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The [Soil Science Group, Institute of Geography, University of Bern](#), invites applications for a

100% Postdoc position in Environmental Biogeochemistry/Soil Science to study the mobilization and (bio)chemical transformation of antimony (80% postdoc and 20% Scientific coordinator of the Soil Science unit).

Responsibilities and background

We are looking for a motivated scientist who is interested in being part of our on-going project titled “*Release, biomethylation and biovolatilisation of antimony in soils. Drivers, mechanisms, and global environmental implications.*” This project is financed through an SNSF Project funding awarded to Prof. Adrien Mestrot and takes place at the Institute of Geography.

Due to its extensive industrial use, antimony, a naturally occurring element, has become a pollutant of environmental concern. Despite the rapid growth in its use, antimony has been much less studied than other trace element such as arsenic or mercury and very little is known about its biogeochemical cycle. Flooded environments, likely to become more common due to the rapid climate changes, are key environments in the cycle of antimony affecting its storage and remobilization. In addition, antimony is impacted by biological mechanisms taking place in soils such as methylation and volatilization, modifying its physicochemical properties and consequently its toxicity and mobility in the environment.

The main objective of this research project is to develop analytical methods for the detection of methylated and volatile species of antimony and to study the fluxes of volatile antimony from contaminated sites and the factors driving its volatilisation. Additionally, the Postdoctoral researcher will collaborate with a PhD candidate (2nd year) in the study of the mobilisation of antimony from soils upon flooding, including X-ray absorption spectroscopy measurements (XANES). To do so, the researcher will:

- a) Improve the analytical techniques used in the lab, adapt existing techniques, and/or develop new ones for the chemical speciation of antimony.
- b) Sample and perform field measurements of antimony-polluted shooting ranges in Switzerland, rice paddies in China and a river catchment and a floodplain in Australia.

- c) Perform lab experiments that allow to unravel the methylation and volatilisation of antimony in the environment.
- d) Use Size Exclusion Chromatography coupled to UV-ICP-MS, HPLC-ICP-MS and other techniques like HPLC-AFS or GC-ICP-MS, depending on the candidate's background.

The project will take full advantage of the state-of-the-art analytical facilities present at our Institute (e.g. clean room, HPLC-ICP-MS (single quadrupole and triple quadrupole), HPLC-ESI-MS, incubation facilities).

Scientific coordinator

For the 20% of the contract, the postdoctoral researcher oversees administrative tasks including the organisation of the Soil Science colloquium, elaboration of documents related to the well-functioning of the group, management of the student assistants and of the unit's website, purchase of advance lab equipment, coordination of scientific collaborations with external third-parties and HPLC-ICP-MS troubleshooting among other tasks.

Requirements

The successful candidate should hold a PhD degree in Geography, Geology, Chemistry, Environmental Sciences or similar. Substantial experience in using analytical instruments is required, specially ICP-MS and its coupling to HPLC. Specific experience with method development in HPLC, antimony cycling, microbiology or field sampling would be an asset. The successful candidate should have excellent English writing and communication skills.

Further information

The salary is according to SNSF and University of Bern guidelines, with funding guaranteed for 2 years starting April 1st or at earliest convenience.

If interested, please send your application (CV, motivation letter of 1 page max, and the names and contact details of at least two references in one single file in PDF format) before February 19th by email to hire.giub@gmail.com.