Maryland Department of the Environment

FACTS ABOUT:

METHYL TERTIARY-BUTYL ETHER (MTBE)

Methyl tertiary-butyl ether (MTBE) is a chemical compound made from a chemical reaction of methanol and isobutylene. At one time, MTBE was produced in very large quantities and was used primarily as a fuel additive in gasoline. During the summer of 2006, the gasoline refiners phased MTBE out of Maryland's gasoline supplies and replaced it with ethanol.

WHY WAS MTBE USED AS A FUEL ADDITIVE?

MTBE replaced lead as an octane enhancer to help prevent gasoline engines from "knocking." MTBE is known as an oxygenate because it raises the oxygen content of gasoline. Oxygen helps gasoline burn more completely, thereby reducing harmful tailpipe emissions from motor vehicles. Most refiners used MTBE in higher concentrations over other oxygenates primarily for its blending characteristics to fulfill some requirements set by Congress in the 1990 Clean Air Act Amendments. MTBE became more prevalently used in the Baltimore-Washington Metropolitan region in 1995 when the Clean Air Act required areas with the worst ground-level ozone air pollution to reduce emissions of pollutants that form ground-level ozone by using reformulated, or oxygenated, gasoline. This continued until the summer of 2006 when ethanol replaced MTBE as the primary oxygenate used by gasoline refiners.

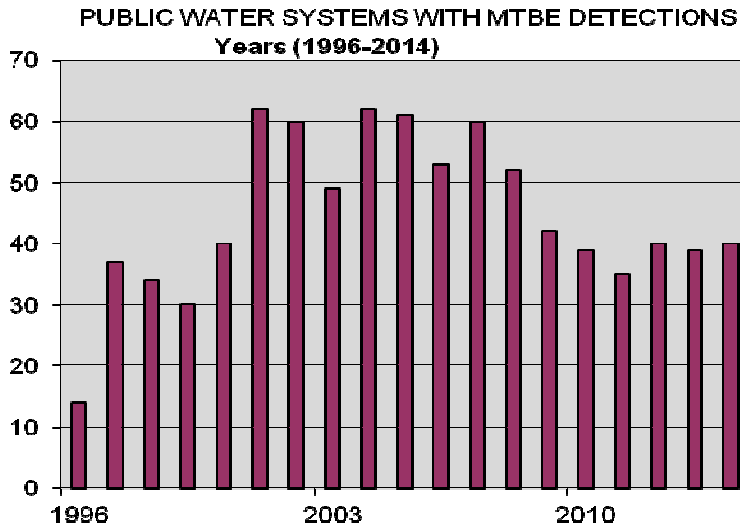
WHY IS MTBE AN ENVIRONMENTAL CONCERN?

MTBE is more soluble and mobile in water, has a smaller molecular size, and is less biodegradable than other gasoline components. MTBE can become introduced into the environment, particularly to water, from leaking underground and aboveground petroleum storage tank (USTs and ASTs) systems through liquid and vapor releases. Other sources of MTBE include atmospheric deposition, storm water runoff, watercraft, and residential fuel use.

IS MTBE A HEALTH CONCERN?

The U.S. Environmental Protection Agency (EPA) reviewed all available information and concluded that there was insufficient data to quantify health risks from low-level MTBE exposures in drinking water. EPA's Drinking Water Advisory, issued in December 1997, states that levels of contamination at or below 20 to 40 parts per billion (ppb) provides a large margin of safety from toxic effects and that water would not have an unpleasant taste and odor. Maryland established a State Action Level at 20 ppb. This is the level at or above which water treatment is required.

HAVE THE WATERS OF MARYLAND BEEN IMPACTED?



Since 1995, MDE has periodically sampled community and non- transient, non-community public water systems for MTBE. Of the 1,007 public water systems, MTBE was detected in 40 systems in 2014. MDE continues to require sampling for MTBE contamination at all petroleum release sites with groundwater impacts. Data from all such sites indicated that 674 domestic wells have been impacted by MTBE to date. Carbon filtration systems are typically installed to remove contamination or alternative water supplies are provided to address MTBE concerns.

WHAT IS BEING DONE ABOUT MTBE CONTAMINATION?

The MDE continues to test for the presence of MTBE in groundwater. For public water supplies, sampling frequency increases when MTBE is detected. For public water supplies or private wells with contamination levels over 10 ppb (i.e. half the State Action Level) an investigation for the contamination source is initiated. For private wells, treatment is recommended for wells with levels at or above 20 ppb at the point of use. However, at higher levels other options including well replacement may be needed. Follow-up action has included providing alternative sources of water, adding treatment, conducting additional monitoring, and implementing remediation strategies. MDE continues to assist local governments to develop wellhead protection programs to reduce the risk of contaminating public supplies. Many local government water sampling programs include MTBE in their sampling.

CONTACTS

For further information please contact the Oil Control Program at (410) 537-3442 or (800) 633-6101 x3442.

To report oil spills call 1-866-633-4686. Available 24 hours a day.

If have questions concerning the presence of MTBE in public water supplies, please contact MDE's Water Supply Program at (410) 537-3714.