Innovative Postgraduate Education in the Field of Environment Protection: Methods and Tools

ENVIRONMENTAL TOXICOLOGY

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BIO Presenter

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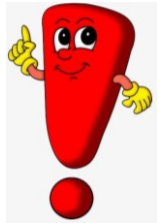
Modernized Course Objectives and Tasks

Course goal: to acquaint students with the main types of **toxins**, their fate in the environment, as well as the **side effects** and **potential risks** for the human organism.

- introduce the **terminology** of environmental toxicology;
- get acquainted with the classification of **toxins**, their properties, **toxicity** levels, and the **mechanisms** of side effects on living organisms;
- introduce the essentials of **toxicokinetics** and **toxicodynamics**;
- describe ևֆ discuss the main mechanisms of **target organ toxicology**;
- get acquainted with the **databases** for the toxicology of environmental contaminants.



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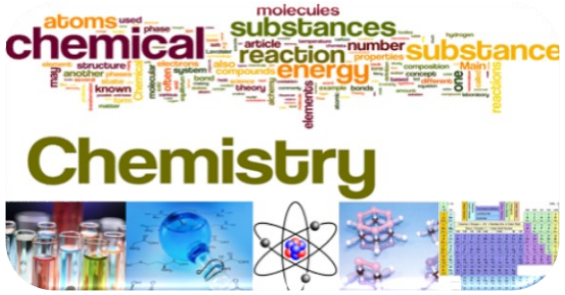
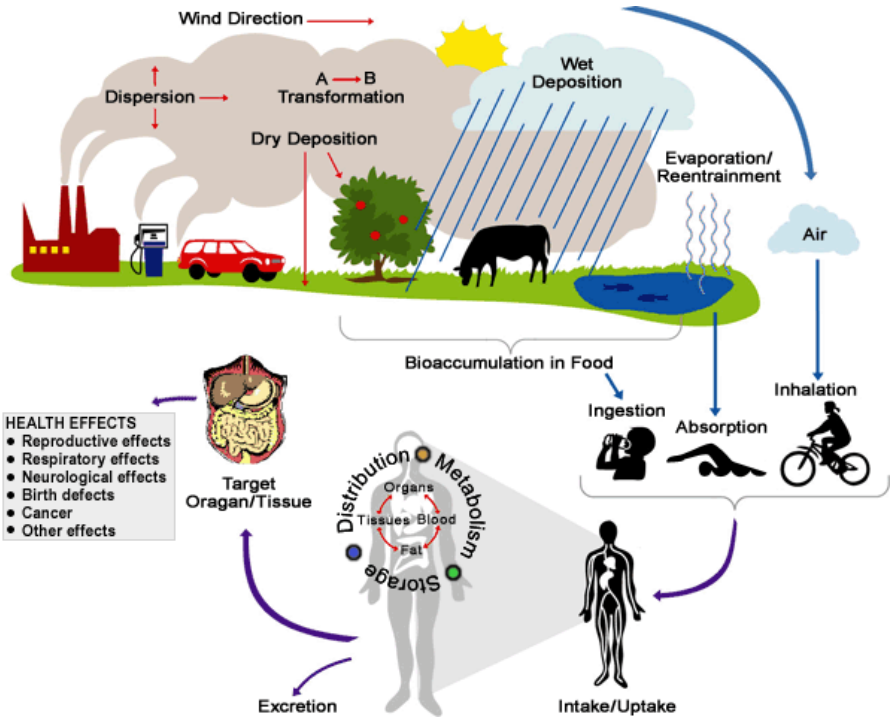
Course Prerequisites

a high-school familiarity with **biology** and **chemistry**, but no prior knowledge of environmental toxicology.

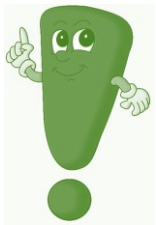




Course Comparative Analysis

the most relevant and similar course was “Environmental Toxicology” at Wageningen University & Research (WUR)

Criterion/Details	EU Example: WUR	Course Modernized in RA
Classic or applied:	Applied (Research and education combined)	Both (Academic)
Program/discipline profile:	Env.Tox. is one of the thesis track-related subjects	Env.Tox. is one of the compulsory courses
Course type:	Both for bachelor and master	Only for master level
Relations to other courses in the program: Outcome courses:	Environmental Risk Assessment of Chemicals	Food Safety Risk Assessment *(which is newly developed in the frame of MENVIPRO project)*



Modernized Course Topics

Topic 1

Environmental toxicology subject, importance, and problems.

Topic 2

Essentials of toxicology. Terminology.

Topic 3

Classification of toxic substances.

new

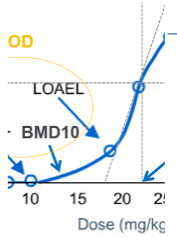
Topic 3 - Practical

Main types of environmental toxins.

new

Topic 4

Mechanisms, types, and levels of toxic effects of xenobiotics.



Topic 5

Dose-response relationships for toxicants.

Topic 5 - Practical

Interpretation of toxins' dose-response data.

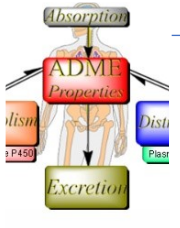
new

Lectures

Practical

Individual work

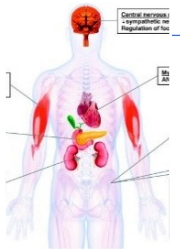
Modernized Course Topics (2)



Tobic 6

Toxicodynamics.

Toxicokinetics.



