

# Arctic Environmental Toxicology

## Synopsis

The course provides advanced knowledge on levels, effects and toxico-kinetics of environmental contaminants in Arctic wildlife and humans (northerners). The focus is on individual and population effects, and potential ecosystem effects, of particularly persistent organic pollutants, but also other contaminants. Field work in the Arctic, including sampling of biological material.

## Aims

To provide advanced knowledge on exposure and effects of environmental contaminants in Arctic wildlife and humans focusing on effects from effects on the subcellular level to population and ecosystem effects.

## Objectives

At the end of the Unit, you should:

1. have advanced knowledge on the major groups of contaminants that pose a threat to Arctic wildlife, humans and Arctic ecosystems.
2. have good basic knowledge in conducting relevant field work during winter in the Arctic
3. be able extract available scientific knowledge within the field to produce an up-to date scientific review essay within the topic of Arctic Environmental Toxicology

## Key Skills Acquired

At the end of this Unit, you should understand:

1. effects of anthropogenic pollutants on the organismal and population level in key Arctic organisms
2. which properties of pollutants that make them potential threats to Arctic wildlife and humans
3. how to produce a written scientific essay based on up-to-date available scientific literature within a self-chosen topic

## Syllabus

Topics covered include:

- Uptake, biotransformation and excretion of pollutants in Arctic organisms

- Effects of pollutants in organisms in relation to the specific Arctic environmental conditions
- How climate change and pollutants may interact in affecting Arctic organisms and ecosystems
- Effects of pollutants on humans in the Arctic

## Learning & Teaching

- Lectures: 21 hr
- Seminars (student led): 37 hr
- Field work and data treatment: 3-5 days

## Teaching Staff

Bjørn Munro Jenssen (Coord.)

**Semester** 2

**Timetable slot** Ca. 02. March – 17. April

**ECTS** 10

**Level** Optional

## Bibliography

- Letcher, R. J., Bustnes, J. O., Dietz, R., Jenssen, B. M., et al. 2010. Exposure and effects assessment of persistent organohalogen contaminants in arctic wildlife and fish. *Science of the Total Environment*. 408, 2995-3043.
- Dietz R, Letcher RJ, Desforages J-P, Eulaers I, Sonne C, Wilson S, et al. 2019. Current state of knowledge on biological effects from contaminants on arctic wildlife and fish. *Science of the Total Environment* 696, 133792. doi: 10.1016/j.scitotenv.2019133792
- AMAP Assessment 2018: Biological Effects of Contaminants on Arctic Wildlife and Fish. ISBN 978-82-7971-106-3 (Download for free at [amap.no](http://amap.no)).
- Additional course material provided at the lectures and seminars

## Assessment

- Written theory examination (80%)
- Group work lecture (20%)

## Course Evaluation

By completion of University Unit Evaluation Questionnaire by students, annual assessment by Unit Co-ordination