

Drinking Water and MTBE: A Guide for Private Well Owners

A word about this publication! This brochure provides private well owners with basic information about the gasoline additive chemical methyl tertiary-butyl ether (MTBE). You can get more information about drinking water and MTBE from the resources listed at the end, and you can get help from your local health department.



Do you have a private well?

About 42 million people in the U.S. get their drinking water from household wells, springs, cisterns, and streams (instead of getting piped water supplied by public water systems). Although the federal government does not supervise private wells, most states have requirements for home well installation.

Gasoline is one of many pollution threats to the ground water that supplies your well. If you are a private well owner, the best way to make sure your drinking water is safe is to test it! More importantly, if your water supply is clean now, you can take steps to protect it from pollution in the future (see the section, *How can you protect your drinking water from pollution risks?*, below).

What is MTBE?

MTBE (methyl tertiary-butyl ether) is a chemical added to gasoline to increase octane. Its use began in the 1970's to replace lead in gasoline. After 1995, many metropolitan areas of the country with smog problems also added MTBE to gasoline because it helps to reduce harmful emissions from automobile exhaust. Adding MTBE to gas has been one way to meet EPA's oxygenate mandate.

Why is MTBE a drinking water concern?

Gasoline and heating oil travel through pipelines and are also distributed by truck to above ground and underground storage tanks. Underground storage tank leaks and spills provide major sources of MTBE.

In addition, people store gasoline in cars, boats, planes, lawn mowers, chain saws, generators, and off-road vehicles. Therefore, farm and residential releases, car accidents, spills, boats, and storm water runoff also release gasoline into the environment.

MTBE moves quickly through soil, dissolves easily in water, and takes longer to break down than some other chemicals.

Could MTBE be in your water?

The US Geological Survey has found MTBE in ground water in 24 states, though gasoline with MTBE poses a risk wherever it is used, transported or stored. The USGS has found MTBE in water roughly five times more often and at higher concentrations in areas of the country where MTBE has been used as a fuel additive to reduce pollution. Your local health department may know if people are finding MTBE in your area.

For most people, water with MTBE in very low concentrations tastes and smells "nasty," bitter, or like turpentine. However, natural or water treatment chemicals can hide or increase taste and odors in drinking water. Typically, the levels of any contaminant increase very slowly in a well as the contaminated water moves from the source into the well. The result is that people drinking the water every day may not notice a change in the taste or odor. Over time they may become accustomed to the taste and smell. You may discover the problem only when someone who has not been drinking contaminated water (perhaps a friend from across town or an out-of-town visitor) notices that the water tastes or smells funny. If you suspect contamination, you may want to pay to get your water tested for MTBE. It costs about \$150 per sample, and your state can give you a list of laboratories certified to test for MTBE. EPA recommends yearly testing of private water supplies for nitrate and coliform bacteria. Some states recommend other testing and your local health department may do these water quality tests for you.

How much MTBE is too much?

Most people can taste and smell MTBE in very small amounts. According to EPA's Drinking Water Advisory, EPA reviewed health effects studies in 1997 and noted that drinking water with MTBE levels of 20 to 40 "parts per billion" (acceptable taste and odor) would probably not pose health risks. MTBE at 20 ppb in water is about the same as one drop in 500 gallons of water. EPA has efforts underway to fill some of the data gaps on health effects of MTBE and the extent of its occurrence in drinking water supplies.

Current data on MTBE levels in ground and surface waters indicate widespread and numerous detections at low levels of MTBE. However, in studies to date, only about one percent of the ground and surface water testing positive for MTBE has levels higher than 20 ppb. Leaks and spills from storage tanks have caused a limited number of drinking water wells to have high concentrations of MTBE.

Keep in mind that gasoline contains many chemicals, some of which could be in higher concentration in your water and a much more serious health concern. Immediately contact your local health officials if your water tastes or smells suspicious, and remember to test!




Do you need to take further action concerning MTBE?

If you answer "no" or "unknown" to any of the questions in the following checklist, you should get more information (see the resources at the end of this brochure). If a question does not apply to you, just skip it.

A Checklist for identifying MTBE problems

	<i>Yes</i>	<i>No</i>	<i>Unknown</i>
Have you tested your well water in the last 12 months?			
If gasoline is sold or stored within 1 mile of your well, have you tested your water specifically for MTBE at least once?			
Have you asked the health department if there is any known groundwater contamination reported in your community?			
If you have an underground fuel storage tank (UST), have you tested the tank for leaks in the last 12 months?			
If you have an above-ground fuel storage tank (AST), have you tested the soil around the tank to determine if there have been leaks, drips, or spills?			
If you have an AST, is it protected with concrete containment and do you closely monitor the tank for leaks, drips, and spills?			
If you have either an AST or UST, do you have procedures to prevent leaks, drips, or spills and as well as methods to clean them up immediately?			
If there has been a vehicle accident or other instances of fuel spills on or near your property, have you tested for MTBE since those occurrences?			
Have you tested your water upon recognizing a change in taste, smell, or appearance?			
If you use gasoline-powered equipment, do you prevent leaks, drips, and spills and do you clean them up immediately?			



