Maryland Department
of the Environment

FACTS ABOUT:

METHYL TERTIARY-BUTYL ETHER (MTBE)

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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 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.

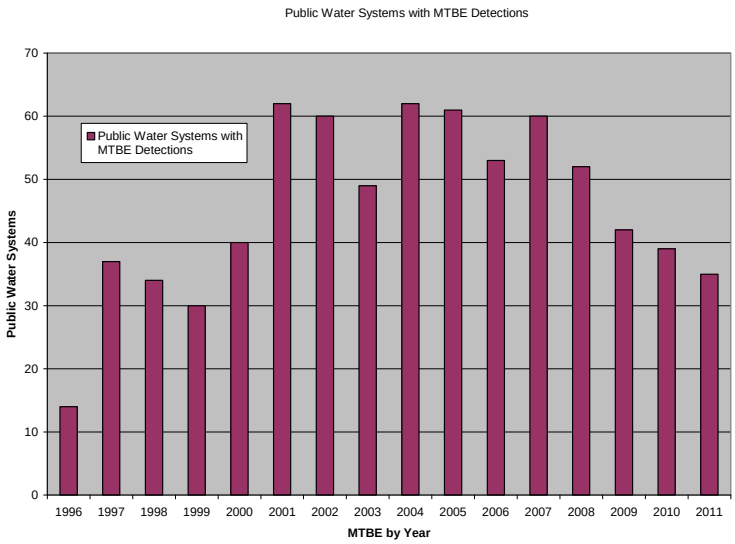
IS MTBE A HEALTH CONCERN?

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 health 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. In 1999, an EPA Panel investigated concerns about MTBE in drinking water supplies. The Panel recommended that EPA work with Congress and the states to implement reforms to protect drinking water

supplies from MTBE while maintaining air pollution reductions. Specific Panel recommendations included:

- Substantially reducing the use of MTBE while ensuring no loss in air quality benefits;
- Enhancing public drinking water monitoring, assessment, and protection programs;
- Enhancing enforcement of UST upgrade or replacement programs; and
- Enhancing programs for public education and clean-up of gasoline spills.

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 1,023 public water systems, MTBE was detected in 35 systems in 2011. MDE continues to require sampling for MTBE contamination at all leaking underground storage tank (LUST) sites with groundwater impacts. Data from all such LUST sites indicated that 652 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 MDE DOING 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, and contamination levels over 10 ppb trigger an investigation for the contamination source. 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 there sampling.

GOVERNOR TASK FORCE ON MTBE:

- On May 11, 2000, the Governor signed an emergency bill that created a Task Force charged with determining and addressing the environmental and health risks associated with ground and surface water MTBE contamination, examining national and regional efforts on MTBE contamination, recommending a plan to minimize and counteract MTBE risks, and exploring alternatives to MTBE. The Task Force published its findings in Preliminary and Final Reports. (Click here to view Governor's Office Press Release)
- The Preliminary Report by the Task Force became available by December 2000. (Click here to download the Preliminary Report)
- The Final Report by the Task Force became available by December 2001. (Click here to download the Final Report)

If you need more information, please contact MDE's Oil Control Program at (410) 537-3442, and if you have questions concerning the presence of MTBE in public water supplies, contact MDE's Water Supply Program at (410) 537-3714.