

## 5. High-speed Decomposition of Volatile Organic Compounds and Oil Using Ozone Microbubbles

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The contamination of soil and ground water with volatile organic compounds (VOC) and oil has been frequently confirmed since the execution of Water Pollution Prevention Law and Soil Contamination Control Law. The contaminated soils and water are purified by excavating contaminated soils or pumping groundwater. The groundwater and surface water generated by excavation and the water discharged from pumping wells need to be treated properly to prevent pollution dispersion.

The major wastewater treatment methods currently adopted require much time and high running cost. Then, authors took notice of oxidative decomposition technology using ozone with high oxidizing power and developed a technique for decomposing VOC and oil at high speed by oxidation.

The developed technique reduces the time of treatment by injecting ozone as microbubbles to stay in water for a long time to induce continuous oxidation. The technique is applicable to the treatment of lubricant, oil coolant and ethane materials, which were considered difficult to decompose using conventional oxidative decomposition methods or methods using air as microbubbles. Decomposition requires a short time, so the reaction tanks and other facilities required may be downsized. Running cost can be reduced greatly because few chemicals are used and because only small quantities of mud are produced.

**Keywords:** volatile organic compounds, oil, oxidation, ozone, microbubbles