

Principles in environmental chemistry

Lecture series: 20 h + 10 h ;

Starting 19.05.14- 30.05.14

2 hours lecture + 1 h seminar

The lecture is divided into 4 blocks:

1. Pollutants: The first lectures give an overview of major classes of environmental pollutants (e.g. pesticides, heavy metals, pharmaceuticals, nanoparticles, CO₂ and many more), their properties and occurrence. Thereby the necessity of using chemicals will be demonstrated as well as various environmental problems that they can cause.
2. Routes and fate: This block describes the routes by which the pollutants enter the environment, how they are distributed and transported and potentially removed from the ecosystem. Thereby also the concepts of persistency, bioavailability, bioconcentration and bioaccumulation are addressed.
3. (Eco-)Toxicity testing: The lecture series is about the toxicity testing. That includes testing strategies, general test principles, the selection of test systems and endpoints and the statistical analysis of effects. Moreover, the various modes of toxic action of environmental pollutants are discussed. A focus will be put on structure-activity-relationships.
4. General context of environmental science: Based on the basics presented before, a broader spectrum of issues is raised and concepts and term such as Sustainability, Green Chemistry, Environmental legislation and Ethical issues are matter of discussions.

The seminar

Subsequent to lecture the seminar takes place that deals with practical aspects of issues discussed during lectures. This hour can be used for discussion and open questions. Potential environmental hazards of chemicals of interest can be elaborated together.