Topic 7

Target organ toxicology.

new

Topic 7 - Practical

Examples of target organ toxicity.

new

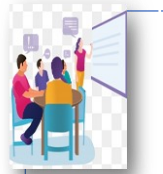
Topic 8

Teratogenicity, mutagenicity, and carcinogenicity.

Topic 9

Toxicological characterization of environmental contaminants.

new



Topic 9 - practical

Informational sources on the toxicity of xenobiotics.

new

120 h

Lecture
24 h

Individual
88 h

Practical
8 h

Course Outcomes

Know

the **sources** and **main types** of toxic substances, their toxicological properties, as well as the types and levels of **side** (toxic) **effects**.

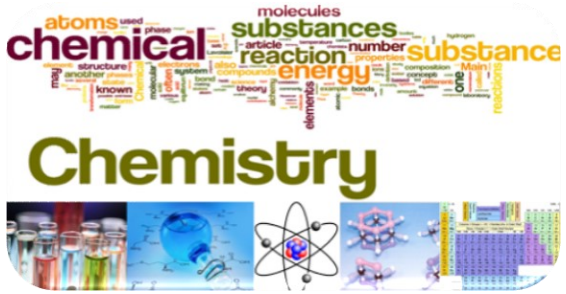
Be able

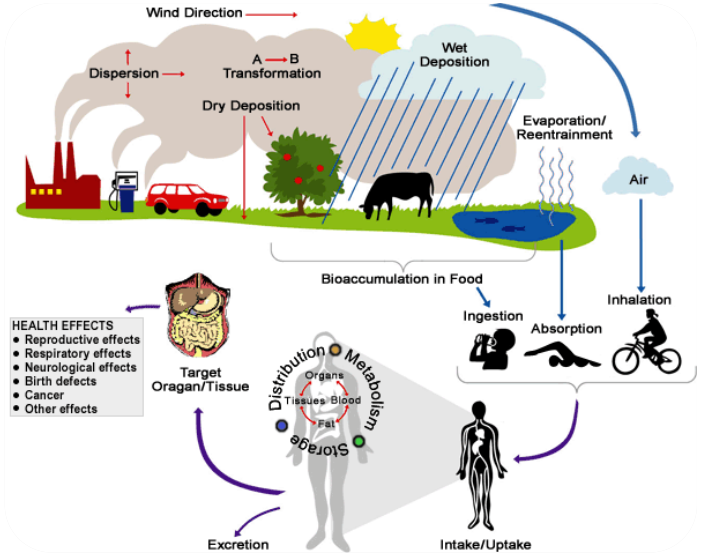
to **understand** the **mechanisms** of toxic effects of environmental pollutants on living organisms, as well as the dose-response ratio.

Master

the basic principles of mitigation and prevention of side effects of toxin substances on the human organism and environment, as well as the use of **databases** for the toxicology of contaminants.

Interdisciplinary Connections With Other Courses





Multidisciplinary science

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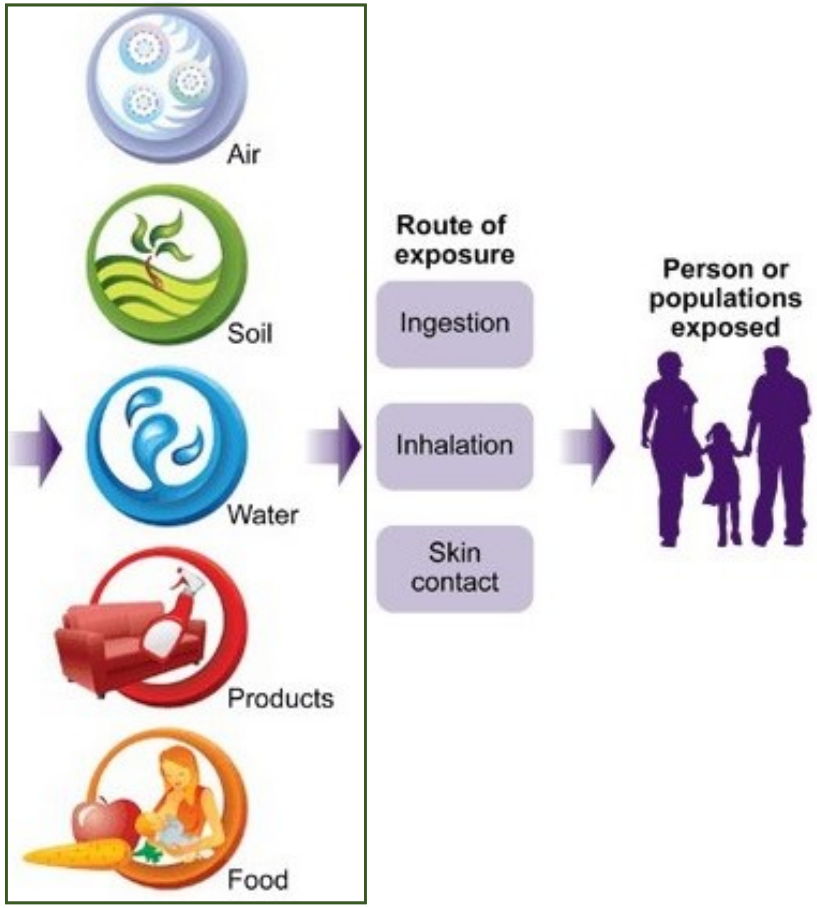
ERLEP Laboratory Involvement in the Course Curricula

Hazard identification - detection of **environmental contaminants** *(hazardous substances that can have adverse effects)* in **different matrixes**



THANK YOU !

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