

Course Description

Natural attenuation as a potential remediation approach is widely accepted and used in the US and also increasingly applied in Australia as a site management option for organic solute plumes in groundwater.

Natural Attenuation must be supported by sufficient evidence of its effectiveness and requires adequate site characterisation to determine solute plume behaviour, make realistic estimates of attenuation rates and source decay rates, and design an adequate monitoring program to show that natural attenuation is occurring as expected.

For sites where MNA is found to be inadequate or impractical and which require more active remediation approaches for a number of reasons, numerous low-cost technologies for remediating soil and ground water contaminated with organic contaminants have been developed including enhanced bioremediation.

This introductory short course is presented by one of the world's leading experts in the field and provides the practical information needed to understand the evaluation of natural attenuation and enhanced bioremediation as remediation alternatives at sites with petroleum hydrocarbons, chlorinated solvents, and other contaminants in soil and ground water.

It will provide information on underlying concepts of natural attenuation and practical guidelines for evaluating and applying natural attenuation and enhanced bioremediation as remediation approaches.

A selected number of case studies are integrated into the course, which are designed to enhance the participant's understanding of the material and provide opportunities to show real-world data.

This one-day course includes coverage of:

- Introduction to the theory, concepts and application of monitored natural attenuation and enhanced bioremediation for groundwater remediation and management.
- A mix of theory and practical application, using industry relevant examples and case studies.
- Methods of site assessment, lines of evidence, options screening, remedial implementation, performance and long term monitoring approaches.
- Bioremediation concepts, processes and treatment systems.

Course Background

This course has been designed specifically by the Australian Contaminated Land Consultants Association (Victoria) for local conditions and is a repeat of the introductory course held two years ago.

This course aims to provide an introduction to the concepts and practices of MNA. Attendees will gain an understanding of the science of natural attenuation and how to measure, assess and report on natural attenuation and enhanced bioremediation.

Todd Wiedemeier is a leading expert in this field and an experienced and engaging presenter.

"I found Todd Wiedemeier to be an extremely knowledgeable and authoritative expert on MNA. Although a lot of material was covered it was always entertaining. The course notes are an excellent resource and I feel I now have a much better understanding of the processes occurring on my remediation sites and how to optimise them" (Remediation Consultant – Melbourne, October 2007 ACLCA MNA Course).



Introduction to Monitored Natural Attenuation and Enhanced Bioremediation

**26th October 2009 (1 day)
Melbourne, Victoria
Holmesglen Conference Centre**

**A short course offered by ACLCA Victoria
and presented by Todd H. Wiedemeier, PG
and W. Zachary Dickson, PG**



Course Outline and Schedule

26th October 2009

- 7:30 – 8:00 **Registration**
- 8:00 – 9:00 **Overview of Natural Attenuation as a Remediation Approach**
- ◆ Overview of natural attenuation
 - ◆ Geochemistry and microbiology
 - ◆ Basic components of natural attenuation as a remediation approach
- 9:00 – 9:30 **Source Zones**
- ◆ Sources and nature of releases
 - ◆ Relation of solute plumes to hydrogeology
 - ◆ Dynamics of solute plumes in groundwater
 - ◆ Strength and duration of NAPL sources
- 9:30 - 10:00 **Non-Destructive Attenuation Mechanisms**
- ◆ Transport Processes – advection, diffusion, dispersion
 - ◆ Sorption and volatilization
- 10:00 - 10:15 **Break**
- 10:15 – 12:00 **Destructive Attenuation Mechanisms**
- 10:15 – 11:00 **Natural Biodegradation of Fuel Hydrocarbons**
- ◆ Hydrocarbon oxidation
 - ◆ Aerobic and anaerobic degradation
 - ◆ Biodegradation rate constant estimation
- 11:00 – 12:00 **Natural Biodegradation of Chlorinated Solvents**
- ◆ Reductive dechlorination
 - ◆ Patterns of chlorinated solvent biodegradation
- 12:00 - 1:00 **Lunch**

Course Outline and Schedule (cont'd)

26th October 2009

- 1:00 – 2:30 **Lines of Evidence Used to Evaluate Natural Attenuation**
- ◆ Loss of contaminants at field scale
 - ◆ Geochemical and biochemical indicators
 - ◆ Microbiological laboratory data
 - ◆ Data requirements
- 2:30 – 2:45 **Break**
- 2:45 – 4:00 **Site Characterization for Evaluating Natural Attenuation**
- ◆ Approaches to site characterization
 - ◆ Field parameters and methods
 - ◆ Laboratory parameters and methods
 - ◆ Data interpretation
 - ◆ Evaluating evidence of natural attenuation
- 4:00-5:00 **Developing Long-Term Monitoring Plans for Monitored Natural Attenuation**
- ◆ Monitoring well placement
 - ◆ Sampling frequency
 - ◆ Analytical protocol
 - ◆ Data interpretation and presentation
- 5:00 – 5:30 **Question and Answer Session**

Education Level

Introductory to intermediate – assumed that participants have at least 2-3 years industry experience and significant experience in groundwater assessment

Fees

Non-members:

Non-members — **AUS\$650**

ACLCA members - Early bird rate

(for registrations received with payment prior to Friday 25th September 2009)
— **AUS\$480**

ACLCA members - Standard rate

— **AUS\$520**

The course fee includes attendance of the course, course notes and full catering for the duration of the course.

Refunds will only be provided for cancellations received at least ten business days prior to the commencement of the course. No refunds will be offered to registrants failing to attend any part of the course once it has commenced

To register:

www.aclca.org.au

Click on Events

Select event from calendar and click 'register now'

Confirmed registrations will be accepted by Visa or Mastercard

Pending registrations will be accepted by EFT or cheque

Course Location

Holmesglen Conference Centre
Auditorium
Cnr Warrigal and Batesford Rds
CHADSTONE VIC 3148
T 9564 1500

Contact Info

For more information contact Louisa Nicholls of ACLCA Victoria on 9509 5949.

