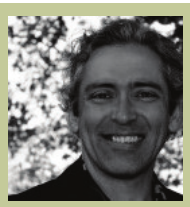
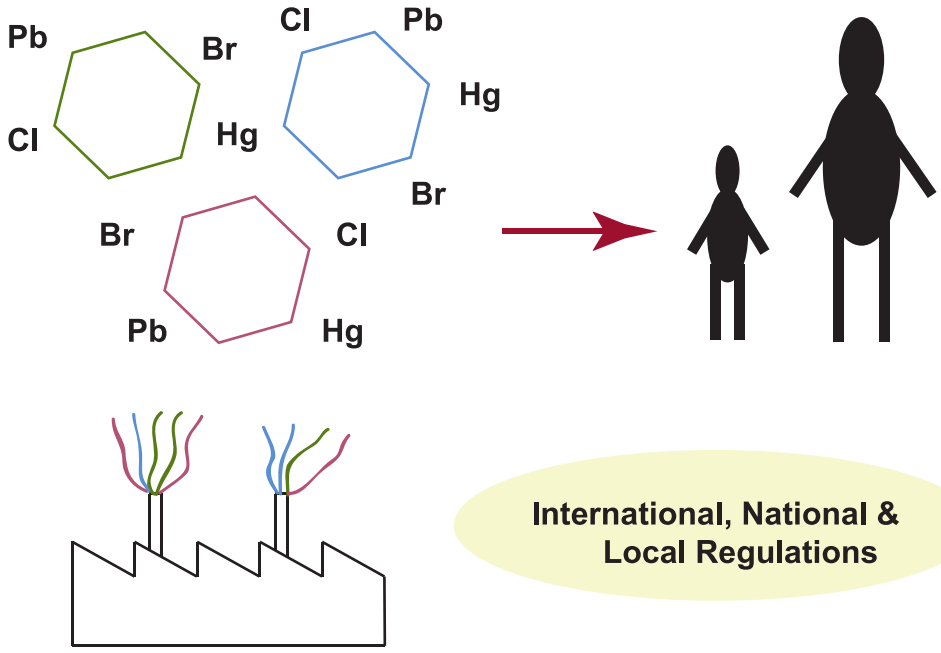
About Prof. Matthew MacLeod



Prof. Matthew MacLeod holds a BSc (1996) in Chemistry from the University of Victoria, and an MSc (1999) in Applied Mathematics and PhD (2002) in Environmental Science from Trent University, Canada. He completed two years as a post-doctoral researcher in the Lawrence Berkeley National Laboratory, USA, and from 2004 – 2010 he was a Lecturer and Senior Researcher at ETH Zurich. Prof. MacLeod is currently a full Professor in the Department of Environmental Science & Analytical Chemistry at Stockholm University, Sweden. Prof. MacLeod has authored over 100 peer-reviewed scientif c articles in environmental chemistry, hazard and exposure assessment of chemicals, and determinants of environmental and human exposure of chemicals.

About Dr. Asif Qureshi

Dr. Asif Qureshi holds a BTech (2003) in Civil Engineering from IIT Kanpur, and MASc from the University of British Columbia. (2006). He completed Doctor of Science (DSc) in Environmental Science from ETH Zurich (2011). He was a post-doctoral researcher at Harvard University, School of Public Health, in the period 2011 – 2013. Since June 2013, Dr. Qureshi is an Assistant Professor at the Indian Institute of Technology (IIT) Hyderabad. He is a current recipient of the INSPIRE Faculty Award from the Department of Science &Technology, India. His research focus is on analysis and interpretation of sources, environmental cycling and fate of harmful substances, and their ef ects on environmental and human health.



Environmental and Human Health Risk Assessment of Chemicals

Sources, properties, distribution, exposure and regulation

29 August - 03 September, 2016

Indian Institute of Technology Hyderabad

Global Initiative on Academic Network (GIAN)

Overview and objectives

Environmental risk factors, expressed through exposure to pollutants in air, water and food, are estimated to play a role in as much as 84% of all diseases globally. Currently, more than 30,000 industrial chemicals are in circulation in the global economy. When released to the environment, many have the potential to travel long distances, persist for years to decades, accumulate in living organisms and cause toxic effects. Chemcials that have the potential to cause harm in regions far from where they are used and released require international management, such as under the Stockholm Convention on persistent organic pollutants, the Minamata Convention and/or the Convention on Long-Range Transboundary Air Pollution. These conventions have enacted policies to control harmful exposure from chemicals that are realized through international or global actions implemented by national governments.

Effective implementation of international policies requires scientific information on emissions of chemicals, their physical and chemical properties, and their propensity to accumulate in living organisms and induce toxic effects. That is, the risks posed by the chemical to the environment and living beings. This course is intended to equip students to understand the basic concepts behind this science and trains him/her to be able to carry out risk assessment. The student is sensitized towards the uncertainties and safety factors inherently embedded in these assessments. The student is also made aware of the procedure for transferring scientific information to policy makers, who then go on to make national and international policies. Real case studies will be used.

Evaluation and Grading

An exam will be conducted. A letter grade will be awarded. A course completion certificate will also be issued.

Lectures and design

Lecture 1 : Introduction. Environmental pollution and health. Calculation of the burden of disease.
Lecture 2 : Production of chemicals. Pollution and health. Case studies.
Lecture 3 : Development of a regulatory framework and formation of international bodies. Historical account and current status.
Lecture 4 : Chemical properties of interest. Experimental, numerical and statistical methods to determine chemical properties.
Lecture 5 : Estimation of emissions.
Lecture 6 : Modeling multimedia fate and transport. Long range transport.
Lecture 7 : Transformation products, sensitivity and uncertainty analysis.
Tutorial 1 : Problem solving session with examples. Chemical properties, multimedia fate and transport.
Tutorial 2 : Problem solving session with examples. Transformation products. Sensitivity and uncer tainty analysis.
Lecture 8 : Hazard metrics. Ecotoxicity tests.
Lecture 9 : Exposure routes. Methods for exposure analysis. Deterministic and probabilistic methods.
Lecture 10 : Dose-effect relationships. PBT (persistence, bioaccumulation, toxicity) assessment criteria.
Lecture 11 : Classif cation of chemicals into hazard categories.
Lecture 12 : From science to policy. Use of scentif c results to help inform policy decisions. Theory and examples.
Tutorial 3 : Problem solving session with examples. Exposure analysis, PBT assessment, and chemical classif cation.

Examination for students

Important Dates

Last date for receiving applictions	21 Aug 2016
Intimtion to participants	5 - 22 Aug 2016
Course dates	29 Aug - 03 Sep 2016

Registration Information

Students **	Rs. 1000
Individuals from academia and government R&D labs	Rs. 4000
Individuals with other af liations	Rs. 10000

Registration: preferably online

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