

The University of Toronto

School of Environment

ENV1704: ENVIRONMENTAL RISK ANALYSIS AND MANAGEMENT

Academic Term: Winter 2023
Day / Time: Monday 10:00 to 1:00
Place: WI 523
Instructor: Dr. Christopher Ollson,
Adjunct Professor, UTSC
Senior Environmental Health Scientist
Ollson Environmental Health Management
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Course Summary

This course introduces the principles of environmental toxicology and risk assessment. Study of the basic principles of toxicology, including routes of exposure, dose response, and target organ effects from exposure to environmental toxicants will be covered. The course presents the quantitative methods used to assess the human health risks associated with exposure to toxicants, focusing on the four major components of risk assessment - hazard identification, dose-response assessment, exposure assessment, and risk characterization. Risk communication and public consultation will also be addressed. The course will include an overview of Canadian regulations and policies and their impact on the practical realities facing practitioners, policy makers and stakeholders.

We will explore risk assessment issues related to exposure to contaminated sites, air quality and projects undergoing Environmental Assessment. The intent is to make this course hands on and practical so that you are able to participate as a team member conducting human health and ecological risk assessment upon its completion. The course will be based on actual undertakings of Canadian risk assessment projects.

Throughout the course there will be a series of timed quizzes that will involve short answer questions. These may require making calculations to arrive at the correct answers. There will also be a culminating task over the reading week and a final written term assignment at the end of the course. In the past the final assignment was a collaborative effort, but given challenges during Covid it may be an individual assignment. This will be decided by Reading Week.

Reading List

The following reading list will be provided to students electronically on Quercus.

Federal Contaminated Site Risk Assessment in Canada. Part I: Guidance on Human Health Preliminary Quantitative Risk Assessment (PQRA). 2012. Version 2.0. Health Canada.

Federal Contaminated Site Risk Assessment in Canada. Part II: Health Canada Toxicity Reference Values (TRVs). 2021 Version 3.0. Health Canada.

Mark Assignment

Participation	5%	This will be tracked through attendance and participation in discussion groups
Quizzes	20%	There will be 2 timed in class quizzes spaced throughout the course.
Assignment 1	35%	Conduct Preliminary Quantitative Risk Assessment (PQRA)

Term Project

Term Report	40%	Students will select either <ol style="list-style-type: none">1. a chemical to explore its environmental toxicology, development of TRVs around the world, human and ecological considerations and a contaminated site issue which will require the development of appropriate remediation / risk management plan2. Environment topic that has received high profile and has an associated risk assessment that can be reviewed. Students will present both the proponent's and opposition arguments and choose a stand.
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Course Outline.

Jan 9	History of Toxicology and Risk Assessment
Jan 16	Principals of Toxicology and Development of Toxicity Reference Values
Jan 23	Environmental Contaminants
Jan 31	Contaminated Site Assessment / Human Health Risk Assessment /
Feb 6	Environmental Quality Guidelines / Preliminary Quantitative Risk Assessment
Feb 13	Methyl Mercury in Damn Projects (Assignment 1 distributed)
Feb 20	Reading Week - No Class
Feb 27	Air Quality Risk Assessment (Assignment #1 Due)
Mar 6	Wind Energy Health Assessment (Quiz 1)
Mar 13	Health Impact Assessment
Mar 20	Risk Assessment in Support of Environmental Assessment
Mar 27	Risk Communication (Quiz 2)
April 3	Discussion Time Available for Term Papers
April 11	Term Papers Due for Students graduating in June
April 20	Term Papers Due for students not graduating in June