

Presence of MTBE and other Gasoline Compounds in Maine's Drinking Water Supplies – A Preliminary Report

Bureau of Health
Department of Human Services

Bureau of Waste Management & Remediation
Department of Environmental Protection

Maine Geological Survey
Department of Conservation

SUMMARY

This report presents the preliminary findings from a study of the statewide occurrence of MTBE and other gasoline constituents in Maine's drinking water. Water samples were obtained from 951 randomly selected household wells and other household water supplies (e.g., springs and lakes) and 793 of the 830 regulated nontransient public water supplies. Water samples were analyzed for the occurrence and concentration of the following five gasoline constituents: MTBE, benzene, toluene, ethyl benzene, and xylenes.

Results for Household Wells and Other Private Household Water Supplies

- ✓ MTBE was detected in 150, or 15.8%, of the 951 sampled private wells.
- ✓ 1.1% of the sampled waters showed levels of MTBE above the Maine drinking water standard of 35 ppb. Extrapolated statewide, this represents an estimated 1000 - 4300 private wells in Maine with these levels.
- ✓ 92.3% of the sampled waters showed either MTBE levels that were not detectable or below 1ppb; and 6.6% were between 1ppb and 35ppb.
- ✓ Compared to MTBE, other gasoline compounds were infrequently detected, and levels of BTEX compounds detected were well below health-based standards.
- ✓ Assessed factors which were found *not* to be associated with MTBE detection included: a) recollection on a questionnaire of a noticeable water odor or taste, b) recollection on a questionnaire of a recent nearby gasoline spill, c) type of well or water supply, and d) proximity to gasoline storage tanks (such as a gas station).
- ✓ Location of the water supply in areas with required RFG use as well as with high population density were both associated with detectable MTBE levels. Since RFG use is often required in places of high population density, these two factors are difficult to tease apart from each other. However, further data analysis shows that both seem to be separate risk factors.
- ✓ The risk of required RFG use:
 - In areas of high population density (greater than 180 people per square mile), the risk of MTBE detection was 1.3 times higher in areas where RFG use is required compared to other areas;
 - In areas of low population density (less than 180 people per square mile), the risk of MTBE detection was 2.0 times higher in areas where RFG use is required compared to other areas.
- ✓ The risk of high population density:
 - In areas where RFG use is required, the risk of MTBE detection was 1.4 times higher in areas of high population density compared to other areas;

- In areas where RFG use is not required, the risk of MTBE detection was 2.1 times higher in areas of high population density compared to other areas.

Results for Public Water Supplies

- ✓ MTBE was detected in 125, or 16% of the 793 tested public water supplies.
- ✓ No samples were found to have MTBE levels above 35ppb.
- ✓ 93.9% of the samples showed levels that were either not detectable or below 1ppb; and 6.1% were between 1ppb and 35ppb.
- ✓ Toluene was found in 13.1% of public water supplies - higher than seen in private water samples. However, concentrations of toluene were quite low, mostly less than 1ppb and well below the drinking water standard of 1000ppb. With this exception of toluene, very few public water supplies detected BTEX compounds compared with MTBE.
- ✓ Assessed factors that were found *not* to be associated with MTBE detection included: type of well or water supply and proximity to gasoline storage tanks.
- ✓ Type of water use establishment was found to be associated with MTBE detection. Public water supplies that were businesses or mobile home parks were about twice as likely to have detectable levels of MTBE as compared with community water supplies and schools.
- ✓ Location of the water supply in areas with required RFG use as well as with high population density were both associated with detectable levels of MTBE. Population density itself was a significant risk factor within areas where RFG use was required. However, unlike the private water data, population density was not a significant risk factor in areas where RFG is not required.
- ✓ The risk of required RFG use:
 - In areas of high population density, the risk of MTBE detection was 4.1 times higher in areas where RFG use is required compared to other areas;
 - In areas of low population density, the risk of MTBE detection was 1.7 times higher in areas where RFG use is required compared to other areas.
- ✓ The risk of population density:
 - In areas where RFG use is required, the risk of MTBE detection was 1.6 times higher in areas of high population density compared to other areas;
 - In areas where RFG use is not required, population density appeared to not be a risk factor.