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Characterizing the Intrinsic Remediation of MTBE at Field Sites in Texas

The Texas Gulf Coast region produces the majority of the 24 billion pounds of MTBE used annually. Not only is it manufactured locally, it is also used either voluntarily or in compliance with the 1990 Clean Air Act in highly urban areas around Texas as well as many other regions in the nation where reformulated gasoline is recommended. However, MTBE has earned a poor reputation among environmental protection agencies and oil industry competitors due to its recalcitrant nature in groundwater pollution. The emerging evidence on the presence and persistence of MTBE in groundwater at many leaking underground storage tank sites has led the industry to re-examine the use of MTBE in gasoline and the appropriateness of the BTEX remedial technologies in treating MTBE contamination.

This study is aimed at evaluating the natural attenuation of MTBE at field sites in Texas. Very few studies have examined MTBE plume behavior and none have addressed MTBE plume variation with time. In this research, a database of approximately 200 MTBE UST sites is developed. Data from TNRCC (Texas Natural Resource Conservation Commission) information sources were used to develop the database. Sites with at least three years of MTBE data were screened for use in this study. Sites were also selected from the various state regions across Texas. Statistical analyses are undertaken to understand MTBE plume behavior over time and to compare that to changes in BTEX plumes over time. Field-based degradation rates for MTBE are calculated and compared to their BTEX counterparts. Correlations and comparisons are made between "older" spills and more recent spills.