

Master thesis positions in environmental chemistry

Department of Aquatic Sciences and Assessment, SLU, Uppsala

1. Assessment of organic contaminants in indoor air at Ultuna, Uppsala, SLU

Previous studies have shown that indoor air concentrations of industrial chemicals (e.g. flame retardants) are about 1000 times higher than in ambient air. This is of concern due to possible hazardous effects associated with these contaminants. In this project, passive samplers will be deployed in lecture rooms, offices, meeting rooms and laboratories at Ultuna, SLU, for assessing organic contaminants in indoor air. The aim of this master thesis is to investigate organic contaminants in indoor air using passive air samplers. The sampling and analysis of the passive air samplers will be performed by the student. The student should have laboratory experience and be interested in analytical chemistry. This project is scheduled to take approximately 6 month.



2. The role of phytoplankton blooms for transporting organic pollutants into aquatic food webs

Many persistent organic pollutants (POPs) are hydrophobic and preferentially sorb to organic matter such as algae instead of being dissolved in water. The transport of POPs in the aquatic environment is therefore strongly linked to the fluxes of organic matter, such as the sedimentation occurring during algal blooms. The sedimented organic matter is a food source for benthic fauna, and the POPs can in this way be incorporated into aquatic food webs. In this master thesis project, field sampling and chemical analysis of water, phytoplankton, sediment and fauna will be carried out to investigate the fate of POPs during phytoplankton blooms. The student should have laboratory experience and be interested in analytical chemistry. The project is scheduled to start no later than September 2014.

3. Evaluation of the removal efficiency of perfluoroalkyl substances in drinking water

The quality of tap water is considered to be high. Recently, however, several water sources had to be restricted or even shut down because of the occurrence of perfluoroalkyl substances (PFASs), such as perfluorooctane sulfonate (PFOS). PFASs have received increasing public attention due to their persistence, bioaccumulative potential, and toxicity. However, only a few data are available on the removal efficiency of PFASs in drinking water treatment plants. The student performing this master thesis work will evaluate different water treatment techniques in pilot-scale with respect to removal efficiency of PFASs. The experiments and chemical analysis will be performed by the student. The student should have laboratory experience and be interested in analytical chemistry. This project is scheduled to take approximately 6 month.



4. Temporal trends and fluxes of emerging pollutants in sediment cores



Emerging pollutants have received increasing public attention due to their persistence, bioaccumulative potential, and possible adverse effects on human and wildlife. A widely used way to reconstruct the historical trend of contaminants is to study sediment cores. The student performing this master thesis work will investigate different organic emerging pollutants in sediment core samples to examine their flux deposition and temporal trends. The chemical analysis will be performed by the student. The student should have laboratory experience and be interested in analytical chemistry. This project is scheduled to take approximately 6 month.

5. Atmospheric deposition of emerging pollutants in northern Sweden

Atmospheric deposition (rain and snow) is an important input pathway of emerging pollutants to remote areas such as northern Sweden. The investigation of spatial and temporal variations in atmospheric deposition fluxes will improve our understanding of the long-range transport potential of emerging pollutants to remote areas. In this master thesis project, atmospheric deposition samples from northern Sweden will be analysed to investigate the spatial and temporal variations of emerging pollutants in the environment. The student interested in this project should have laboratory experience and be interested in environmental and analytical chemistry. This project is scheduled to take approximately 6 month.

Contact persons

Karin Wiberg:

karin.wiberg@slu.se

070-2341570 or 018-673115

Lutz Ahrens:

lutz.ahrens@slu.se

070-297 2245

Sarah Josefsson:

sarah.josefsson@slu.se

018-673032