

# Fundamentals of Risk Assessment

## Ecological and Human Health

### INSTRUCTORS

Christopher Wren, Ph.D. and Graeme Spiers, Ph.D.

February 21–25, 2011



Course # ENGR5347

## A One Week Course Covering

- ⇒ Current regulations covering risk assessment and applications in Ontario and Canada will be presented. A full day will be devoted to risk communication and how to present results in a format understandable to the public.
- ⇒ Concepts in toxicology will be discussed since the toxicity of chemicals in the environment is a fundamental component of risk. Some background in biology and chemistry would be helpful to anyone considering this course but is not a pre-requisite.
- ⇒ The course will draw upon case studies to demonstrate how real-life data are used. Guest lecturers will be brought in to provide a wide breadth of experience and case studies on various aspects of risk assessment.

*Dr. Chris Wren recently directed the Sudbury Soils Study which is one of the largest human health and ecological risk assessments in Canada. He has been involved with environmental impact assessments and risk assessment for almost 25 years and brings a considerable amount of practical experience to this course.*

This one week intensive course will provide participants with a detailed introduction to the principles of risk assessment. It will be of interest to students and professionals who may get involved in conducting risk assessments or wish to understand the science behind them. Key guidance documents from Environment Canada and Ontario Ministry of the Environment (MOE) will be used to outline the various stages of risk assessment.



The course qualifies for **Continuing Education Units (CEU)** through the **Engineering Institute of Canada (EIC)**.

### LOCATION

**Willet Green Miller Centre Auditorium**  
933 Ramsey Lake Road  
Sudbury, Ontario

Graduate Students can take the course for 3 credits.

Graduate Students are responsible for paying the cost of the course materials and meals.

**Enrollment will be limited to 30 participants.**

### COST

**CAD \$1,150.00**

additional 250.00 after  
January 21, 2011

### CONTACT DIANE LEPAGE

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To register visit

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# Course Outline: Fundamentals of Risk Assessment

## **Introduction to Risk Assessment:**

Definitions and basic principles

Risk assessment paradigm

Regulatory goals and Key guidance documents: *Environment Canada, Ontario Ministry of the Environment*

## **Case Study in Problem Formulation:**

Conceptual site model (HHRA and ERA)

Sudbury Soils Study: selection of chemicals of concern (COC)

Selection of Valued Ecosystem Components (VECs)

## **Concepts in Toxicology:**

Mammalian and avian toxicology

Aquatic toxicology

## **Ontario Ministry of the Environment; Reg 153/Brownfields Risk Assessment**

Protocols and QPRA (Qualified Person Risk Assessment)

QPESA (Qualified Person Environmental Site Assessment)

## **Human Health Risk Assessment (HHRA)**

Threshold vs. non-Threshold chemicals

Exposure pathways, data collection and models

Exposure models: probabilistic and deterministic

Risk Characterization

## **Ecological Risk Assessment**

Receptors and VECs

Exposure pathways

Selecting Toxicity Reference Values (TRVs)

Risk Characterization

**Risk Communication** - A full day will be devoted to this subject that is important to students and professionals. Students are sure to enjoy this informative session taught by Mr. Trevor Smith-Diggins who is a specialist in the field of communications.

## **Risk Management**

How to manage risks including case studies