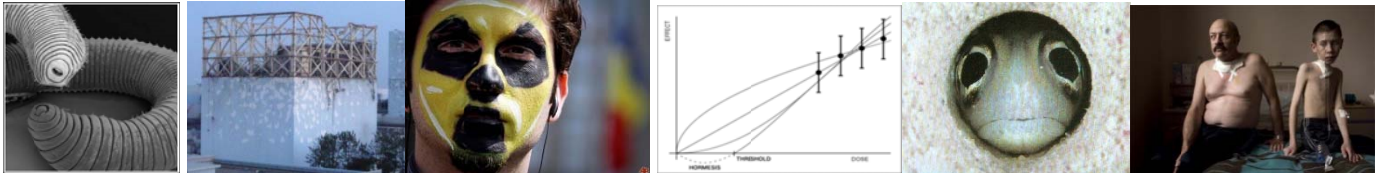




# Assessing Risk to Humans and the Environment

10-20<sup>th</sup> June 2014, NMBU, Norway

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



## 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 some of the risk assessment tools and models. 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 covers 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. Topics covered include 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 and students may also attend parts of the course, for example society, perception and communication, or accreditation in the ERICA assessment tool.

**Teachers:** Prof Deborah Oughton (CERAD/NMBU), Prof Per Strand (CERAD/NRPA), Prof Andrzej Wojcik and Dr Clare Bradshaw (Stockholm University); Prof Richard Wakeford (Manchester University), Prof Brian Wynne (Lancaster University) ++

**ECTS accreditation:** Bologna Accredited 5 or 10 ECTS (depending on exam form).

**Accommodation:** Available on a first-come-first-served basis, and ranges from rooms in student residence halls to shared apartments and hotels. A limited number of accommodation support grants are available.

**Extracurricular activities:** Various cultural activities, including films and a Midsummer Party will be organized for students.

**Application Deadline 30<sup>th</sup> April 2014**

Further information and application for the course: [deborah.oughton@nmbu.no](mailto:deborah.oughton@nmbu.no)  
[www.star-radioecology.org](http://www.star-radioecology.org) [www.doremi-noe.net](http://www.doremi-noe.net)

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

The course is mainly lecture based, with two days dedicated to hands-on training in modelling and assessment tools. At NMBU, laboratory work, field studies and analysis cover an important part of teaching within the Radioecology MSc, but the learning outcome of the present course is risk assessment skills, rather than producing the data used in risk assessment.

### **Monday 9<sup>th</sup> : Public Holiday**

#### **Day 1: Tuesday 10<sup>th</sup>**

General Introduction + Human Risk Assessment and Radiological Protection for Ionising Radiation (Per Strand NRPA)

#### **Day 2: Wednesday 11<sup>th</sup>**

*Morning:* Assessing the impacts of radiation on humans (Per Strand, NRPA)

*Afternoon:* Assessing risks from multiple stressors (TBC)

#### **Day 3: Thursday 12<sup>th</sup>**

*Morning:* Assessing doses, costs and remediation efficiency after Fukushima (Wataru Naito, AIST Japan)

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

#### **Day 4: Friday 13<sup>th</sup>**

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

#### **Day 5: Monday 16<sup>th</sup>**

*Morning/Afternoon* Ecological Risk Assessment: Chemicals and Radiation; Ecosystem Approach (Lawrence Kapustka, Canada and Clare Bradshaw, SU)

#### **Day 6 and 7: Tuesday 17<sup>th</sup> – Wednesday 18<sup>th</sup>**

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

#### **Day 8: Thursday 19<sup>th</sup>**

*Morning:* International management and regulation of environmental risks – focus on OSPAR, etc (Simon Carroll, Sweden, and former Greenpeace International etc.)

*Afternoon:* Social and Ethical Aspects of Radiation Risk Assessment and Management: Experience from Chernobyl and Fukushima (Deborah Oughton, UMB)

#### **Day 9: Friday 20<sup>th</sup>**

Risk, Uncertainty and Communication: STS studies (Brian Wynne, University of Lancaster)

The ECTS exam is either a short exam after the course (5 ECTS credits) or 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.

Alternatively, provided that places are available, students or professionals can attend parts of the course (e.g. epidemiology; ERICA Assessment Tool; Society, Perception and Communication). Certificates of attendance can be provided, including accreditation (by IUR) as an ERICA Tool User.

Course Organisers: Prof Deborah Oughton and Prof Per Strand (CERAD), Prof Andrzej Wojcik and Dr Clare Bradshaw (SU).