What can you do if you have MTBE contamination?

Make sure that you get a “certified treatment system” and consult with resources listed at the end of this brochure before you purchase a product. One not-for-profit, non-government organization, NSF International, certifies products to meet national and international standards. (See *Other Internet Websites* at the end of this brochure)

How can you protect your drinking water from pollution risks?

MTBE in gasoline is just one of many types of chemicals that can contaminate your drinking water if not properly used and stored. In addition to gasoline, pesticides, herbicides and other chemicals are used on farms and around households. Use chemicals only as directed by the manufacturer, never apply more than is recommended, and follow proper clean up procedures. Don't build stockpiles! Stockpiling excess chemicals near your home or on your farm could be a contamination problem waiting to happen.

Protect your ground water supply when you build, modify, or close a well. Inspect septic systems, maintain your well cap and surface seals, keep well maintenance records, and do not drink from flooded wells. Take preventative steps to avoid contamination from fuel stored in an underground or above-ground storage tank. Use the checklist provided in this brochure to determine if you need to take action based upon your current or past use and storage of gasoline.

Use the *Home *A* Syst* and *Farm *A* Syst* Pollution Assessment Programs to assess the risk of gasoline and chemical use and storage on your farm or near your home. On the internet access <http://www.uwex.edu/farmasyst> (click on “search” then select “Petroleum Product Management” or “Private Drinking Water Supply” under the Household Topic Search to find worksheets developed in your state or region). To find program contacts in your state, click on the “Resources” button on this web site, or call 608-262-0024.

How real is the threat of MTBE contamination?

The Environmental Protection Agency and many scientific organizations continue to study the health risks and total environmental threat from gasoline containing MTBE. Fourteen states – nine of which are not required to use a fuel additive to limit air pollution in certain areas, have partially or completely banned the use of MTBE within their borders or made other regulations on its use. Even if MTBE is banned, it will be many years before it is eliminated from the environment. According to a report in the March 2001 *Successful Farming* magazine, even a minor spill of gasoline containing MTBE is a big threat to ground water supplies. In one instance, just ten gallons of gasoline containing MTBE was spilled as a result of an automobile accident on one person's property. This single event led to MTBE contamination of the water supply for twelve families.

Summary

You can protect your water supply through good practices that prevent contamination and by testing your water regularly. There is a great deal of information and there are many services available on the World Wide Web if you have a computer and an internet service provider. You can get much of the same information by calling the telephone numbers listed for the resources below. The US EPA and many states have free printed materials about MTBE and other water related topics.

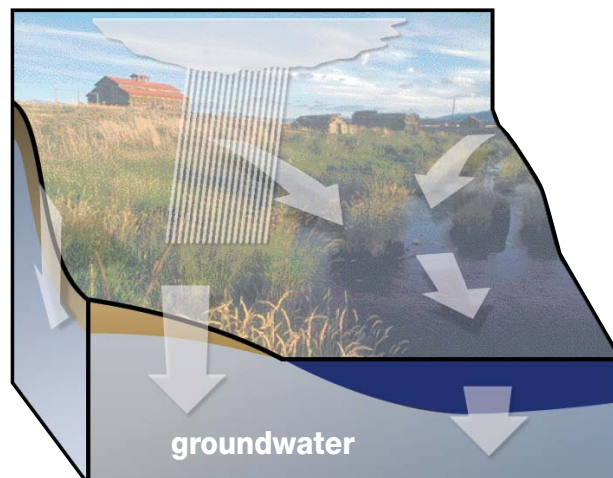


photo by Ken Hammond
diagram by Betsy True

Resources Available in Your State

Public Health

You should first call your local or state public health department concerning local drinking water MTBE issues. Your local office may have some information about MTBE contamination, if it has occurred in your vicinity. A listing of and links to all state health agencies may be found at <http://www.fda.gov/oca/sthealth.htm>.

Natural Resources and Environmental Quality

Each state has a department of environmental or natural resource protection that works closely with the federal Environmental Protection Agency. These state offices help individuals keep their drinking water safe by providing information about well construction and protection. Listings of and links to all state departments may be found at http://risk.lsd.ornl.gov/CRE/CRE_eco_state.html.

Cooperative Extension

County Cooperative Extension agents can help you evaluate risks to your drinking water supply, and find local sources of assistance. Listings of and links to all state University and Cooperative Extension offices may be found at <http://www.recusda.gov/1700/statepartners/usa.htm>. These state web sites in turn will lead you to your county contacts. Links to state *Farm*A*Syst/Home*A*Syst* programs may be found by clicking "Resources" at <http://www.uwex.edu/farmasyst>, or call 608-262-0024.

