

Research School of  
Environmental Chemistry and Ecotoxicology  
RECETO

Annual report 2004 – Extended/UK version



Frederiksberg – January 2006

## Foreword

In this annual report you will find a short description of RECETO's activities in 2004, which is RECETO's second year of operation. The layout of the annual report follows the layout of RECETO's internal evaluation report (see below, encl. A) and the official requirements of the Danish Research Agency (FUR). In 2004, several new Ph.D.-projects were initiated and RECETO organized several new courses as well. Consolidation of RECETO's activities was also a main activity of 2004. The research school has had a nice increase in the number of affiliated Ph.D.-students – the number of students has more than doubled, and now counts approx. 30. The number of students seems to increase in 2005. Most of the new students are not financed by FUR, but have got their scholarships in another way.

Several arrangements have been held by RECETO in 2004. However, participation by the partner institutions in organization and arrangement of meetings has been difficult. Cooperation with the host-institution – the Royal Veterinary and Agricultural University – has been good. RECETO's activities were satisfactory visited by students and supervisors, and the annual RECETO symposium in October 2004 gave a neat impression of the quality of the research carried out by Ph.D.-students affiliated with RECETO.

The RECETO homepage is still the main communication tool between the secretariat, the supervisors and the students. Announcement of courses and meetings are made in the news section of the homepage – a service used by many Ph.D.-students.

The administration of RECETO has demanded allocation of more resources than granted by FUR. In addition, several partner institutions have not been able to allocate much time and resources to RECETO-activities. This is particularly true for the *sector research institutions*.

Contact was taken to the Finnish research school ENSTE late in 2004 in order to investigate collaboration possibilities in organizing courses and application for EU grants (Marie Curie). At the moment, RECETO considers possible international collaboration with other countries than Finland (e.g. the Netherlands).

In 2005, RECETO will continue the promising course development strategy, and a single RECETO Ph.D.-course will be arranged (the RECETO summerschool). An evaluation of the research school activities will be initiated. The evaluation will comprise a self evaluation as well as an international evaluation. An extended version of annual report 2004 (DK/FUR version) will be published in November 2005. The extended version makes-up the fundament of the evaluation process. The annual RECETO symposium will take place in October 2005 – main topics will be *research in progress* and the future of RECETO. Several other social and scientific arrangements are planned and the cooperation with Danish and foreign research schools will continue.

*Hans Christian Bruun Hansen*

Hans Christian Bruun Hansen  
(Head of RECETO)

# General information about RECETO

## 1.1 Introduction

The post graduate school, The Research School of Environmental Chemistry and Ecotoxicology (RECETO), was established in 2003 and hence has now run for 2 years. Application for funding of RECETO was submitted to the Danish Research Council September 2001; funding received June 2002. The establishment of the research school has been approved by The Royal Veterinary and Agricultural University (KVL), which hosts the research school. The research school comprise 10 different partner institutions. RECETO has currently 29 affiliated Ph.D.-students.

## 1.2 Background and the aims of RECETO

According to the aims and visions expressed in the proposal send to FUR September 2001, RECETO aims at:

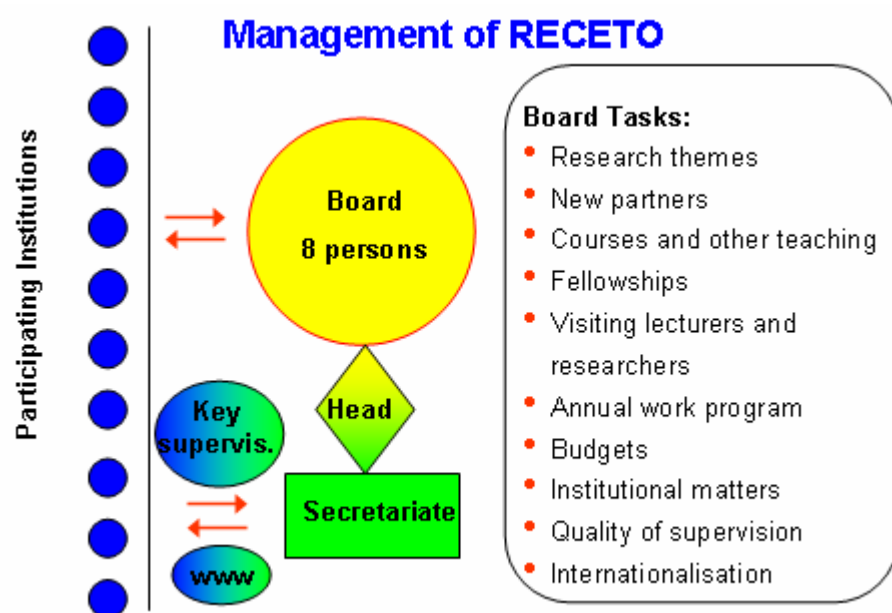
- Providing Ph.D.-education and supervision within environmental science within a framework of analytical chemistry, biogeochemistry, microbiology, transport modelling, toxicology, and risk assessment.
- Stimulating students to work interdisciplinary and to draw on the values of a research network among students and supervisors within the RECETO frame.
- Improving the quality of post graduate education in environmental science in the Øresund region through common development of concepts, harmonized admission and quality requirements, and a high quality of teaching activities offered within a network of cooperating partners.
- Coordinating post graduate research activities among institutions in the Øresund region, with emphasis on soil, water and biota.
- Being able to provide competitive post graduate candidates for the labor market.

