

## SULFATE-ENHANCED IN SITU REMEDIATION FOR ACCELERATED CLEANUP OF

**Sheri L. Knox\***

**Tim Parker**

EOS Remediation, LLC

1101 Nowell Road

Raleigh, NC 27607

Voice: 919-873-2204

Fax: 919-873-1074

[sknox@eosremediation.com](mailto:sknox@eosremediation.com)

**James F. Cuthbertson**

Antea Group

Novi, MI

The conventional wisdom for remediation of petroleum hydrocarbon (PHC) contaminated aquifers is to add oxygen. However, the importance of naturally occurring anaerobic oxidation processes in the biodegradation of PHCs is now firmly established. Sulfate reduction and methanogenesis appear to be the dominant natural degradation processes at many PHC-contaminated sites and native bacteria capable of using these processes can accelerate the rate of biological degradation of these contaminants of concern.

EAS™ (Electron Acceptor Solution) has been injected at hundreds of PHC-contaminated sites. It stimulates biodegradation by providing a soluble, readily available electron acceptor (sulfate) to anaerobic groundwater bacteria which allows them to use the PHCs for carbon and energy and mineralize them to CO<sub>2</sub> and H<sub>2</sub>O. Sulfate reduction also consumes protons providing an added benefit of maintaining local pH in a more favorable range for bioactivity.

At many sites, BTEX concentrations have been significantly reduced and the plume footprint substantially reduced within a 1 to 2 year post-injection monitoring period. Typically, areas closer to the injections have shown the fastest rates of degradation and the most sustainable contaminant mass reduction. At completion, sulfate levels returned close to pre-injection levels, leaving no long-term source of sulfate at the site. Case studies illustrating the effectiveness of this technology will be discussed.

###