Breathing contaminated air
- Contacting HMX in water while swimming or bathing
- Playing in contaminated soil

### What Federal and State standards exist to protect public health and the environment?

The EPA has established a lifetime Health Advisory guidance level of 400 ppb (parts per billion) for HMX in drinking water. To date, HMX has not been detected at MMR above this lifetime guidance level. The EPA and MADEP have not established an ambient air level for HMX or a cleanup standard for HMX in soil.

### Contributing Agencies

U.S. Environmental Protection Agency (EPA)  
 Massachusetts Department of Environmental Protection (MADEP)  
 Air Force Center for Environmental Excellence  
 Massachusetts Department of Public Health  
 Army Environmental Center  
 United States Air Force  
 Agency for Toxic Substance and Disease Registry

### For Additional Information, Contact:

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