In total, RECETO was granted 3.7 mills. DKK by FUR.

## 1.3 Objectives

The overall objective of the research school RECETO is to strengthen the research education within environmental chemistry and ecotoxicology rooted in the fundamental scientific disciplines. Through co-ordination, critical scientific and interdisciplinary co-operation the research school will work towards a coherent development of concepts within environmental chemistry, high quality standards of the teaching activities offered to Ph.D. students within the field, and an attractive and interesting research environment for students and supervisors. The research school also aims to develop the international dimension of post graduate education. RECETO is part of the co-operation between universities and governmental non-university research institutions (sector research), and it further aims to strengthen post graduate education and research co-operation within environmental chemistry and ecotoxicology in the Øresund region.

The research school is managed by the head of the research school and the board. The board makes decisions about annual plans comprising all activities, budgets, applications for new funding, adoption of new members, international collaboration and the research profile of the school. The external funding that the research school receives is administered by the host institution – in fact the department at which the head of the research school is employed. Each partner institution is represented in the board.



Organization of RECETO, management and tasks of the board

Ph.D. students affiliated with the research school are offered several educational activities and possibilities, including:

- Ph.D. courses
- Summer schools
- RECETO symposia's
- Seminars and workshops
- Academic networking, information portal and a broad panel of supervisors
- Internationalization

### 1.3 Partner institutions and core disciplines in RECETO

The research school is based on collaboration between the following 9 universities and sector research institutions in the Øresund region:

- 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/NERI)
- The Geological Survey of Denmark and Greenland (GEUS)
- DHI Water and Environment (DHI)
- Danish Forest and Landscape Research Institute (FSL)
- Danish Institute of Agricultural Sciences (DJF).

RECETO widely covers research activities within the fields of environmental chemistry and ecotoxicology. Most RECETO research projects are related to the terrestrial environment, in

particular to the analysis/sampling, fate and effects of pollutants in soils, surface waters and groundwater.

## Six research themes

- **Chemical analysis and quality assessment:** Sampling. Extraction. Advanced chemical methods (e.g. LC-MS, ICP-MS, and CE). Quality assurance. Advanced microbial methods (e.g. PCR and DGGE).
- **Biogeochemical processes:** Geochemical models, kinetics of biogeochemical processes, modelling of pollutant speciation and sorption. Natural attenuation processes. Chemical and mineralogical composition of soils, soil classification, surveying and mapping.
- **Microbiological degradation processes:** Degradation pathways and metabolites. Bioavailability and degradation kinetics. Microorganisms in the rhizosphere. Adaptation processes in relation to pollutant degradation. Genetic diversity and gene expression.
- **Pollutant - plant interactions:** Uptake, internal allocation, metabolization and accumulation of inorganic and organic pollutants in vegetation. Plant influence on degradation processes and transport of pollutants. Methods for quantification and modelling of uptake and metabolization of pollutants in plants.
- **Modelling of transport and degradation:** Development, calibration and validation of transport models. Transport in biopores. Scaling problems. Colloidal transport. Kinetic modelling of degradation and sorption processes.
- **Ecotoxicology and risk analysis:** Ecotoxicological data analysis and testing. Chemical fate modelling. QSAR. Molecular interactions.

The six fundamental pillars of RECETO.

### 1.4 RECETO finances

The approved RECETO budget for 2004 (as funded by FUR) is presented below.

