



## PROGRAM\*

### DAY 1 – September 17 (Tuesday)

#### Morning Session (9:00—12:30)

- Introduction to Environmental Remediation
- Site Characterization Techniques
- Overview of Remediation Technologies - Thermal Remediation

#### Lunch

#### Afternoon Session (14:00-18:30)

- Overview of Remediation Technologies — ISCO, SVE/MPE, P&T
- Question and Answers

### DAY 2 – September 18 (Wednesday)

#### Morning Session (9:00-12:15)

- Overview of Remediation Technologies — MCR, EISB

#### Lunch

#### Afternoon Session (14:00-18:30)

- Overview of Remediation Technologies - MNA
- Technology Selection including Class Exercise
- Closing Session

\*Tentative Schedule

In most instances at least two case studies will be presented with each remediation technology.

## INFORMATION

### Registration Deadline

August 2<sup>nd</sup> 2013

To register, please use the workshop registration form in the website:

[www.sscr2013.weebly.com](http://www.sscr2013.weebly.com)

### Cost

€300

**Payment** can be made by check, cash, or bank transfer:

NIB\*: 0010 0000 2159 5710 0013 5

BIC SWIFT: BBPIPTPL

IBAN: PT50 0010 0000 2159 5710 0013 5

\*must include the name of the participant

**The number of participants will be limited to 25.**

## CONTACTS:

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### Instituto Superior Técnico

Technical University of Lisbon

Av. Rovisco Pais

1049-001 Lisbon, Portugal

# Soil and Groundwater Remediation Workshop

September 17-18, 2013

Lisbon, Portugal



Instituto Superior Técnico  
Technical University of Lisbon



# Soil and Groundwater Remediation Workshop

## OBJECTIVES

The manufacture, storage, use and disposal of chemicals, including petroleum hydrocarbons, chlorinated solvents, polychlorinated biphenyls (PCBs), polyaromatic hydrocarbons (PAHs), pesticides, metals, explosives and inorganics have resulted in soil and groundwater contamination at a number of sites in Portugal. Remediation of affected subsurface material is required at many sites to protect against risk of human and ecological exposure. This 2-day Workshop will provide valuable information and tools that will help site owners, remediation practitioners, regulators and other stakeholders identify and develop appropriate strategies to remediate soil and groundwater contamination using a variety of remediation technologies and techniques, including:

- Monitored Natural Attenuation (MNA)
- Enhanced In Situ Bioremediation (EISB)
- Metal-Catalyzed Reduction (MCR)
- In Situ Chemical Oxidation (ISCO)
- Thermal Remediation
- Soil Vapor Extraction (SVE)
- Multi-Phase Extraction (MPE)
- Pump & Treat

## INSTRUCTORS

### EVAN COX

Mr. Cox is a Principal Remediation Scientist with Geosyntec Consultants (USA/Canada) with 20+ years of demonstrated experience in the development, feasibility evaluation and application of innovative in situ remediation technologies, including MNA, EISB, ISCO, and MCR of chlorinated and recalcitrant chemicals in subsurface environments. Mr. Cox has over 50 professional publications and helped to pioneer the development of MNA and EISB technologies, including bioaugmentation, for remediation of chlorinated solvents, propulsion energetics, and explosives in porous media and fractured bedrock. Finally, he has co-authored multiple guidance documents and educational courses for European Environmental Protection Agencies.

### ANTHONY DANKO, PH.D.

Dr. Danko is a Research Associate with CIGAR and has over 15 years of research and consulting experience in bioremediation of chlorinated and non-chlorinated solvents involving MNA and EISB (including bioaugmentation). He is currently the PI on a FCT funded project to develop new remediation technologies for the cleanup of biofuel spills.

### JAMES CASHWELL, P.E.

Mr. Cashwell is a Senior Associate Environmental Specialist in Olin Corporation's Corporate Environmental Remediation Group (USA). Over his 15+ years of experience in the environmental field, Mr. Cashwell has managed environmental projects involving active remediation design, permitting, construction, and operation as well as projects undergoing long-term monitoring. He was the technical manager of the largest ISCO project completed to date. He has published numerous technical articles in both peer-reviewed journals and conference proceedings including (as a co-author) the Interstate Technology and Regulatory Council's Remediation Process Optimization Guidance Document (USA).

### ANTÓNIO FIÚZA, PH.D.

Dr. Fiúza is a Full Professor at FEUP and Scientific Coordinator of CIGAR. He has more than 30 years of experience managing multidisciplinary projects pertaining to the mining and remediation fields. He has served as a scientific and technical consultant for several Portuguese and foreign companies and has developed several projects for the characterization and remediation of contaminated soils and aquifers.

The course will be taught through a combination of lectures, interactive class exercises, and review/discussion of real-world case studies. Attendees will learn about available tools and approaches for remedial site characterization, remedial alternatives evaluation, remedy selection and design, implementation and performance monitoring. In most instances at least two case studies will be presented with each remediation technology.