



Department of Civil Engineering  
Motilal Nehru National Institute of Technology  
Allahabad  
Allahabad-211004, Uttar Pradesh, India



# Contaminated Sites: Assessment, Remediation and Risk

November 19-23, 2018

## Overview

Exploration of Industrialization and rapid growth in India over the past few decades have led to a significant increase in soil and water contamination. These contaminated sites which contain elevated levels of toxic and hazardous compounds are having human health and ecological impacts. The environmental and human health impacts of contaminated sites are not always easily recognized, as it takes a long time for certain chronic effects to take effect. Nonetheless, it is imperative that action is taken in order to avoid the impending effects. Most of the impact of contamination in soil and water will manifest in a decrease in life expectancy, chronic health problems, poorer quality of life and an increase in health care costs. Identification of contamination and remedial management of contaminated sites is necessary to protect the populations living nearby.

This course is designed in five modules to give academic scholars and engineering practitioners an in-depth understanding of the different protocols to identify and then develop a cost effective remedial plan for contaminated sites. It will further discuss the different techniques to remediate a contaminated site and bring it up to an acceptable level for its use. Newer and cost effective technologies and their applicability under different conditions will be considered. The human health risk assessment guidelines as developed by the USEPA and Health Canada to identify the risks posed by a contaminated site will be taught. Uncertainty in data and making decisions with sparse data in the context of health risks will also be covered.

Course participants will learn these topics through lectures and hands-on experiments. Also case studies and assignments will be shared to stimulate research motivation of participants.

<b>Modules</b>	<p><b>A. Module 1:</b> Introduction to environmental pollution, sources of pollutants, industrial and municipal pollutants, laboratory methods of evaluation of contaminated matrices, quality assurance and control in laboratory methods, standards and guidance protocols, landfilling and other site management options: <b>November 19-November 20, 2018.</b></p> <p><b>B. Module 2:</b> Environmental site assessment, Phase 1, phase 2 assessments, remedial planning and risk based site remedial plans, Contaminated Site remediation techniques – soil vapour extraction, air sparging: <b>November 20-November 21, 2018.</b></p> <p><b>C. Module 3:</b> Contaminated Site remediation techniques – solidification, bioremediation, thermal techniques, fracturing, barriers and others: <b>November 21, 2018.</b></p> <p><b>D. Module 4:</b> Human Health and Ecological Risk assessment – basic principles and exposure models: <b>November 22, 2018.</b></p> <p><b>E. Module 5:</b> Example of human health risk assessment and associated uncertainty in data, uncertainty analysis using probabilistic and non probabilistic methods, guidance documents: <b>November 22- November 23, 2018.</b></p>
<b>Who should attend</b>	<ul style="list-style-type: none"><li>Executives, engineers, geologist or geophysicist, and researchers from manufacturing, service and government organizations including R&amp;D laboratories.</li><li>Students at all levels (BTech/MSc/MTech/PhD) or Faculty from reputed academic and technical institutions.</li></ul>
<b>Fees</b>	<p>The participation fees for taking the course is as follows:</p> <ul style="list-style-type: none"><li>Participants from abroad : US \$250</li><li>Industry/ Research Organizations: Rs. 5000/-</li><li>Academic Institutions: Rs. 2000/-</li><li>Students: Rs. 500/-</li></ul> <p>The above fee include all instructional materials. The participants will be provided with accommodation on payment basis subject to availability.</p> <p>All course registrations will processed via the national GIAN portal (<a href="http://gian.iitgp.ac.in">gian.iitgp.ac.in</a>), where a Rs. 500/- one-time fee is payable in addition to the above amount.</p> <p>Registration fee can be directly deposited through NEFT to the designated account as given below or can be sent in the form of demand draft (D.D.) drawn on any nationalized bank in favor of “<b>GIAN- CS 2018</b>” payable at Allahabad.</p> <p><b>Account Name: GIAN-CS 2018</b> <b>Account No. : 718400301000321</b> <b>Bank: Vijaya Bank, MNNIT Branch, Allahabad-211004, UP, INDIA</b> <b>IFSC Code: VIJB0007184</b> <b>Last Date of Registration: 09 November, 2018</b></p>

# The Faculty



**Prof. Gopal Achari** is a professor with the Center for Environmental Engineering Research and Education (CEERE) at the Schulich School of Engineering. His research interests include advanced oxidative processes for treatment of priority pollutants, uncertainty analysis in environmental engineering and landfill engineering. He has developed a technology for treating polychlorinated biphenyls (PCBs) in soils using a combination of chemical extraction followed by photolytic dechlorination. The technology is now being piloted for commercial use. His research also spans across to decision making when there is a lack of complete information using fuzzy logic. Having published extensively in these areas, Dr. Achari is the recipient of numerous awards. Dr. Achari is a member of RES'EAU-WaterNET, a Canadian strategic research network devoted to developing affordable solutions for providing clean drinking water to small, rural and First Nations communities. He has established research collaborations across countries, helped organize conferences, workshops and technical sessions. Dr. Achari teaches advanced environmental engineering courses such as water and wastewater engineering, contaminant transport and contaminated sites remediation.

**Prof. Raj Mohan Singh** received his Ph.D. degree from Indian Institute of Technology (IIT), Kanpur, Uttar Pradesh India in Civil Engineering: Hydraulics and Water Resources in year 2004. In year 2005, he joined Motilal Nehru National Institute of



Technology (MNNIT), Allahabad, India as Lecturer in Department of Civil Engineering. Presently, he is working as Professor in Department of Civil Engineering, MNNIT Allahabad, Uttar Pradesh, India. His current research interests include Water Resources Management, especially, groundwater and climate change, conjunctive use of surface water and groundwater, optimization and soft computing. Dr. Singh has published several technical papers in peer reviewed National and International journals/seminars/ conferences/ symposia in area of water resources management. Dr. Singh is also involved as an expert/PI in many esteemed research and consultancy projects of Govt. of India. He is lifetime member of many professional organizations/ societies like ISH Pune, IWRS Roorkee, IAH Roorkee, and IAHS. Also, he is Corporate Member of The Institution of Engineers (India).

## Course Co-ordinator

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## Local Co-ordinator

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<http://www.gian.iitkgp.ac.in/GREGN>