

Remediation of MTBE Contaminations - a Challenge for the Future



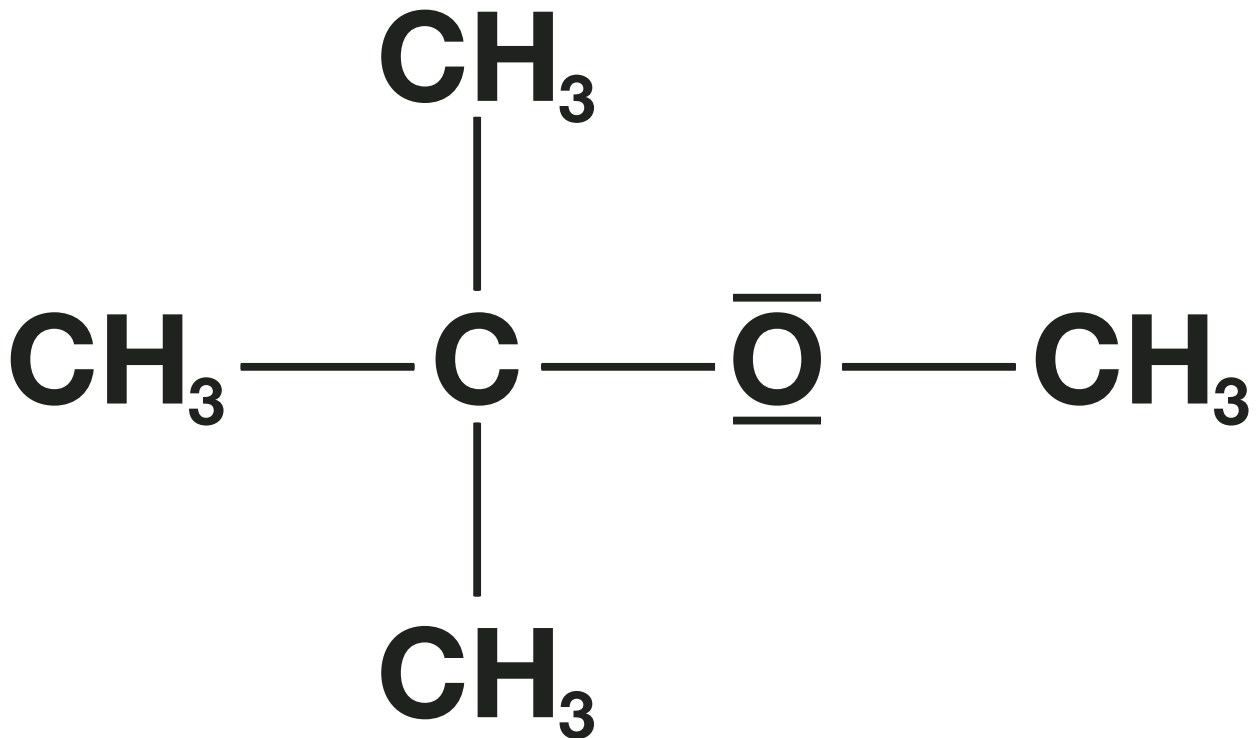
BAUERUmweltgruppe

Planning and Operation:

FWS Filter- und Wasserstechnik GmbH

Scope of work:

Installation and Operation of
Groundwater Treatment Plants
for MTBE contaminated Water



Methyl-tert-butylether

Background

After tetraethyl lead was forbidden in 1985 methyl-tert-butylether (MTBE) was used as an antiknock additive for motor fuel. MTBE is a colourless, volatile liquid and is highly water soluble. With up to 5 % solubility it poses a hazard to groundwater and environment.

MTBE is listed as a carcinogenic chemical. Despite it is considered not to be carcinogenic for human beings hazardous effects can not be excluded. Soon it will be added to the list of environmental hazardous substances.

There are no legal regulations regarding limit values in groundwater so far, but MTBE is added to the analytical parameters analysed while investigating sites under suspicion of contamination in some countries. Other countries will add MTBE to their investigation program in future.

A concentration of 5 mg/l was proposed for a marginal value by the German Federal Consortium Water for groundwater.



Stripper towers are used for the treatment. The process has to be operated with a specific water-air ratio due to the water solubility of MTBE.

Due to the good water solubility (approx. 50 g/l) of MTBE the treatment takes place downstream from the contamination hot spot. At the contamination hot spot the treatment process is influenced by other contaminants like PAH and BTEX. These contaminants are retarded by adsorption processes in opposite to MTBE. Thus MTBE is found as single contaminant downstream and is there easier to be treated.

MTBE concentrations could be reduced with the applied technique to levels below 10 µg/l.

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State-of-the-art treatment for the produced off gas is vapour phase activated carbon adsorption. Due to the low contaminant concentrations in the off gas stream the treatment process is expensive till now.

For that reason BAUER Environment Group is developing a treatment process modification to increase the contaminant concentration in the off gas stream. Sufficient contaminant concentrations in the off gas stream allow the autothermic operation of a catalytic oxidation stage instead of activated carbon. As a result the economic operation of the process is enhanced and costs are saved.

The modification of the process will probably be available this year. Thus BAUER Environment Group is your partner for remediation of MTBE contaminated groundwater now and in future.



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Projects

Bauer Environment Group has carried out several groundwater remediation projects treating MTBE. The contracts were given by clients who realised, that the MTBE problem has to be treated before harm occurs to people or environment.

The clients furthermore realised the necessity to treat MTBE contaminated groundwater in an early stage. Due to biological degradation MTBE is transformed into tert-butyl alcohol (TBA). TBA is even better water soluble than MTBE and thus more difficult to remove from groundwater.

Technology

BAUER Environment Group developed an efficient treatment process for MTBE contaminated water. Therefore standard treatment techniques were modified.