Abstract **UCRL-JC-126441 abs**

Evaluation of MTBE Analytical Results. Anne Happel, Lawrence Livermore National Laboratory, and Sarah Schoen, Association of California Testing Laboratories.

As part of an ongoing study evaluating the distribution, fate, intrinsic biodegradation, and remediation of MTBE in ground water, we present results pertaining to the validity of MTBE analytical data. To begin to assess analytical methods for MTBE detection and quantification, we have evaluated analytical results of LUFT groundwater samples analyzed by both EPA Methods 8020 and 8240/8260. We have also conducted a blind performance evaluation study working with commercial analytical laboratories. MTBE field data was evaluated for the occurrence of false positives and for the level of agreement between values reported by EPA Methods 8020 and 8240/8260. In the field data, false positives occurred at a very low rate and only when high concentrations of gasoline compounds were present. These mis-identifications are attributed to the presence of other hydrocarbons such as 3-methylpentane, that may co-elute with MTBE under standard conditions used for BTEX analysis by EPA Method 8020. MTBE values reported by each method were in general agreement for samples containing low levels of gasoline compounds, however, for samples that differed significantly between methods, the 8020 value tended to be lower than the 8240/8260 value. For samples with high levels of gasoline compounds, correlation between methods decreased slightly and in some cases EPA 8020 tended to overestimate low concentrations of MTBE. Based on these field results, we have recommended that LUFT ground water samples continue to be analyzed by EPA 8020 to detect BTEX and MTBE compounds and that one MTBE sample per site be confirmed by EPA method 8240/8260 (i.e. split samples from the well with highest 8020 MTBE concentration). Furthermore, to define MTBE plumes at LUFT sites, we have suggested a detection limit of 10 ug/L where possible. To further test MTBE analytical results from EPA Methods 8020 and 8240/8260, we have performed a study with sixteen commercial analytical laboratories analyzing performance evaluation samples by EPA Methods 8020 and 8240/8260. These samples tested the ability of the laboratories to quantify MTBE in the presence of gasoline compounds and tested for interference of specific gasoline compounds (2-methylpentane and 3-methylpentane) for detection and quantification of MTBE.

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