

**ENROLL NOW**

Complete the form below and mail your check ASAP to reserve your seat. You may also enroll by phone with a credit card.

Cost : \$300.00 each attendee

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For hotel reservations contacty the Crowne Plaza Riverwalk Hotel at (210) 354-2800



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**RAVE REVIEWS**

*"This was one of the best and most informative workshops I have ever attended for my continuing education credits."*

–Brian Guillete, Arcadis G&M, Inc.

*"This course is key to successful approaches to site clean-ups. Consultants, industry operatives, and government regulatros all will benefit from Dr. Sublette's presentation."*

–Michael Dale, Conestoga-Rovers

*"I suggest this seminar to anyone who wants scientific-based, up-to-date information on available bioremediation technology."*

–Justin Taylor, Secor International

Remediation & Restoration of Hydrocarbon & Brine Contaminated Soils



**August 30, 2010**  
**8:00 am - 5:00 pm**

**Crowne Plaza Riverwalk Hotel**  
**111 E. Pecan St.**  
**San Antonio, TX**

Instructed by Kerry L. Sublette

## WHO SHOULD ATTEND

- ◆ Technical personnel from oil companies and oil service companies who find themselves with new responsibilities in the environmental arena
- ◆ Landmen
- ◆ Environmental attorneys
- ◆ Non-technical personnel working with and supporting engineers and geologists in the environmental area
- ◆ State and federal regulators/technicians with jurisdiction over remediation of hydrocarbon and brine spills
- ◆ Agricultural extension agents
- ◆ Landowners
- ◆ Plus, anyone needing or wanting an overview of soil remediation

**8  
Professional  
Development  
Hours**

## BENEFITS OF ATTENDING

- ✔ Be able to conduct small to medium size hydrocarbon and brine remediation projects in-house
- ✔ Learn to direct an appropriate monitoring program for soil remediation projects
- ✔ Become more effective in dealing with regulators and landowners
- ✔ Be able to judge the efficacy of products and services offered by outside vendors for soil remediation and monitoring.
- ✔ Continuing Education Credit = 8 PDHs

### \*\*\*\*\*SPECIAL FEATURES\*\*\*\*\*

- ◆ No previous experience in bioremediation, microbiology, soil science, or hydrology required
- ◆ Practical information that you can apply immediately

*“An excellent course, especially for any service companies claiming to be practitioners of land farming and bioremediation techniques. Dr. Sublette’s course removes a lot of the mystique associated with the bioremediation of hydrocarbons by explaining what processes are occurring during remediation, and then provides a pragmatic introduction of how to design, plan, and implement biological treatment processes in the field.”*

-Paul Page, Drilling Environmental Advisor, BP Exploration Ltd.

## AGENDA—

### Bioremediation of hydrocarbon contaminated soils

- ◆ **How the bugs work**
- ◆ **What the bugs need to survive**
- ◆ **How the bugs eat the hydrocarbons**
- ◆ **How to put the bugs to work for you**
  - The landfarming process
    - Making hydrocarbon available to the bugs
    - Creating the right soil conditions
    - Analysis of hydrocarbons in soil
    - Recommended practice
      - \* Making the hydrocarbon the limiting nutrient
      - \* Optimizing environmental conditions
      - \* Supplying oxygen
      - \* Nutrient requirements
      - \* Moisture
      - \* Sampling
      - \* Counting bugs
      - \* Soil gas analysis
      - \* Nutrient analysis
      - \* Toxicity
      - \* Endpoints

### Remediation of brine contaminated soils

- ◆ **Key parameters in brine remediation**
  - EC, SAR, CEC, ESP
- ◆ **Effects of salt on soil structure and plants**
- ◆ **Water requirements**
- ◆ **Maximizing infiltration of water**
- ◆ **Drainage**
  - Enhancing and controlling movement of salt
  - Facilitating the movement of salts from the site in a responsible manner
  - Taking advantage of natural drainage patterns
  - Artificial drainage
  - Erosion

### ◆ **Leaching of salts and restoring soil structure**

- ◆ Facilitating contact between water and salt
- ◆ Maintaining soil permeability
- ◆ Reducing sodicity
- ◆ Amendments

### Restoration and re-vegetation of remediated sites

- ◆ Restoring soil fertility
- ◆ Preparing a seed bed
- ◆ Seeding and establishing plant cover
- ◆ Maintenance and sustainability
- ◆ Moisture

Dr. Kerry Sublette is the Sarkeys Professor of Environmental Engineering at the University of Tulsa. He has over 25 years of experience in a wide variety of bioengineering problems including biodegradation of hydrocarbons, biotreatment of various hazardous waste streams, bioreactor design and scale-up, design and operation of pilot and full-scale bioreactors and bioremediation systems, and remediation of brine-impacted sites. Dr. Sublette worked for 6 years in a corporate R&D environment for Combustion Engineering. In addition to developing new bioprocessing technologies, he was responsible for reviewing the technology base of various bioprocessing and biological waste treatment companies for possible acquisition by Combustion Engineering. Dr. Sublette also has 13 U.S. patents, 10 of those in bioprocessing inventions, and over 100 publications in bioprocessing, bioremediation, and soil remediation. He serves as Director of the Integrated Petroleum Environmental Consortium (IPEC), an EPA Research Center, and chairs the annual International Petroleum Environmental Conference. Dr. Sublette has also provided training in soil remediation for EPA on-scene coordinators and for the EPA Oil Spill Program. Dr. Sublette also currently serves on the Oklahoma Board of Environmental Quality. Recently Dr. Sublette was the key-note speaker on bioremediation at the Kuwait Oil Lakes/Soil Remediation Forum.

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