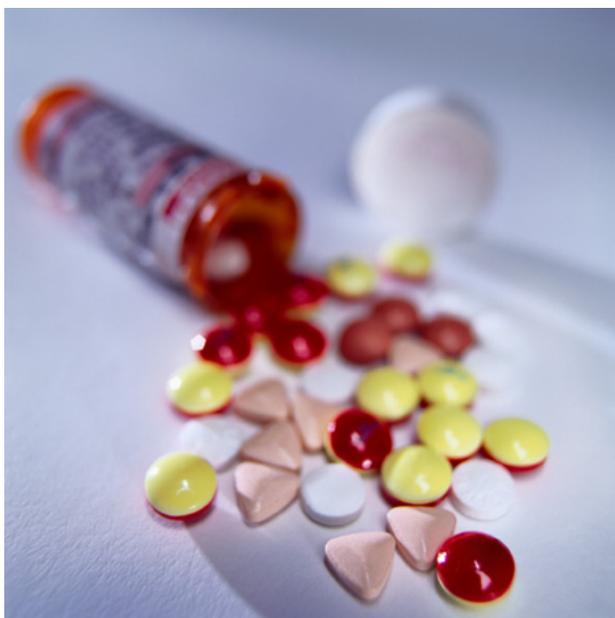


PHARMACEUTICALS AND HORMONES IN THE ENVIRONMENT

*RECETO Ph.D.-course
15/8 – 19/8 2005
Brorfelde Fieldstation, Denmark*

The objective of this summer school is to introduce the participants to a new class of pollutants which constitute the active agents in medicine and the natural and synthetic hormones (pharmaceuticals and hormones, P&H).

During the course the students will be introduced to the important aspects regarding this subject. As a part of this, a number of state of the art methods and techniques important to this research field will be presented. Therefore, special attention will be put on detection methods for drugs and hormones in the environment, assessment of effects of drugs in the environment, and on environmental risk assessment (ERA) of pharmaceuticals.



Course structure:

In head of the course, the participants will prepare at home for five days. The main course activities will take place during a one week residence at Brorfelde Fieldstation. During this stay, a combination of lectures, exercises,

discussions and work on own project reports will be the main activities. After the course, the participant is required to use approximately three days for finishing this project work. The final evaluation will take place on basis of a written report based on the project work. The report is prepared by the participants in groups of two.



Target group:

The target group for this course comprises Ph.D.-students and scientists who need a solid introduction to this class of pollutants both with respect to the current issues but also with respect to the regulatory aspects regarding these substances. The course will also be beneficial to people from the industry or public administration in need of knowledge about pharmaceuticals and hormones in the environment.

Times and location:

8/8-12/8: Course preparation at home.

15/8-19/8: Brorfelde Fieldstation, Observatør Gyldenernes Vej 1 – 13, Tølløse.

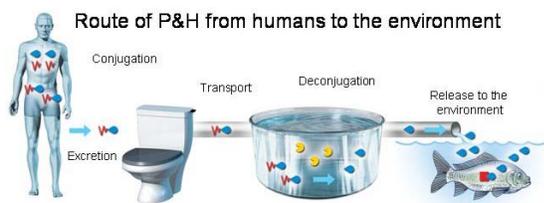
September: Preparation of course report and evaluation.

Transport will be arranged from Roskilde train station to Brorfelde Fieldstation upon request.

Registration:

Registration and payment: 1 July 2005.

A short description of your research and which types of compounds are of interest must follow with the registration. Based on this information, work groups are combined. The course is limited to 30 participants in total.



Course fee:

6,330 DKK for non-Ph.D.-students and Post Docs. In case of open places, master students may attend the course at reduced price. Please contact RECETO for further information. Transport to and from Brorfelde is not included in the price.

Course size and material:

6 ECTS. Course material will be available for download from the RECETO website no later than 15/8 2005.

Heads of course:

Flemming Ingerslev: Associate professor in environmental analytical chemistry at the Danish Pharmaceutical University (DPU). Ph.D. (2000) in biodegradation of pharmaceutical substances in the environment. Has since then worked with P&H in the environment with focus on antibiotics and hormones.

