

Methyl tert-butyl ether (MTBE)
Contaminated Groundwater Treatability Study

1.0 METHOD

Advanced Oxidation Technology, Inc. utilized its **VTX** catalyst and 35% hydrogen peroxide in its mobile water treatment system to conduct an onsite test for the treatability of methyl tert-butyl ether (MTBE) in groundwater samples taken from contaminated groundwater at a fuel spill site in western Kentucky. In this test, approximately 100 gallons of contaminated well water was extracted from an existing well with known MTBE contamination and distributed between two treatment units within the mobile unit. One unit received mixing via aeration during the course of a 12 hour study and the other unit was neither mixed mechanically nor aerated (i.e. remained static). Dose rates for the two treatment additives was at 0.1% by volume or 1:1000 for each additive (catalyst and 35% hydrogen peroxide). Three replicate samples were taken from each treatment unit prior to adding the treatment chemicals and three replicate samples from each unit after approximately 12 hours of treatment. All samples were taken as instructed by the laboratory and delivered to the lab with the appropriate chain-of-custody protocol.

RESULTS

Aerated Treatment Unit

Description of Sample	Before Treatment	After Treatment	Average % Reduction
Replicate 1	34,000 ppb	5.4 ppb	>99%
Replicate 2	33,000 ppb	< 5.0 ppb	
Replicate 3	34,000 ppb	5.2 ppb	

Non Aerated and Mixed Unit

Description of Sample	Before Treatment	After Treatment	Average % Reduction
Replicate 1	34,000 ppb	1,500 ppb	95.6%
Replicate 2	33,000 ppb	1,500 ppb	
Replicate 3	35,000 ppb	1,500 ppb	

CONCLUSIONS

It is apparent that the procedure worked effectively utilizing either treatment condition. However, the aerated approach resulted in elimination of essentially all of the MTBE, whereas, the vessel receiving no active mixing or aeration was left with some MTBE (i.e. 1.5 ppm).

Since Advanced Oxidation would recommend utilizing some aeration to mix the water prior to reinjection with bacteria and nutrients, it is safe to say that the process will achieve the desired results necessary to remediate the MTBE to acceptable levels.