The University of Toronto

School of Environment

ENV1704: ENVIRONMENTAL RISK ANALYSIS AND MANAGEMENT

Academic Term:	Winter-Spring 2022
Day / Time:	Monday 10:00 to 1:00
Place:	Online Synchronous Until End of January
Instructor:	Dr. Christopher Ollson, Adjunct Professor, UTSC Senior Environmental Health Scientist Ollson Environmental Health Management christopher.ollson@gmail.com

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 realties 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.

With the Covid restrictions this course will be delivered online synchronous until at least the end of January. It will be delivered through Quercus Blackboard Collaborate on Mondays from 10 am - 1 pm. This will help us to be as interactive as possible. I will be recording these sessions and will post in case you miss the lecture. However, it is expected that you will attempt to make the live sessions and use recordings as a back-up.

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 will likely 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	10%	This will be tracked through Quercus, BlackBoard and participation in discussion groups
Quizzes	20%	There will be 2 timed online quizzes spaced throughout the course.
Assignment 1	30%	Conduct Preliminary Quantitative Risk Assessment (PQRA)
Term Project		
Term Report	40%	Students will select either 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 plan 2. 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.

Course Outline.

Jan 10	**History of Toxicology and Risk Assessment**
Jan 17	**Principals of Toxicology and Development of Toxicity Reference Values**
Jan 24	**Environmental Contaminants**
Jan 31	**Contaminated Site Assessment / Human Health Risk Assessment /**
Feb 7	**Environmental Quality Guidelines / Preliminary Quantitative Risk Assessment**
Feb 14	**Methyl Mercury in Damn Projects (Assignment 1 distributed)**
Feb 21	**Reading Week - No Class**
Feb 28	**Air Quality Risk Assessment (Assignment #1 Due)**
Mar 7	**Wind Energy Health Assessment (Quiz 1)**
Mar 14	**Health Impact Assessment**
Mar 21	**Risk Assessment in Support of Environmental Assessment**
Mar 28	**Risk Communication (Quiz 2)**
April 4	**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**