

**IN SITU REMEDIATION OF HYDROCARBONS USING EAS™  
AS TERMINAL ELECTRON ACCEPTORS**

**Timothy Parker**

**Gary Birk**

EOS Remediation, LLC

1101 Nowell Rd

Raleigh, NC 27607

Voice: 919-873-2204

Fax: 919-873-1074

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

**Walter Mulica\***

Global Technologies, Inc.

Fort Collins, CO

It was once thought that aromatic hydrocarbons do not biodegrade under anaerobic conditions. However, the importance of naturally occurring anaerobic oxidation processes in the biodegradation of petroleum hydrocarbons (PHCs) is now firmly established and is considered to be the dominant driving force in natural attenuation of PHCs in the subsurface. This process occurs through the oxidation of the PHC with the reduction of inorganic terminal electron acceptor compounds such as nitrate, sulfate and iron (Van Stempvoort et al., 2007).

Sulfate reduction and methanogenesis appear to be the dominant natural degradation processes at most sites (Wiedemeier et al., 1999). A BP – EPA study on the median consumptions of electron acceptors at 74 sites concluded that most hydrocarbon plumes are anaerobic and depleted of sulfate.

Based on a solid body of published scientific evidence, adding electron acceptors such as EAS™ (U.S. Patent # 7,138,060) to groundwater will aid in increased degradation. EAS™ addition will stimulate biodegradation by providing a soluble, readily available electron acceptor. In the presence of elevated SO<sub>4</sub><sup>2-</sup>, anaerobic groundwater bacteria use the PHCs for carbon and energy while mineralizing the hydrocarbons to CO<sub>2</sub> and H<sub>2</sub>O. In addition, SO<sub>4</sub><sup>2-</sup> reduction consumes protons increasing the pH and enhancing methanogenesis. This presentation will provide information on anaerobic biodegradation of PHCs. The effectiveness of this cost-effective technology and case studies will also be discussed.

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