

## The Rising Concerns of MTBE Contamination

by Cynthia Turner

Environmental consultants involved in the investigation of underground storage tanks (UST) and the remediation of petroleum-impacted soils and groundwater should consider the potential for MTBE contamination at each project site. Recent findings indicate that MTBE appears to be entering the environment from stations that have USEPA-compliant (40 CFR 280) underground storage tank systems. MTBE appears to be able to escape even though tanks pass tightness tests or have interstitial monitoring or other leak detection methods. The release mechanism is not known, but is believed to be associated with MTBE vapor migrating through gaskets, flanges and connections; slow migration through fiberglass; or small chronic spills at the surface. Pathways that were previously thought to be secure.

MTBE is used as an octane improver (anti-knock agent) and as an oxygenate to improve the clean-burning qualities of gasoline. It is more soluble in water than other gasoline compounds (i.e., BTEX); therefore, it often travels to the front of the contaminant plume and may fractionate from the rest of the plume. As a result, the location of the

BTEX plume may not be representative of the MTBE plume.

Widespread use of MTBE started in 1979, but testing requirements for MTBE did not begin until 1995. Accordingly, site characterization and tank closure documentation supporting "No Further Action" letters for service stations issued before 1996 are subject to potential "re-opening" by regulators due to the potential presence of MTBE. Although the re-opening of these earlier sites may not impact the total liability of firms that serviced these sites, the liability associated with the re-opening of closed sites after 1996 is unknown.

MTBE has an unpleasant taste and odor, much like turpentine and may exhibit a foul odor at low concentrations in drinking water. Currently, there is no data on the effects of human consumption of drinking MTBE-contaminated water; however, in laboratory tests on animals, cancer and non-cancer effects occur at high levels of exposures (either through inhalation or through direct chemical injection). To date, USEPA has not established a Maximum Contaminant Level (MCL) for MTBE in drinking water, but they have issued a health advisory level of 20 to 40 ppb.

MTBE contamination is widespread and is not confined to underground storage sites. Studies by the USGS National Water Quality Assessment

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program indicate the presence of MTBE in groundwater resources that were not specifically traceable to underground storage sites. Therefore, in addition to the concerns associated with MTBE at service stations, other non-service station petroleum risks should be evaluated, such as non-regulated USEPA tanks located on non-commercial farms, residences, and petroleum gathering and production facilities. Single-walled, non-regulated USEPA tanks are of particular concern. Based on the limited sampling data available, concentrations of MTBE are typically not exceeded in drinking water sources. However, an additional concern is that most private wells are not tested for VOCs, like MTBE, after construction and even some public waters are only required to be tested for VOCs every three years.

Due to MTBE's low affinity for soil, soil sampling may not be a reliable indicator for MTBE groundwater contamination. States are recognizing this and currently 43 States require groundwater sampling at sites with leaking USTs. Furthermore, States require different testing methods to detect MTBE, primarily USEPA standard method SW-846 8240/8260 (GC/MS) and SW-846 8020/8021 (GC/PID). As consultants take on new projects in different states, knowledge and understanding of that State's MTBE requirements is critical as each may be under constant revision and updating.

Consultants working in the fields of petroleum-impacted groundwater and soil investigation, monitoring and remediation, as well as groundwater and surface water resource investigations need to be aware of the potential impact of MTBE. The adverse impact of this man-made chemical in the groundwater system is yet to be



quantified. Similarly, the clean-up costs, as well as the scope of liability of responsible parties and professionals hired to identify and remediate such contamination has not yet been realized and will certainly be played-out in courtrooms in years to come. Therefore, it is imperative for consultants and experts to know and adhere to existing and newly imposed State regulations on this emerging issue. Additionally, consultants and experts must take care to understand and provide services in accord with industry standards of care regarding investigating and educating clients on the potential impacts of MTBE. As the professional in this field, clients are depending on your knowledge, experience and foresight to address this issue on their project. They are also willing to hold you responsible for damages resulting from the release of MTBE.

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