Fate and behaviour of environmental contaminants

Kohn Tamar

Summary
The student will learn the important processes that control the transport and transformation of organic chemicals and pathogens in the environment, as well as the formulation and solution of quantitative models to describe these processes.

Content
- Phase transfer processes, e.g., sorption and air-liquid partitioning
- Mass transfers through boundary layers, kinetics of air-water exchange
- Structure-Activity relationships
- Transformation reactions of chemicals in the environment: substitution, elimination, hydrolysis reactions, photolysis
- Introduction to biological contaminants (pathogens) and their fate in the environment

Keywords
organic pollutants
pathogens
aquatic system
mass transfer
transformation reactions
kinetics

Learning Prerequisites
Required courses
General chemistry

Recommended courses
Environmental chemistry
Environmental microbiology

Important concepts to start the course
Interest in chemical and microbiological processes in the aquatic environment

Learning Outcomes
By the end of the course, the student must be able to:
• Anticipate the important processes that control the fate of aquatic contaminants
• Formulate models that quantify that fate
• Solve those models, e.g., to determine chemical half lives

Transversal skills
• Collect data.
• Access and evaluate appropriate sources of information.
• Make an oral presentation.
• Write a scientific or technical report.

Teaching methods
Ex cathedra
Exercises
Student project

Expected student activities
Attend lectures and exercise sessions.
Complete assigned exercises.
Prepare independently for exams.
Prepare and present an independent project.

Assessment methods
Independent project (50 %)
Final exam (50 %)

Supervision
Office hours No
Assistants No
Forum No

Resources
Bibliography
Schwarzenbach et al., "Environmental Organic Chemistry" (will be provided)

Ressources en bibliothèque
• Environmental Organic Chemistry / Schwarzenbach et al.

Notes/Handbook
Class handouts will be provided