

“Chemical Geology”

Call for contributing to the Special Issue

Geo(hydro)thermal Arsenic: Genesis, Chemistry and Environmental Implications

Guest editors:

Jochen Bundschuh: Institute of Applied Research (IAF), University of Applied Sciences, Moltkestr. 30, 76133 Karlsruhe, Germany & Department of Earth Sciences, National Cheng Kung University, 1 University Road, Tainan City, Taiwan, e-mail: jochenbundschuh@yahoo.com

Thomas Pichler: Fachbereich Geowissenschaften, Geochemistry and Hydrogeology, Klagenfurterstr. 1, 28359 Bremen, Germany, e-mail: pichler@uni-bremen.de

OUR SPECIAL ISSUE: Consists of a collection of papers on arsenic species in geothermal fluids, including those from terrestrial and submarine hydrothermal systems that reflect current thinking and awareness in that field that involves cutting edge science. The Special Issue will be focused on geochemical and biogeochemical processes related to arsenic in geothermal fluids and related environmental issues of scientific or public concern with global significance. The Special Issue will contain review papers and original research articles to provide an assessment of the state of the art and what are future directions in arsenic research related to geothermal fluids.

NOTE: (a) A FULL PAPER is a contribution describing original research, including theoretical exposition, extensive data and in-depth critical evaluation. The journal does not accept case studies, unless it is a study that has a wide impact. (b) REVIEW PAPERS: Only critical review papers will be considered.

SYNOPSIS:

Most geothermal fluids are rich in dissolved arsenic (As) and concentrations can be in the range of several to several tens of mg/L. However, little is known about the source, transport, speciation and fate of As, which all depend on geological, geochemical and physical conditions such as rock and mineral assemblage, redox potential, pH, pressure and temperature. In areas where geothermal fluids mix with groundwater or surface water bodies, which are used for human consumption, irrigation or other purposes, the geothermal As constitutes a natural hazard. This system, however, is complex and, often it remains unclear whether geothermal or anthropogenic As constitute the source. Determination of specific inorganic or microbiological assemblages (patterns) to identify geothermal As in these waters is therefore of importance.

Many measurements of As in geothermal fluids and cold groundwater in contact have been performed in the last decades, but practically none of the data are conclusive. Some data even is contradictory, likely due to insufficient sample densities and hence unsatisfactory statistical evidence.

The proposed special issue (SI) will focus on major advancements and challenging issues, innovative developments and future perspectives of research on As in geothermal fluids and the interaction between these fluids and groundwater and seawater. It is a multidisciplinary scientific endeavor that is problem-driven with the aim to provide knowledge and understanding about the behavior of As in terrestrial and submarine hydrothermal systems and the impact on the environment at or near the earth's surface. The SI would take a holistic approach to the interpretation of As behavior in the subsurface, ranging from biological to thermodynamic approaches. New information in this area is necessary to understand the role geothermal As plays in the genesis of As-rich ground- and surface water resources, which are used for human consumption.

Authors are invited to submit manuscripts for consideration to be published in the special issue covering the following topics (but the editors also welcome papers on other related topics):

I. Arsenic in geothermal fluids: occurrence, genesis, mobility, transport

- Sources of As in geothermal fluids: mineral phases present in different types of geothermal reservoirs (volcanic/non-volcanic, high-enthalpy/low-enthalpy, supercritical or not, marine/terrestrial)
- Solid-fluid phase interactions and As mobilization processes from solid mineral phases into geothermal fluids (within the geothermal reservoir and along pathway of uprising geothermal fluids), As mobility controls, As speciation and the dependence on geological, geochemical and physical conditions such as, redox potential, pH, pressure and temperature
- Geochemical and biogeochemical processes in the fluid and between solid and fluid phases, which are occurring along the pathway of ascending geothermal fluids and their relevance for altering the chemical fluid composition, the As contents and species composition. Differences of respective behavior under adiabatic and non-adiabatic conditions.
- Hydrogeochemical modeling

II. Identification of pattern to distinguish geothermal As from other As sources

- Using pattern of inorganic chemical and microbiological composition, the As source may be identified

III. Interactions of geothermal fluids mixing with shallow ground- and surface water and related environmental and human exposure effects

Manuscripts will be reviewed with the same rigor as for all submissions to Chemical Geology.

Confirmation of intention to contribute a manuscript and preliminary title, coauthors and topic/subtopic number should be sent to Jochen Bundschuh (jochenbundschuh@yahoo.com) by February 15th 2011. All manuscripts must be submitted to the Electronic Submission System (<http://ees.elsevier.com/chemge/>) by **JULY 31st 2011**, to be considered.

Submission of Paper: It is important to indicate in your cover letter that the paper is for the Special Issue: *Geothermal Arsenic: Genesis, Chemistry and Environmental Implications* special issue and also to select the appropriate article type (Special Issue: Geothermal Arsenic) from the drop down list when submitting your paper to the Editorial system.

IMPORTANT DATES:

Call for contributions:

January 2011

Confirmation of intention to contribute
a manuscript and preliminary title, coauthors

deadline 15 February 2011

Manuscript submission by authors to EES:
according to the authors instructions
of Chemical Geology

deadline 31 July 2011