

Course Syllabus

1. Introduction to Course and Objectives

2. Common SOA vs. SOP Differences

- a. Differences in initial cost vs entire project cycle
- b. Appropriate testing and design vs common alternatives in use
- c. Certainty of meeting goals

3. Role of Conceptual Model Development & Detailed Characterization in Remedial Design

4. Role of Treatability Studies in Remedial Design

5. Role of Pilot Studies in Remedial Design

6. State of the Art Pre-Design Engineering

- a. In situ chemical oxidation
- b. Soil vapor extraction
- c. Enhanced bioremediation
- d. Thermal enhancements

7. Case Studies

8. Wrap-Up / Summary of SOA vs. SOP

Instructor Biographies

Michael Marley, M.Sc., CT LEP, President, XDD Environmental. Mr. Marley is president and cofounder of XDD Environmental, with over 40 years of experience in environmental and civil engineering. He has experience with a full array of remediation technologies and has worked at the forefront of developing design and application protocols for several technologies including, soil vapor extraction, air sparging, and insitu chemical oxidation (ISCO). He performs peer reviews of articles submitted to several remediation journals, including *Groundwater Monitoring & Remediation*, and proposals submitted to the U.S. Department of Defense's environmental R&D program (SERDP). He has published numerous articles and contributed chapters in several monographs and books.

Dennis Keane, M.Sc., P.G. (NH), VP Hydrogeological Services, XDD Environmental.

Dennis is a Geologist at XDD's Stratham, NH office with over 19 years remediation experience. He has an indepth technical and a practical understanding of many insitu technologies. In addition, Dennis has extensive experience in focused Phase II and predesign site investigations, including geostatistical interpretation of available data to yield high quality sampling programs. Mr. Keane's extensive understanding of subsurface mass estimation, hydrogeologic, and fate and transport modeling has enabled timely and cost effective evaluations of remedial options and design configurations for his clients.