INTRODUCTION

This course will cover the problems associated with contaminated land that arise from the unmanaged release of contaminants into the environment with a big emphasis on Non-aqueous phase liquids (LNAPLs), which are organic liquids such as gasoline, diesel, and other petroleum hydrocarbon products that are immiscible with water. Selected topics include: Contaminated land definition; legal framework governing contaminated lands; contaminant types and transportation mechanisms; risk assessment procedures related to contaminated lands; geotechnical site investigation and monitoring related to contaminated lands; remediation and waste disposal methods. A sound understanding of these concepts is necessary to effectively characterize and assess site conditions and potential risks, as well as to evaluate potential remedial technologies or alternatives. Unfortunately, many environmental professionals have a faulty understanding based on out-dated paradigms.

WHO SHOULD ATTEND?

This training course is relevant for new and experienced individuals including: Government Regulatory Authorities, Environmental Consultants, Environmental Engineers, Environmental Geologists, Hydro-geologist, Engineering Geologists, Geotechnical Engineers, and any technically-inclined site owners from Oil and Gas Industry, Mining, Manufacturing and Environmental Due Diligence Transaction advisors.
COURSE AIMS:
The aim of this course is to create awareness and better understanding of contaminated site characterization and risks posed by contaminants, and to develop basic engineering skills and knowledge required to identify appropriate remediation methods for contaminated land and better decision making in evaluating site remedial technologies for achieving site specific project remedial goals.

COURSE OUTCOMES:
By the end of the course, the participant shall be able to:
- Demonstrate their knowledge of the legal framework relating to contaminated lands
- Describe site investigation techniques and monitoring procedures for contaminated lands
- Explain the mechanisms by which contaminants enter and move within soils or groundwater
- Describe and Explain Conceptual Site Models for contaminated sites
- Demonstrate an understanding of site risk assessment for contaminated land
- Demonstrate an understanding of remediation methods subject to both site specific conditions and economic constraints.

TOPICS TO BE COVERED:

**Day 1**
1. Introduction to Contaminated Land (Soil) and Remediation
2. Review of the South African Legal Framework for Management of Contaminated Land
3. Contaminated Site Characterization
4. Sampling Techniques for Soil and Groundwater
5. Developing Conceptual Site Models
6. Risk Assessment for Contaminated Site
7. Phase 1, Phase 2 Site Assessment for Contaminated Sites

**Day 2**
1. Contaminant Transport Mechanisms and Principles
2. Multi-Phase Flow in Porous Media
3. Understanding Non Aqueous Phase Liquids (NAPL) Fate and Transport
4. Assessing and Evaluation of Remediation Techniques
5. Soil Vapour Extraction, Air Sparging, Duo Phase, Multi Phase Extraction, etc.
6. In-situ Bioremediation
7. Monitored Natural Attenuation
8. Evaluation of Remediation Technologies
9. Discussion of Case Studies

GUEST SPEAKERS

Dr Jon McStay

An engineering and environmental geologist with over twenty-two years of consulting experience, Jon specialises in environmental remediation of contaminated land and has extensive marine geotechnical expertise, having undertaken major intrusive investigations and construction projects at the Port of Durban and Port of Port Elizabeth in South Africa, as well as Walvis Bay (Namibia) and Pemba (Mozambique). Jon’s key relevant experience comprises remediation planning, including supporting environmental and human health risk assessments, and negotiation of remediation objectives with relevant regulatory bodies. Further, on behalf of the DEA, Jon was largely responsible for the development of the South African Framework for the Management of Contaminated Land, as well as its supporting National Norms and Standards. Moreover, Jon has recently been appointed to the Steering Committee of the recently established Network for Industrially Contaminated Land in Africa (NICOLA). Within his role as Director at WSP, Jon has recently been appointed as the independent specialist to assess the remediation options for the Bayside Aluminium Smelter in Richards Bay, KwaZulu-Natal, which will be South Africa’s largest remediation project to date. Jon’s past achievements include the remediation of Thesen Island, Knysna, Western Cape, which was South Africa’s first major brownfield property re-development and was winner of a South African Institute of Civil Engineering (SAICE) award for Environmental Engineering.
Dr Steve Kalule

