

Emerging Topics and Current Practice in Environmental Risk Assessment (I002595)

Course size	<i>(nominal values; actual values may depend on programme)</i>		
Credits 6.0	Study time 180 h	Contact hrs	60.0 h

Course offerings and teaching methods in academic year 2023-2024

A (semester 2)	English	Gent	lecture seminar peer teaching
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Lecturers in academic year 2023-2024

De Schamphelaere, Karel	LA22	lecturer-in-charge
Demeestere, Kristof	LA24	co-lecturer

Offered in the following programmes in 2023-2024

	crdts	offering
Master of Science in Environmental Science and Technology	6	A
Exchange Programme in Bioscience Engineering: Environmental Technology (master's level)	6	A

Teaching languages

English

Keywords

Environmental toxicology, ecotoxicology, risk assessment of chemicals, contaminants of emerging concern, chemical exposure, chemical hazards

Position of the course

This course builds further on fundamental knowledge and skills obtained in environmental chemistry and environmental risk assessment. The aims of this course are to bring students up-to-date with emerging topics and issues in environmental risk assessment of chemicals and to learn about current practice in the regulatory arena, based on case studies.

Contents

LECTURES

This part will deal with a selection of emerging topics in environmental risk assessment at an advanced level, with a special attention for trace contaminants of emerging concern (e.g. human pharmaceuticals, personal care products, nanoparticles), the use of new technologies and methods (e.g. exposure and effects models, omics, in vitro to in vivo extrapolation), specific remediation and management tools, state-of-the-science and advanced monitoring methods (e.g. passive samplers, bioanalytical tools, non-targeted analysis). Topics will be dealt with in a detailed and holistic manner, including legislative aspect, accounting both for exposure, effects, risks, and remediation.

Part of the knowledge will be conveyed by classic lectures. Part of the knowledge will be made available via free online available material (video's from lecturers, presentations at conferences, publications, reports). Q&A sessions and discussion will follow at the end of every lecture.

FLIPPED CLASSROOM / MICROTEACHING / PC EXERCISES

In this part, the group of students will seek an answer to the question: What is the current evidence for environmental risks of [a chemical or group of chemicals]? The starting point will be a subject that is currently hot-topic in the popular (science) media and/or social media. They

will then start critically analyzing the subject, based on scientific evidence available in scientific literature and existing regulatory documents. Students will report their findings to the whole group and the lecturers, with the aim of reaching a conclusion on points of consensus and remaining uncertainties. Depending on the topic, this part may also include a demonstration of relevant monitoring and analytical tools (e.g. passive sampling and targeted and non-targeted high resolution mass spectrometry) as well as chemical analytical data analysis.

The students will also critically analyze an existing environmental risk assessment dossier by a European regulatory authority that is open for public commenting. They will determine if the most recent science has been taken into account, whether the calculations have been performed correctly, whether the conclusions are supported by the data and the analysis, and whether additional research is needed? All necessary software will be made available.

Ultimately, they will draft a brief opinion, based on their findings, and submit it as a public comment to the relevant authority.

Initial competences

Basic knowledge of and/or practical skills in at least one of the following: (eco)toxicology, environmental risk assessment, or environmental chemistry

Final competences

- 1 Know about and understand emerging issues in environmental risk assessment
- 2 Identify and synthesize the current scientific evidence on a topic of emerging concern
- 3 Interpret and critically analyze a risk assessment dossier and write a science-based opinion about it
- 4 Perform exposure, effect, hazard and risk calculations according to current practice as laid out in regulatory guidance documents
- 5 Have knowledge about advanced monitoring and analytical tools for emerging chemicals and analyse and know how to interpret them

Conditions for credit contract

Access to this course unit via a credit contract is determined after successful competences assessment

Conditions for exam contract

This course unit cannot be taken via an exam contract

Teaching methods

Lecture, microteaching, seminar: practical PC room classes

Learning materials and price

References

Course content-related study coaching

Evaluation methods

end-of-term and continuous assessment

Examination methods in case of periodic evaluation during the first examination period

Oral examination

Examination methods in case of periodic evaluation during the second examination period

Oral examination

Examination methods in case of permanent evaluation

Participation, assignment, peer assessment

Possibilities of retake in case of permanent evaluation

examination during the second examination period is possible

Calculation of the examination mark

End of term assessment: 50%; Continuous assessment: 50%

In case of assignments in group: if there is a clear difference in the input between the different group members, the examination mark for this part can be different between the different group members.

Students who eschew continuous or end of term assessment may be failed by the examiner.
The maximum score in this case is 6/20.