<b>RECETO budget in units of 10<sup>3</sup> DKK</b>	
	2004
Academic Secretary	120
Secretariat	40
Meetings travel expenses	30
Guests (summer schools)	96
Symposia's/academic arrangements	100
Stipends	375
Overhead	152
<b>Total</b>	<b>913</b>

Grants for Ph.D.-scholarships are usually administered by the university at which the student has been enrolled. At present, the affiliated students or the collaborating institutions pay no fees for participation in RECETO.

### 1.5 RECETO affiliated Ph.D.-students

The students affiliated with RECETO all work within the research areas of environmental chemistry and ecotoxicology. The Ph.D.-students come from different universities both in Denmark, Sweden and other countries. In the following table, the distribution among male and female students, their age, and their physical location are presented. Numbers in brackets are new students in 2004.

	Number of Ph.D. students	FUR financed:				Erhvervs-Ph.D.-ordningen:
		Co-financed:	With contribution from the sector research institutions:	With contribution from the private sector:	Internationalization scholarships:	
Total number:	29 (12)	5 (0)	4 (0)	1 (0)	1 (1)	0 (0)
Of which:						
Are at the host university	6 (4)	2 (0)	2 (0)	1 (0)	0 (0)	0 (0)
Are at participating universities	23 (6)	3 (0)	2 (0)	0 (0)	1 (1)	0 (0)
Have foreign masters degree	12 (5)	1 (0)				
Are females	17 (5)					

No RECETO Ph.D.-students got a Ph.D.-degree in 2004. A single scholarship was financed through RECETO in 2004 (an *Internationalization Scholarship*). A total number of 10 applicants applied for the scholarship. Of the applicants, 5 were females.

The number of publications made by RECETO Ph.D.-students in 2004 is not known at present due to poor feed-back from the students on a questionnaire targeting this issue.

### 1.6 RECETO supervisors

RECETO has 61 supervisors affiliated. The supervisors can be used by all RECETO students.

	Host university	Participating universities	Sector research institutions	Private sector	In total
Number of supervisors:	18	23	20	0	61
From abroad:	0	7	0	0	7

In addition, 3 post.doc.'s financed by FUR were affiliated with RECETO in 2004.

### 1.7 RECETO activities in 2004

RECETO offers a wide range of activities for students as well as for supervisors. The main activities are the annual RECETO symposium and the annual summer school. In addition, Ph.D.-courses and other activities such as meetings, workshops and seminars are organized and financed (fully or partly). All activities are announced via the RECETO homepage as well as by email to students or supervisors.

### RECETO activities in 2004.

Activity		Comments
<i>Summer schools</i>	2004: Chemical Pollutants and biological systems, 15 participants	2004: Successful summerschool
<i>Ph.D. courses</i>	- Arctic microbiology, GEUS - Sampling in analytical chemistry - Uptake and effects of xenobiotics in plants.	All courses were satisfactory. Many students from RECETO and outside participated.
<i>Symposia</i>	The Second RECETO symposium	The purpose of the symposia is to highlight research topics within the frame of the research school, to train the presentation skills of the Ph.D. students, and to discuss topics of general interest. Half of the day is filled out with presentations of research subjects and poster presentations by the students. Approximately 60 students, guests and supervisors attended the symposium in 2004.
<i>Other activities</i>	31/3-04: Seminar on environmental chemistry, KVL 06/3-04: Seminar at Institute for Chemistry, KVL: <i>Biofumigation for soil-borne pest and disease suppression, and enhanced biodegradation of soil-applied pesticides - an overview of principles and issues.</i> By: John Matthiessen, CSIRO Entomology, Perth, Australia	

Approximately 110 students and supervisors attended Ph.D.-courses, summerschools, workshops etc. 20 of these were foreigners (Swedes included). As part of the RECETO symposium, a workshop on supervising Ph.D.-students was held for supervisors. 20 supervisors participated in the workshop (1 Swede participated).

### 1.8 Daily management

The day-to-day management is carried out by the head of the research school and the secretary. The job functions which have taken most time in 2004 comprise: Cooperation schemes/agreements (1/3 stipends usually with three partners), search for funding capabilities among partners, formulation of Ph.D. projects, job postings, evaluation committees, annual reports, board meetings, participation in national and international meetings, and development and planning of Ph.D.-courses. The RECETO secretary has used most of his time updating the RECETO homepage, in particular the news section (information on courses, Ph.D.-project/scholarship announcements).

Enclosure A: Annual report 2004

Danish/FUR version.

