



Significant depletion in $^{13}\text{C}/^{12}\text{C}$ of the Methoxyl Group in Methyl *tert* Butyl Ether (MTBE) and the implications for the application of Stable Carbon Isotope Studies

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Methyl *tert* Butyl Ether (MTBE) is a synthetic compound which is added to gasoline as an octane enhancer to improve fuel performance and combustion efficiency. However due to concerns of its effect on human health and its low odour and taste thresholds MTBE contamination of local and global potable water supplies is becoming a major issue.

Over the past number of years stable isotope analysis has increasingly become the tool of choice to confirm biodegradation of MTBE. Despite this increasing popularity variations in the carbon isotope ratios of the various carbon atoms within the MTBE molecule have not yet been studied. Results from such a study now reveal that the methoxyl group is significantly depleted in ^{13}C with respect to the entire molecule. We present this data and show that this finding has major implications for the interpretation of isotopic fractionations observed during the biodegradation of MTBE. We also discuss how the highly depleted methoxyl group could be used as a tracer in investigations for elucidation of the mechanisms and pathways involved in its biodegradation.