

# Environmental Chemodynamics

## Overview

What happens to a chemical when it enters the environment? The answer to this question involves tracking the path of a pollutant from its source through the various phases of a highly heterogeneous environment eventually to a biological receptor. The environment is comprised of different composite phases such as water, soil, air, biota, sediment and sub-phases such as mineral, organic matter, pore water and pore vapor. The fate and transport of a chemical from its origin to a receptor involves the resolution of the equilibrium partitioning of a chemical between two phases and its transport across interfaces between two phases or sub-phases in the environment. The partitioning and of transport governs the timescale of chemical dynamics in the environment and plays a critical role in the exposure of receptors to chemicals in the environment. The fate and transport of chemicals in the environment, both within a phase (intra-phase) and across two phases (inter-phase) is controlled by environmental factors and chemical properties. It is important to understand these mechanisms controlling the fate and transport. This can be useful in the process of risk assessment, exposure analysis and remediation design.

## Course Objectives

This course deals with the fate and transport of chemical pollutants entering the natural environment. The objectives of this course are to provide an in-depth understanding of the processes and the mechanisms governing chemical partitioning in the different phases of the environment and the methods to estimate rates of chemical movement across different interfaces in the environment – air/soil; air/water; soil/water; sediment/water. This understanding of chemical fate and transport is vital for conducting human and ecological risk assessment or remedial design. The course is designed to give participants the experience in assessing pollutant fate and transport in various pollution scenarios through problem solving exercises and case studies.

<b>Dates for the Course</b>	<b>November 7 – November 18, 2016</b>
<b>Host Institute</b>	<b>IIT Madras</b>
<b>No. of Credits</b>	<b>2</b>
<b>Maximum No. of Participants</b>	<b>30</b>
<b>You Should Attend If...</b>	<ul style="list-style-type: none"><li>▪ You are a chemical, civil, environmental engineering student or environmental scientist interested in assessing the fate and transport of chemicals in the environment.</li><li>▪ You are practising professional in the area of environmental risk assessment or pollutant transport interested in assessing various environmental scenarios</li></ul>
<b>Course Registration Fees</b>	<p>The participation fees for taking the course is as follows: <b>Student Participants:Rs.2000</b> <b>Faculty Participants:Rs.6000</b> <b>Government Research Organization Participants: Rs.10000</b> <b>Industry Participants:Rs.20000</b></p> <p>The above fee is towards participation in the course, the course material, computer use for tutorials and assignments, and laboratory equipment usage charges. <b>Mode of payment: Demand draft in favour of “Registrar, IIT Madras” payable at Chennai</b> The demand draft is to be sent to the Course Coordinator at the address given below.</p>
<b>Accommodation</b>	<p>The participants may be provided with hostel accommodation, depending on the availability, on payment basis. Request for hostel accommodation may be submitted through the link: <a href="http://hosteldine.iitm.ac.in/iitmhostel">http://hosteldine.iitm.ac.in/iitmhostel</a></p>

## Course Faculty



Prof. Louis J. Thibodeaux is a Professor Emeritus in Department of Chemical at Louisiana State University, Baton Rouge, USA. His research interests are in Environmental Chemodynamics and he has also authored 2 editions of the book in that topic. He has served as the director of the US EPA funded Hazardous Substance Research Center at LSU and Hazardous Waste Research Centers at LSU and University of Arkansas.



Dr. R. Ravi Krishna is an Associate Professor in the Department of Chemical Engineering at the Indian Institute of Technology-Madras, Chennai, India. His research interests are in the area of contaminant fate and transport in the environment.

## Course Coordinator

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