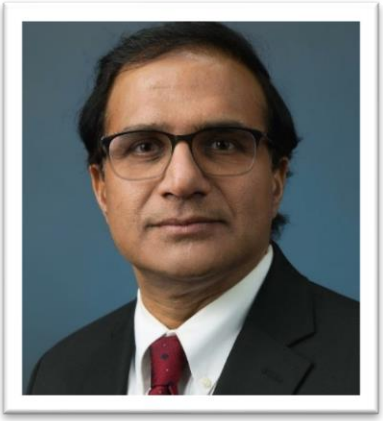
8ICEG Invited Lecture



Prof. Krishna R. Reddy

Professor of Civil and Environmental Engineering, the Director of Sustainable Engineering Research Laboratory

Director of the Geotechnical and Geoenvironmental Engineering Laboratory at the University of Illinois, Chicago, USA

Invited Lecture Title

Risk, Sustainability and Resiliency Considerations in Polluted Site Remediation

【11:05 - 11:35 , Monday 29th Oct. 2018】

Biography

Dr. Krishna R. Reddy is Professor of Civil and Environmental Engineering, the Director of Sustainable Engineering Research Laboratory, and also the Director of the Geotechnical and Geoenvironmental Engineering Laboratory at the University of Illinois, Chicago, USA. Professor Reddy's research expertise includes: (1) environmental remediation of soils, sediments, groundwater, and stormwater; (2) solid and hazardous waste management and landfill engineering; (3) engineering applications of waste/recycled materials; (4) life cycle assessment and sustainable engineering; and (5) geotechnical engineering. He is the author of four books (including the Geoenvironmental Engineering: Site Remediation, Waste Containment, and Emerging Waste Management Technologies, and the Sustainable Engineering: Drivers, Metrics, Tools, and Applications, both published by John Wiley), 208 journal papers, and 196 conference papers (with h-index 53). Dr. Reddy has given 167 invited presentations in the USA and 18 other countries. Dr. Reddy is the recipient of the ASCE Wesley W. Horner Award, the ASTM Hogentogler Award, the University Distinguished Researcher Award, the University of Illinois Scholar Award, and the University of Illinois Award for Excellence in Teaching. He is a Fellow of the American Society of Civil Engineers, a Board Certified Environmental Engineer, and a Diplomate of Geotechnical Engineering. He is also a registered Professional Civil Engineer and an Envision Sustainability Professional.

Abstract

Environmental pollution including the soil and groundwater contamination has been a major problem faced by the U.S., and many other countries across the world. Realizing the impact contaminated sites had on human health and environment, some of the major environmental regulatory agencies were formed that imposed strict regulations to

condemn improper waste disposal practices and to clean up the contaminated sites. Over the years, the environmental regulations and policies have evolved from being ambitious and impractical to a more rational risk-based remediation approach. Several remediation technologies have been developed based on their suitability to different site characteristics. However, the choice of the final remedial technology has always been dictated by its ability to reduce the contaminant concentrations to remedial goals, the cost, and speed of implementation of the technology at the contaminated site. The enormous use of energy and resources by the remediation activities and consequently, the broader environmental impacts that follow from various remediation activities goes unaccounted. In recent years, a more holistic approach, the green and sustainable remediation, involving the quantification of net environmental, economic, and social impacts/benefits (the triple bottom line) of site remediation activities is given great importance to achieve sustainable development. Moreover, with the global climate change and regularly occurring extreme events, it is essential that the remediation plan and design is resilient/adaptable to the extreme events. This study presents an overview of risk-based site remediation approach, and green and sustainable remediation and the tools that aid in quantifying the sustainability of remediation alternatives. In addition, the importance of considering resilient design in remediation projects is discussed. Finally, the challenges and opportunities that needs to be addressed to realize sustainable and resilient remediation are highlighted.