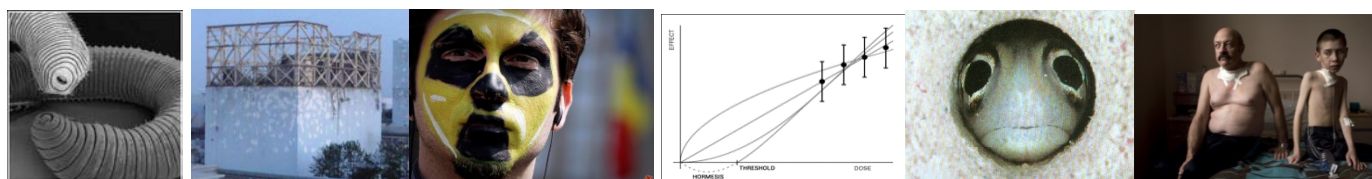


# KJM360: Assessing Risk to Humans and the Environment

9-19<sup>th</sup> June 2020, NMBU, Norway

Organised by the Centre for Environmental Radioactivity (CERAD), Norwegian University of Life Sciences (NMBU) and supported by IUR



## Course Aims and Overview

The aim of the course is to give students a grounding in the theory and skills needed to carry out environmental risk assessment for humans and non-human organisms. This will include hands-on training in the ERICA assessment tool. In addition to learning the basic theory and strengths of risk assessment and management, students are given insights into the assumptions, uncertainties and limitations of the tools and models. The central theme is environmental risk assessment, hence the main focus is the exposure of humans to radionuclides in the environment, as well as the exposure of non-human biota to ionising radiation. The course does not cover worker or medical exposures, although these themes are touched upon when the tools used are similar (e.g., radiation dose calculations and epidemiology). The course concentrates on the approaches used in radiation risk assessment and management, but it also compares these with approaches used in the assessment of other chemicals and stressors. This provides nuclear science and radiation protection students with important insights into similarities and differences in risk assessment and management of ionising radiation as compared to other stressors. Such comparisons make the course relevant to students working in other areas of environmental risk assessment. Topics covered include generic risk assessment approaches, international regulation and policy, risk communication and perception, and social and ethical aspects of risk management. It is open to students of environmental science, ecology and nature management, as well as those from nuclear sciences. Professionals may also attend all or parts of the course, for example to obtain certification in assessment tool training.

**Teachers:** Prof Deborah Oughton (CERAD/NMBU), Prof Per Strand (CERAD/NRPA), Prof Andrzej Wojcik (Stockholm University); Prof Larry Kapustka, (Canada), Prof Paul Schofield (Cambridge Univ, UK), Prof Richard Wakeford (Manchester University), Prof Carmel Mothersill (McMaster University), Prof Brian Wynne (Univ Lancaster)

**ECTS accreditation:** Bologna Accredited 10 ECTS

**Accommodation:** Ranges from rooms in student residence halls to shared apartments and hotels. A limited number of accommodation support grants are available.

**Extracurricular activities:** Cultural activities, sightseeing and a Midsummer Barbeque will be organised

**Application Deadline 30<sup>th</sup> April 2020**

## Detailed course contents and modelling/assessment tool activities:

The course is mainly lecture based, with two days dedicated to hands-on training in the ERICA risk assessment tool.

### **Day 1: Tuesday 9<sup>th</sup> June**

*Morning:* Introduction to Human, Environmental and Ecological Risk Assessment (Deborah Oughton, NMBU)

*Afternoon:* Ecological Risk Assessment: Chemicals and Radionuclides (Deborah Oughton, NMBU)

### **Day 2: Wednesday 10<sup>th</sup> June**

*Morning/Afternoon:* Assessing risks from ionising radiation: General Introduction to Radiological Protection (Per Strand DSA)

### **Day 4: Thursday 11<sup>th</sup> June**

*Morning:* Biomarkers for wildlife assessment (Carmel Mothersill, Canada)

Assessing human radiation risk following high dose exposures (Andrzej Wojcik, SU)

*Afternoon* Data Collection, Treatment and Storage (Paul Schofield, Cambridge, UK)

### **Day 3: Friday 12<sup>th</sup> June**

*Morning/Afternoon:* Human Risk Assessment - Epidemiology (Richard Wakeford, Univ Manchester)

## ERICA ASSESSMENT TOOL MODULE

### **Day 5-6: Monday 15<sup>th</sup> June and Tuesday 16<sup>th</sup> June**

Assessing Risks to Non-human biota: ERICA Assessment tool introduction and training sessions (Dr Justin Brown, NRPA and Boris Facilia, Sweden)

### **Day 7: Wednesday 17<sup>th</sup>**

*Morning/Afternoon:* Ecosystem Approach and Ecological Risk Assessment and Management; Ecosystem Services (Larry Kapustka, Canada)

### **Day 8: Thursday 18<sup>th</sup> June**

*Morning:* Title TBD (Per Strand ? DSA)

*Afternoon:* Radiosensitivity/labwork (Dag Anders Brede, CERAD)

### **Day 9: Friday 19<sup>th</sup> June**

*Morning:* Social and Ethical Aspects of Risk Assessment and Management – Including Case studies from Chernobyl and Fukushima (Deborah Oughton, NMBU)

*Afternoon:* Risk, Uncertainty, Communication and Public Attitudes: STS studies (Prof Brian Wynne, University of Lancaster/CERAD)

The ECTS exam is a course assignment to carry out a risk assessment on either human or environmental case (10 ECTS). This can be the choice of the student or an assignment provided by the course tutors. Students are expected to spend one week on research for the risk assessment assignment, and will be given tutoring (distance) by the course teachers during this time.

Course Organisers: Prof Deborah Oughton and Prof Per Strand (CERAD)