

**REMEDICATION OF SOILS AND GROUND WATER USING
COMBINED *IN SITU* CHEMICAL OXIDATION AND BIOREMEDIATION**

Eric Nuttall*

Kleinfelder, Inc.
8300 Jefferson, NE Suite B
Albuquerque, NM 87113
Voice: 505-344-7373
Fax: 505-344-1711
enuttall@kleinfelder.com

William Lundy

DeepEarth Technologies, Inc (DTI)
Chicago, IL

Combining abiotic and biotic remediation processes substantially enhances the effectiveness of the remediation effort without increasing costs. This presentation describes the chemical and biological fundamentals followed by field applications. The approach is particularly applicable to petroleum contamination but also works well on chlorinate organic that may be contaminated with petroleum products.

This presentation further describes also the laboratory and field application results using a select modified Fenton's reagent as an in situ chemical oxidant. Unlike other Fenton reactions that require a low acidic pH, this oxidant can be applied under native pH conditions (i.e. 5 to 9), extending the longevity of hydrogen peroxide. In conventional Fenton processes, the liquid hydrogen peroxide reacts with iron salts to produce the oxidizing radicals. Such a reaction is largely uncontrollable and produces excessive heat. The oxidant selected for the site does not require the injection of metal catalysts to activate the production of oxidizing radicals in the substrata. The reaction does not create heat; therefore, there is no volatilization of organic compounds. This is an important safety factor at an active retail facility that includes a meat processing facility.

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