

1.0 Administrative Coverage

University of Guelph

School of Engineering

ENGG*4510 Assessment and Management of Risk

ENGG*6010 Assessment and Management of Risk

Winter 2013



Examples of Concerns

- hazardous waste cleanups – how clean is clean enough?
- permitting activities for water and air discharges,
- input to land and water management decisions related to open land, forests, watersheds and estuaries,
- flood protection
- food safety,
- non-chemical risks, and,
- establishing environmental quality standards and guidelines

Objectives of the Course

- use the knowledge of everyday risks in society, to establish the context of risk management for human health and the environment;
- assemble, interpret, and analyze environmental data as a basis from which risk assessments can be developed for protection of human health and the environment;
- identify strategies which can be used to determine - additional data needed, to make a decision;
- develop concepts, and then build the concepts/techniques in risk assessment, for application to simple and complex environmental issues;
- understand how to access various data sources from epidemiology and toxicology; and,
- develop plans for appropriate risk management, reflecting legal, economic, and socioeconomic considerations

Objectives of the Course

- concepts of risk as understood by the general public;
- cover basic statistical concepts;
- exposure assessments to human health and the environment;
- bio-accumulation, biomagnification, ecological modeling, and dose-response methodologies;
- quantitatively characterize risk to human health and the environment;
- building risk assessment methodologies
- risk communication and management strategies

Topics to be Covered

(not necessarily covered in the order indicated)

- 1 Background to exposure risks to human health and safety
- 2 Public perception of risk and influence on decision-making
- 3 Fundamentals of statistics and probability
- 4 Elements of fate and transport of chemicals
- 5 Receptor impacts - ecological and human
- 6 Exposure assessments and dose response information
- 7 Databases and information sources
- 8 Risk assessment methodologies for human health
- 9 Risk assessment methodologies for the environment
- 10 Monte Carlo analytical procedures
- 11 Risk communication and management
- 12 Case studies
- 13 Larger views of risk including developing world considerations.

Method of Evaluation

- Quizzes 10%
 - Project 25%
 - Midterm 25%
 - Final 40%
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- Quizzes will be in class on Jan 22, Feb 5, Mar 5 and Mar 26 (best 3 of 4 to be counted as 10%)
 - Midterm will be Feb 14th in class.

Course Materials

- McBean, E., and Rovers, F., 1998, Statistical Procedures for Analysis of Environmental Monitoring Data and Risk Assessment, Prentice-Hall Publishing Co. Inc., Englewood Cliffs, New Jersey
- Available for purchase 60\$

- Current timeframe of class
- TU & TH from 2:30 to 4:00 Tu and Thur
Mack 226
- And TH from 4:00 to 5:00 in Mack 226