**Forskerskolen RECETO**  
Research School of Environmental Chemistry and Ecotoxicology

Årsberetning 2004

## Forord

I denne beretning findes en kortfattet beskrivelse af RECETOs virke i 2004 - det andet år, hvor RECETO har været i gang. Årsberetningens layout følger det fastsatte koncept fra Forskningsstyrelsen. Det forgangne år er primært blevet brugt til at få iværksat en række nye ph.d.-projekter og kurser, hverve nye studerende samt konsolidere RECETO's aktiviteter. Forskerskolen har haft en pæn tilgang af studerende, og har mere end fordoblet antallet siden 2003, så antallet nu er oppe på ca. 30. Og fremgangen synes at fortsætte i 2005. De fleste af de nye studerende er ikke støttet med FUR midler, men finansieres på anden måde.

Der har været afholdt en række arrangementer; det har dog været vanskeligt for de deltagende institutioner at afse tid til planlægning og afholdelse af møder af kortere varighed i regi af forskerskolen. Organisationen og driften har forløbet planmæssigt og samarbejdet med værtsinstitutionen er fortsat i samme gode ånd som i 2003. Der har været god tilslutning til de afholdte arrangementer og RECETO symposiet i oktober 2004 gav et godt indtryk af kvaliteten af den forskning der gennemføres af ph.d.-studerende tilknyttet RECETO.

RECETOs hjemmeside er fortsat det vigtigste kommunikationsmiddel mellem sekretariatet, vejlederne og de studerende. Der annonceres løbende nye kurser og møder – en service som mange studerende benytter sig.

Administrationen har fortsat været langt mere ressourcekrævende end honoreret af FUR-bevillingen; en del af de deltagende parter har ligeledes været presset på tid og allokerbare ressourcer til forskerskolesamarbejdet. Dette gælder især sektorforskningen.

Sidst på året i 2004 har RECETO besøgt ENSTE forskerskolen i Finland for at undersøge mulighederne for et samarbejde omkring fælles kurser og udvikling af EU program (Marie Curie). Det overvejes i den sammenhæng at opbygge et internationalt samarbejde hvor andre lande indgår, herunder Holland.

I 2005 vil RECETO arbejde videre med kursusudvikling, der vil blive afholdt ét ph.d.-kursus udviklet i regi af RECETO (RECETO sommerskole). I 2005 vil RECETO iværksætte en evaluering af skolens aktiviteter bestående af dels en selvevaluering og en international evaluering. I den forbindelse vil der i november 2005 udkomme en udvidet årsrapport for 2004, der skal anvendes i forbindelse med evalueringsprocessen. I oktober 2005 vil der blive afholdt et RECETO symposium med "research in progress" og hvor fremtiden for RECETO vil blive drøftet. Her ud over planlægges forskellige andre faglige arrangementer inkl. sammenkomster af mere social karakter. Kontakten og det i 2004 igangsatte samarbejde med beslægtede danske og udenlandske forskerskoler fortsættes.



Hans Chr. Bruun Hansen  
Forskerskoleleder

**Forskerskolen i Miljøkemi og Økotoxikologi (RECETO)  
ÅRSRAPPORT FOR 2004**

Forskerskolens navn	RECETO – Forskerskolen i Miljøkemi og Økotoxikologi
Forskerskolens leder	Professor Hans Christian Bruun Hansen
Værtsuniversitet	Den Kgl. Veterinær- og Landbohøjskole
Deltagende universiteter	Danmarks Tekniske Universitet, Danmarks Farmaceutiske Universitet, Københavns Universitet, Lunds Universitet

### ***Nyindskrivninger i 2004***

Der ønskes en opgørelse af antal nyindskrevne ph.d.-studerende knyttet til forskerskolen fordelt på finansieringskilder og indskrivende universitet samt antal kvindelige studerende og studerende med udenlandsk adgangsgivende eksamen.

	Samtlige nyindskrevne ph.d-studerende	Heraf med tilskud fra FUR (opr. bevilling)				Heraf under Erhvervs-PhD-ordningen
		Samfinansierede i alt	Med tilskud fra sektorforskning	Med tilskud fra erhvervsliv	Internationaliseringsstipendier*	
Antal i alt	12	0	0	0	1	0
Heraf:						
Ved værtsuniversitet	4	0	0	0	0	0
Ved deltagende universiteter	6	0	0	0	1	0
Med udenlandsk adg. eksamen	5	0				
Kvinder	5	0				
Gennemsnitsalder	-	0				
Gennemsnitlig kandidatalder	-	0				

\* Omfatter både internationaliseringsstipendier til indskrivning ved forskerskolen og til indskrivning ved udenlandsk universitet.