Steve is an environmental consultant with 17 years of work experience with leading environmental and waste engineering consultancies. He qualified with a Master of Science (Cum laude) in Environmental Toxicology and Pollution Monitoring from the University of Ulster in the United Kingdom, and a Doctorate in Environmental Toxicology with specific focus on contaminated site assessment and remediation. Dr Kalule is a member of a number of professional bodies including the Network of Industrial and Contaminated Land Africa (NICOLA), Society of Environmental Toxicology and Chemistry (SETAC), South African Institute of Consulting Engineers (SAICE) among others. He is a the Managing Director of the USK Group of Companies which offers specialist Environmental and Geotechnical Consulting and Contracting Services throughout Africa, Middles East and North America. His main interests lie in development and implementation of innovative and sustainable technologies in contaminated site characterization, investigation and subsequent cost effective remediation. Steve is one of the founding members and lecturer in the development of the contaminated site course at the Faculty of Engineering & the Built Environment, University of Cape Town.

He enjoys working in challenging projects and requiring multifaceted scientific and engineering solutions and this enables him to appreciate the scientific, engineering and biological aspects which often come into play on most projects. Steve has undertaken and managed numerous contaminated site investigation and remediation projects in a wide range industry sectors. He is a regular speaker at a number of international scientific and engineering conferences and guest lecturer at various universities around the world.

Adam Sanderson

As an Environmental Scientist with thirteen years of consulting experience, Adam specialises in the assessment and remediation of contaminated land, as well as the classification, characterisation and management of wastes in accordance with the Globally Harmonised System. Adam commenced his career in the United Kingdom, gaining considerable exposure to a range of different client sectors and numerous projects relating to a range of geo-environmental issues involving contaminated land and remediation, geotechnical design, air quality and waste management, before transferring to South Africa in 2011. Adam has delivered a number of key projects, both in the United Kingdom and Africa, comprising substantial land quality assessments, quantitative human health and environmental risk assessments, contaminant remediation, asset portfolio management, waste management appraisals, environmental compliance and due diligence auditing. Adam’s key experience includes being the presiding Resident Engineer and Project Manager for a contamination and pre-validation investigation associated with a former munitions/ordnance factory covering an area of around 300 hectares; the project represented the first £1 million (GBP) investigation of its kind in the United Kingdom. Further, Adam contributed to the development of the National Norms and Standards for the Remediation of Contaminated Land and Soil Quality within South Africa and also contributed Quality Assurance for the remediation of the Olympic Park in London prior to 2012. Adam is a Certificated Natural Scientist (Level A) with the South African Council for Natural Scientific Professionals and is an Associate Member of the Land Rehabilitation Society of Southern Africa.
COURSE INFORMATION

Format
Each module is structured in the following way: 2 days of intensive contact time, comprising formal lectures.

Cost
The fee for each course is R7500.00, which includes a comprehensive set of course notes. Payment details will be sent on completion of an application form.

Certificates and CPD Points
A certificate of attendance will be awarded to CPD participants. Participants need to attend 80% of the lectures to qualify for an attendance certificate.

Courses are registered with ECSA for 2 CPD points.

CPD participants can also request a formal university transcript, which will show this course as part of a Professional Development Career.

Please note: If you are interested in attending this course for credit purposes, you will need to register for the master’s programme or as an occasional student. If you attend the course as a CPD participant, credit cannot be claimed in retrospect.

Application and cancellation
Application forms are available on the website www.cpd.uct.ac.za/cpd/applications
In order to ensure a place on the course applicants must complete and return a signed application form to the course administrators: Heidi Tait or Sandra Jemaar.

Confirmation of acceptance will be sent on receipt of an application form.

Applications close one week before the start of each course.
Payment is due one week before the start of each course.

Cancellations must be received one week before the start of a course, or the full course fee will be charged

Course Convenor
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