Kristine Andersen Krogh: Assistant professor in environmental analytical chemistry at the Danish Pharmaceutical University (DPU). Has since her Ph.D. (2003) been working with P&H - especially hormones and parasiticides.

Bent Halling-Sørensen: Professor in chemical toxicology. Has been involved in numerous research projects regarding the fate and effects of P&H in the environment. More than 50 publications on the subject of P&H.

Guest teachers:

Among the national and international experts teaching at the summer school, a few should be mentioned:

Dr Alistair Boxall is Senior Lecturer at University of York and Joint Leader of the EcoChemistry Team at CSL. Alistair is a specialist in environmental risk assessment of human and veterinary medicines and predictive modelling. Alistair was co-ordinator of the EU ERAVMIS project, which focused on developing improved methods for the risk assessment of veterinary medicines. He is involved in the current ERAPHARM project focusing on novel approaches for risk assessment of pharmaceuticals. He sits on the UK Veterinary Products Committee and the EFSA Working Group on Environmental Risk Assessment of Feed Additives.

Dana W. Kolpin is research hydrologist with the U.S. Geological Survey in Iowa City, Iowa. Dana is the project chief of the Emerging Contaminants Project:

<http://toxics.usgs.gov/regional/emc.html> funded through the USGS Toxics Program. This research has provided the first national assessment for emerging contaminants in US water resources.



Pharmaceuticals and hormones may enter agricultural soil, when manure is used as fertilizer.

Developments in the program:

Please observe any developments in the course program on:

<http://www.receto.dk/Education/>

Main topics taught on the course

What can we learn about P&H from the health sector?

- Pharmacokinetics, metabolism and excretion.
- Therapeutic classes and usage of drugs (the *ATC-system* and *defined daily doses*).
- Human and veterinary drugs and consumption.

Fate of P&H in the environment

- Sources of P&H
- Routes of exposure
- Point sources
- Reactivation of metabolites in the environment
- Formation of degradation products in the environment
- Biodegradation and test methods
- Sorption and test methods

Occurrence of P&H in the environment

- Analytical methods for detection of P&H
- Overview of the pollution of the environment with P&H

Effects and risk assessment

- The risk assessment concepts
- Regulatory aspects
- Standardized ecotoxicology methods
- Specific action and effects in the environment



How do I become a RECETO-Ph.D.-student:

All Ph.D.-students from the EU member states can apply for affiliation with RECETO. Please contact the secretariat on: receto@kvl.dk.

RECETO

Research School of Environmental Chemistry and Ecotoxicology

A postgraduate school of environmental chemistry and toxicology - molecular studies of pollutant fate and effects in aquatic and terrestrial ecosystems.

RECETO comprises the following partner institutions:

- The Royal Veterinary and Agricultural University (KVL).
- Technical University of Denmark (DTU).
- The Danish University of Pharmaceutical Sciences (DFU).
- University of Copenhagen (KU).
- Lund University (LU).
- National Environmental Research Institute - Denmark (DMU).
- The Geological Survey of Denmark and Greenland (GEUS).
- DHI Water and Environment (DHI).
- Forest & Landscape Denmark (SL).
- Danish Institute of Agricultural Sciences (DJF).

Registration form:

Pharmaceuticals and hormones in the environment, RECETO Ph.D.-course, 15/8 – 19/8 2005

Name: _____ Institution: _____
Date of birth: _____ Address: _____
Position: _____
Email: _____
Country: _____

The course is free for me because I am Ph.D.-student (Danish Ph.D.-students, Ph.D.-students from Lund University, and students from EU member states that sign up as RECETO students).

My Ph.D.-topic: _____
(objectives, subprojects, procedures) _____

I am a master student from the RECETO partners including Lund University. I am applying for participation in the course at reduced price. Reduced price for master students will only be offered in case of open places after registration has ceased.

Others: The course fee of 6330 DKK must be transferred to Danske Bank (Falkoner Alle 8, DK-2000 Frederiksberg). Registration number: 4530. Account number: 0009000526). Remember to add your name and mark the payment RECETO.

Date: _____ Signature: _____
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Questions and registration to: RECETO, KVL
Thorvaldsensvej 40
DK-1871 Frederiksberg C
Denmark
Email: RECETO@KVL.DK