### ***Igangværende ph.d.-forløb pr. 31. december 2004***

Der ønskes en opgørelse af antal ph.d.-studerende knyttet til forskerskolen fordelt på finansieringskilder og indskrivende universitet samt antal kvindelige studerende og studerende med udenlandsk adgangsgivende eksamen.

	Samtlige tilknyttede ph.d-studerende	Heraf med tilskud fra FUR (opr. bevilling)				Heraf under Erhvervs-PhD-ordningen
		Samfinansierede i alt	Med tilskud fra sektorforskning	Med tilskud fra erhvervsliv	Internationaliseringsstipendier*	
Antal i alt	29	5	4	1	1	0
Heraf:						
Ved værtsuniversitet	6	2	2	1	0	0
Ved deltagende universiteter	23	3	2	0	1	0
Med udenlandsk adg. eksamen	12	1				
Kvinder	17					

\* Omfatter internationaliseringsstipendier både til indskrivning ved forskerskolen og til indskrivning ved udenlandsk universitet.

### **Tildelte ph.d.-grader i 2004**

Der ønskes en opgørelse af antal ph.d.-grader opnået af studerende knyttet til forskerskolen fordelt på finansieringskilder og indskrivende universitet samt antal kvindelige studerende og studerende med udenlandsk adgangsgivende eksamen.

	Samtlige tildelte ph.d.-grader	Heraf med tilskud fra FUR (opr. bevilling)				Heraf under Erhvervs-PhD-ordningen
		Samfinansierede i alt	Med tilskud fra sektorforskning	Med tilskud fra erhvervsliv	Internationaliseringsstipendier*	
Antal i alt	0	0	0	0	0	0
Heraf:						
Ved værtsuniversitet	0	0	0	0	0	0
Ved deltagende universiteter	0	0	0	0	0	0
Med udenlandsk adg. eksamen	0	0				
Kvinder	0	0				
Gennemsnitsalder	-	-				

\* Omfatter internationaliseringsstipendier både til indskrivning ved forskerskolen og ved udenlandsk universitet.

### **Opslag i 2004**

Der ønskes en opgørelse af antal stipendier med tilskud fra FUR, som er slået op i 2004, antal modtagne ansøgninger fordelt på universitet, antal kvindelige ansøgere og ansøgere med udenlandsk adgangsgivende eksamen.

	Opslag	Ansøgere i alt
Antal i alt	1	10
Heraf:		
Ved værtsuniversitet	1	10
Ved deltagende universiteter		
Med udenlandsk adgangsgivende eksamen		0
Kvinder		5

### ***Vejledere i 2004***

Der ønskes en opgørelse af antal vejledere (ifølge ph.d.-bekendtgørelsens § 9) for ph.d.-studerende knyttet til forskerskolen, fordelt på ansættelsessted.

	Værtsuniversitet	Deltagende universiteter	Sektorforskning	Virksomheder	I alt
Antal vejledere	18	23	20	0	61
Heraf fra udlandet	0	7	0	0	7

### ***Postdocs, TAP og udenlandske gæsteforskere med tilskud fra FUR i 2004***

Der ønskes en opgørelse af antal postdocs og TAP knyttet til forskerskolen og lønnet med tilskud fra FUR, samt antal udenlandske gæsteforskere støttet af FUR.

	Værtsuniversitet	Deltagende universiteter	Sektorforskning	Virksomheder	I alt
Postdocs	3	0	0	0	3
TAP	0	0	0	0	0
Udenlandske gæsteforskere	0	0			

### **Kursusvirksomhed mm. med tilskud fra FUR**

Der ønskes en opgørelse af antal ph.d.-kurser mv. og vejlederkurser afholdt med tilskud fra FUR, antal deltagere og heraf ph.d.-studerende indskrevet i udlandet.

	Ph.d.-kurser, workshops mv.		Kurser for vejledere	
	Enheder	Deltagere	Enheder	Deltagere
Antal	4	110	1	20
Heraf fra udlandet		20		1

### **Publicering**

Kommentar: Vi har kun fået sparsomme oplysninger på dette punkt og har derfor valgt ikke at udfylde punktet. Detaljerede oplysninger vil følge med den udvidede rapport fra 2004 der er under udarbejdelse.

	Tidsskrifter med peer review	Antologier	Monografier	Konference-papers	Andet
Danske					
Udenlandske					

### **EVT. BEMÆRKNINGER:**

En udvidet udgave af årsrapport 2004 vil foreligge august 2005 som optakt til evalueringen af RECETO.