

MTBE and other VOCs in Drinking Water in the Northeast and Mid-Atlantic Region

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Data on volatile organic compounds (VOCs) in drinking water supplied by 2,110 randomly selected community-water systems (CWSs) in 12 states were assembled and reviewed for a cooperative study by the U.S. Geological Survey and the U.S. Environmental Protection Agency. The data include 21,635 samples collected during 1993-98. Sixty-six of 84 VOC analytes were detected in at least one drinking-water sample. Trihalomethanes (THMs) were most frequently detected, with 45 percent of the CWSs reporting a detectable total THM concentration. Chloroform, in 39 percent of the CWSs, was the most frequently detected THM, followed by bromodichloromethane, chlorodibromomethane, and bromoform, reported in drinking-water samples from 32, 26, and 13 percent of the CWSs, respectively.

The gasoline additive methyl *tert*-butyl ether (MTBE) was the next most frequently detected VOC in drinking water, reported in 8.9 percent of 1,194 random CWSs in 10 states (no MTBE data were available for Delaware and Pennsylvania). MTBE concentrations ranged from 0.26 to 210 $\mu\text{g/L}$ in 343 of 5,510 samples. Most MTBE concentrations were low, from 0.5 to 5 $\mu\text{g/L}$, and less than 1 percent of the 1,194 random CWSs reported MTBE at concentrations equal to or exceeding the 20- $\mu\text{g/L}$ lower limit of the USEPA's Drinking Water Advisory. MTBE was detected in 9 percent of systems supplied by ground water and 4.8 percent of systems supplied by surface water, and was strongly associated with areas where reformulated and/or oxygenated (RFG/OXY) fuels are used. Fifteen percent of CWSs with source waters in defined RFG/OXY-use areas reported detecting MTBE at concentrations equal to or exceeding 1.0 $\mu\text{g/L}$, whereas only 3 percent of the CWSs with sources outside the RFG/OXY areas reported similar MTBE detections.

Forty-nine percent of the CWSs that reported MTBE also reported detecting one or more additional VOC in at least one sample. The most commonly co-occurring VOCs were solvents and THMs, whereas other gasoline compounds were rarely observed with MTBE.