Resources Available Nationwide

The *Farm*A*Syst* and *Home*A*Syst* Programs, 608-262-0024, <http://www.uwex.edu/farmasyst>, provide farm and home environmental assessment materials and other publications that can help you protect your water supply. Supplies of this brochure may be obtained from this office.

United States Environmental Protection Agency

A number of publications and general information are available via the web site of the EPA Office of Water, Ground Water and Drinking Water: <http://www.epa.gov/safewater/mtbe.html>, and through EPA's general MTBE information web page: <http://www.epa.gov/mtbe/>. These web pages provide an overview of the MTBE issue and recent related actions by EPA. You can go from the "safewater" web page through links to get your local drinking water information ("memo to the states"), drinking water standards, and many other water-related subjects. Both pages also contain many links to EPA and other sites concerning MTBE.

You can call the *Safe Drinking Water (SDW) Hotline* at 800-426-4791 Monday through Friday 9:00am to 5:30pm EST to find out where to get your water tested, and for information specifically on MTBE and other drinking water issues. You can also obtain hard copy EPA publications at

no cost by calling the National Service Center for Environmental Publications (NSCEP) 800-490-9198, or the Water Resource Center (WRC) 202-566-1729. WRC may be reached by fax at 202-566-1736; or email: center.water-resource@epa.gov. Anyone with access to the EPA web site is welcome to print, copy and distribute publication listings. EPA publications have no copy-right restrictions.

The Educational Resources Information Center (ERIC) 800-276-0462, and the National Technical Information Service 800-553-6847 (NTIS), provide EPA publications for a fee.

Information on states that have used MTBE reformulated gasoline is included in *Control of MTBE in Gasoline* (EPA 420-F-00-010), available at www.epa.gov/otaq/consumer/fuels/mtbe/f00010.htm. *Drinking Water Advisory: Consumer Acceptability and Health Effects Analysis* (EPA-822-F-97-009) can be downloaded from <http://www.epa.gov/OST/drinking/mtbe.html>, or obtained from the SDW Hotline.

The EPA Underground Storage Tank (UST) web site, <http://www.epa.gov/swerust1/>, is another good source of relevant information. This site includes a link to the EPA/UST State Investigation Reports on MTBE, which can be accessed directly at <http://www.epa.gov/swerust1/mtbe/mtbestat.htm>.



Other Internet Web Sites and Contacts with Valuable Information Concerning MTBE:

NSF International, <http://www.nsf.org>, operates a product certification program for *water treatment equipment* that is rated for MTBE reduction in drinking water. You can find out about water filtration and obtain names of equipment manufacturers at this web site. NSF's general telephone number is **800-673-6275**.

Water Quality Association (WQA), <http://www.wqa.org>, is another organization that discusses water quality issues such as MTBE and has periodic updates on research in *MTBE remediation*. WQA's telephone number is **630-505-0160**.

American Water Works Association (AWWA) has an MTBE Resource Center, <http://www.awwa.org/mtbe/fact.htm>. AWWA offices in Denver can be reached at **303-794-7711** or in Washington DC at **202-628-8303**.

US Department of Health and Human Services, Public Health Services, Agency for Toxic Substances and Disease Registry provides *ToxFAQs on MTBE* at <http://www.atsdr.cdc.gov/tfacts91.html>. Answers to frequently asked health questions are available by calling **800-447-1544**.

GAO Testimony: MTBE Contamination from Underground Storage Tanks, by John B. Stephenson, director, natural resources and environment, before the Subcommittee on Environment and Hazardous Waste, House Committee on Energy and Commerce. GAO-02-753T, May 21, 2002. <http://www.gao.gov/>

US Geological Survey

These web sites contains information on MTBE and other chemical contamination of ground and surface water, <http://wwwsd.cr.usgs.gov/nawqa/vocns/> or <http://water.wr.usgs.gov/mtbe/>. Or you can call **1-888-ASK-USGS** for information pertaining to biology, geology, hydrology, or mapping. Also, you will find state contacts for the Earth Science Information Centers at <http://mac.usgs.gov/mac/isb/pubs/forms/esicstat.html>.

Materials Available From Selected State Programs

California: MTBE in Drinking Water Fact Sheet, <http://www.dhs.cahwnet.gov/ps/ddwem/chemicals/MTBE/mtbeindex.htm>

Iowa: UST Web Site — contains MTBE-specific information, <http://www.state.ia.us/dnr/organiza/wmad/lqbureau/ust/>

Maine: MTBE Fact Sheet, <http://www.state.me.us/dep/rwm/publications/wprotec.htm>.

Missouri: MTBE Fact Sheet, <http://www.dnr.state.mo.us/mtbe>

New Hampshire: Fact Sheets on MTBE and related issues, <http://www.des.state.nh.us/factsheets/ws/ws-3-19.htm>

Oregon: MTBE Fact Sheet, <http://www.deq.state.or.us/wmc/cleanup/mtbefcst.htm>

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