Government of India

Ministry of Human Resource Development

Study of various effects of heavy metals present in bore well water on human system

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Overview

The term "heavy metal" has been generally used for elements that exhibit metallic properties and have potential human or environmental toxicity in high doses. Heavy metals, example lead, arsenic, mercury, cadmium, zinc, etc., are natural constituents of the earth's crust but indiscriminate human activities have drastically altered their geochemical cycles and biochemical balance. While some heavy metals example copper, selenium, zinc, are essential to maintain the metabolism of the human body, at higher concentrations these heavy metals can lead to poisoning. Heavy metal poisoning could result, for instance, from drinking-water contamination (e.g. lead pipes) or intake via the food chain. Heavy metal toxicity, today, is a global problem. It is thus of paramount importance that we educate the present generation about the adverse effects of heavy metals on human systems and effective management of heavy metal toxicity. This course provides an overview of heavy metals, their pathophysiology, epidemiology and management.

This course is organized in seven days. The topics in the program will expose the participants to the entire gamut of Introduction to Heavy Metals, Heavy metal toxicity, Pathophysiology of heavy metals, Lead & Mercury, Arsenic, Cadmium, Chromium, Cobalt and Zinc poisoning, Symptoms and treatment, Epidemiology and Management strategies. Course participants will learn these topics through lectures and field industry trip. Also case studies and assignments will be shared to stimulate research motivation of participants.The course will be planned and offered as per the norms set by the GIAN programme.

Objectives

Upon successful completion of the course, attendees should be able to:

i. Define the spectrum of heavy metals with adverse effects on human health
ii. Describe the epidemiology of adverse effects of heavy metals
iii. List sources and routes of exposure of adults and children to those heavy metals
iv. Understand the mechanism and illustrate the clinical effects of toxicity due to heavy metals
v. Discuss the strategy to prevent adverse effects of heavy metals

Modules	***Study of various effects of heavy metals present in bore well water on human system*** **Dates: 14th November to 22nd November 2016** **Along with the lecture from Dr. Julie Basu Ray, there will be field trip to industry.**
You Should Attend If…	• This interdisciplinary course is designed for students in chemical engineering and life sciences. • This course can be valuable to those involved in environmental sciences. • You are an Chemical / Environmental Engineer or Research Scientist interested in treatment of heavy metal poisoning and analysis • You are a student or faculty from academic institution interested in learning how to do research on Heavy metal pollution
Fees	The participation fees for taking the course is as follows: **Participants from abroad : US $500/-** **Industry/ Research Organizations/ Academic Institutions: Rs. 10,000/-** **Students: Rs. 2,000/-** The above fee includes all instructional materials, computer use for tutorials and assignments. The participants will be provided with accommodation on payment basis. For more details please visit ***www.bmsce.in***

The Faculty

Dr. Julie Basu Ray is Assistant Professor of Biology, School of Science, Technology, Engineering and Mathematics (STEM), Dillard University, United States of America. Her aim is to develop a collaborative, interdisciplinary teaching program, infused with research, involving undergraduate students. Her own broad background has been in Human Physiology with expertise in Cardiovascular Sciences

Dr. Samita Maitra is Professor and Head at Department of Chemical Engineering, BMS College of Engineering, Bangalore. Her research interests are in interfacial phenomena, Biochemical Engineering, Mass transfer, Transport phenomena and Bioenergy. Her aim is to develop a strong competency towards effective management of valuable natural resources.

Dr. Chetan A. Nayak is Assistant Professor at the Department of Chemical Engineering, BMS College of Engineering, Bangalore. His research interests are in Food Engineering, Water Purification using Membrane Processing, Transport Phenomena and Microfludics. His aim is to create a knowledge pool towards protection of depleting natural resources with judicious usage.

Course Coordinator

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Course Registration: http://www.gian.iitkgp.ac.in