



MTM

**MÄNNISKA-TEKNIK-MILJÖ  
FORSKNINGSCENTRUM  
MAN-TECHNOLOGY-ENVIRONMENT  
RESEARCH CENTRE**

Forskningscentrum MTM  
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Örebro universitet  
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Man-Technology-Environment (Människa-Teknik-Miljö; MTM) started as a project at Örebro University in 1996 and developed into a research programme and a graduate school in 1998. The programme was originally focused on hazardous waste and related problems in a vulnerable society. It has grown and become a multi-disciplinary programme with a core at Örebro University of some 40 people, including some 15 senior scientists representing seven different disciplines (at three departments, two faculties), and with a close collaborating network with some additional 30 people at different departments and at other universities. The programme has grown into three directions:

- Studies of processes in the biogeosphere
- Studies of processes related to the sustainable development of the human society
- Studies, actions and implementations in various environmental sectors

**PERSONNEL**

*Professors*

Bert Allard	Prof, Chemistry/Environmental Science
Bert van Bavel	Prof, Environmental Analytical Chemistry
Lennart Hardell	Prof, Environmental Epidemiology
Birgitta Höijer	Prof, Media- and Communication
Rolf Lidskog	Prof, Sociology
Gunilla Lindström	Prof, Environmental Chemistry
Magnus Engwall	Ass. Prof, Ecotoxicology
Patrick van Hees	Ass. Prof, Analytical Soil Chemistry
Stefan Karlsson	Ass. Prof, Aquatic Chemistry

*Other PhDs*

Mattias Bäckström	Environmental Chemistry
Anders Düker	Environmental Analytical Chemistry

Jessika Hagberg	Environmental Chemistry
Inger Johansson	Environmental Chemistry
Linda Soneryd	Sociology
Ylva Uggla	Sociology

#### *Graduate students/PhD-students*

20 students in 6 different disciplines (chemistry, biology, physics, environmental science, psychology, media- and communication science).

#### RESEARCH PROGRAMME

Three areas for research and education have been defined. Some 30 projects are presently operative.

#### **Biogeosphere dynamics**

(5 senior scientists, 6 PhD-students)

##### *Analytical geochemistry*

Chemical state and distribution of elements in the biogeosphere: Concentrations, mobility, speciation. Element analysis at ultra trace levels, biogenic organic acids, natural complexing agents

##### *Biogeochemical processes and dynamics*

Large-scale element cycles, regional water quality development, regional spreading of persistent agents, regional alterations of the biogeosphere

##### *Soil remediation and geologic waste deposition*

Contaminated soil, remediation, long-term waste deposition in geologic environments – radioactive waste, mercury. Geologic filters (reactive barriers), alkaline processes (cement environments)

##### *PhD-theses*

Suèr P, 2001	Electroremediation of contaminated soil
Lifvergren T, 2001	Remediation of mercury polluted soil
Börjesson E, 2002	Natural treatment systems for heavy metal drainage: a pilot-scale study at the Ranstad field site, Sweden (fil.lic)
Bäckström M, 2002	The biogeochemical cycling of lead at the biogeosphere/technosphere interface
Hagberg J, 2003	Capillary zone electrophoresis for the analysis of low molecular weight organic acids in environmental systems
Dario M, 2004	Metal distribution under alkaline conditions
Temnerud J, 2005	Spatial variation of dissolved organic carbon along streams in Swedish boreal catchments

#### **Environmental chemistry and ecotoxicology**

(6 senior scientists, 8 PhD-students)

##### *Ekotoxikology*

Toxicity tests, degradation of toxic agents in the environment. Bioassays, POPs in the biogeosphere, nitroaromatics in sludge, dioxin degradation in biomass

##### *Environmental analysis, environmental health*

Organic toxic agents in the environment: Occurrence, stability, analysis. Human exposure and uptake of organic pollutants: Halogene compounds (dioxins, bromethers, PCBs, PFOS etc). Environmental health: Cancer risks. Environmental technology: Water, flue gases, waste destruction, organics in incineration residues

*PhD-theses:*

Johansson I, 2003 Characterization of organic materials from incineration residues  
 Julander A, 2004 Organic flame retardants - occupational exposure and environmental

**Regulation and communication**

(4 senior scientists, 3 PhD-students)

*Risks, trust, knowledge and communication*

Risks and trust, knowledge and communication, strategies and decision in environmental issues.  
 Environmental conflicts, information strategy, risks and emotions

*PhD-theses:*

Brikell B, 2000 Negotiating the international waste trade. A discourse analysis  
 Ugglå Y, 2002 Environmental politics and the enchantment of modernity. Mercury and radioactive waste disposal in Sweden  
 Soneryd L, 2002 Environmental conflicts and deliberative solutions  
 Benyamine M, 2003 Theoretical disputes and practical environmental dilemmas  
 Eriksson M, 2003 PR- och informationsverksamhet vid miljöriskhanterande företag  
 Wester-Herber M, 2004 Trust and credibility in risk communication

**PUBLICATIONS**

Ca 180 scientific articles (peer reviewed), 55 extramural reports and book chapters, 70 internal reports, 60 popular science-articles and 200 presentations at scientific conferences during 2000-04

**EQUIPMENT**

Two laboratories are at disposal:

*Campus Alby, Örebro University*

Laboratories for inorganic analysis (AAS, ICP-MS, LC-MS; clean room), organic analysis (GC-MS, CZE-MS, TOC, ASE, UV/Vis, SFE), dioxin analysis (HR-GC-MS), eco toxicology, isotope biology (MS)

*SAKAB/Sydskraft, Kumla (the University Laboratory, M@S)*

Laboratory for inorganic and organic work with toxic and hazardous systems (elements, organics) and for development of full-scale technical solutions

**COLLABORATION***National and international institutes*

MTM has active collaboration with Swedish university groups and institutes (LuTU, UmU, MiH, UU, SLU, SU, KTH, MdH, KaU, LiU, CTH/GU, LU, as well as FOI, SGI) and international groups (Norway, Denmark, Finland, UK, Germany, US, Japan).

*Industry and business sector*

MTM has had active collaboration with totally some 20 industries regulated by contracts since the start in 1996. All applied projects without exceptions are conducted in collaboration with one or several industrial partners

*Public sector*

MTM has active collaboration with regional authorities (county administration and county board, municipal authorities) on matters related to regional development, environmental policy, risk assessments, landscape planning