



Geogenic Chemicals in Groundwaters and Soils: a research training network

Funded under the European Commission Sixth Framework Programme (2002-2006), Marie Curie Actions –
Human Resources and Mobility Activity Area, Research Training Networks

www.aquatrain.eu

NEWSLETTER

Issue 1, January 2008

Edited by: Julia Leventon, Early Stage Researcher, CEU

Contributions from: Jasmin Mertens, Early Stage Researcher, ETH

Geerke Floor, Early Stage Researcher, UDG

Claudia Cascio, Early Stage Researcher, DMU

Michael Berg, Lead Scientist, EAWAG

AquaTRAIN is a [Marie Curie Research Training Network](#) established specifically to develop a better understanding of the behavior and environmental impact, including human health, of geogenic elements, in groundwater and soils in the European Union.

The AquaTRAIN research training network integrates leading centres in Europe active in soil/water systems research within a coherent framework of dedicated young researchers through a joint innovative research programme focused on the cycling of chemicals between soil/sediment and water, and the implications for environmental protection, remediation and management.

Welcome to the AquaTRAIN newsletter. This will be a quarterly publication for circulation to members and associates of the AquaTRAIN research network. It is intended to be a useful and interesting source of information on the work of AquaTRAIN, and related projects. It should also be a way of sharing experiences related both to research and to the mobility aspect of the network.

Contents:

Conferences and Meetings – Page 2

Publications – Page 3

Fieldwork – Page 3

Information Sources – Page 9

Geography Challenge – Page 9

The Next Issue – Page 9

Conferences and Meetings

Completed

24th-28th October 2007 – AquaTRAIN Introductory Workshop, Manchester, UK, including an open meeting “Geogenic Chemicals in European Groundwaters: Health Impacts, Occurrence, Mobility and Remediation – Implications for Regulation/Policy.

All AquaTRAIN researchers and scientists visited Manchester for this first workshop which marked the beginning of the research phase of the project. A lot was achieved in a short space of time. Researchers were introduced to each other and the network and learned about each others research aims. Additionally, discussion was entered into over the selection of study sites. The open meeting gave everyone a comprehensive overview of the context of the AquaTRAIN research.

Over the weekend, researchers were sent to the Lake District for team building event. The network aspect of AquaTRAIN is essential in fulfilling its research aims; it is important that the researchers can collaborate and support each other even though they are in institutions all over Europe. The weekend away gave them a chance to learn each others approaches to working through a treasure hunt challenge. Equally importantly, everyone was able to get to know each other socially over an evening meal, a few bottles of wine, and some silly games. Fun was had by all!

29th – 30th October 2007 - Workshop on Arsenic in Groundwater in SE Asia, Manchester, UK

Jointly organised by Michael Berg (EAWAG, Switzerland) and David Polya (University of Manchester, UK) in conjunction with the [Environmental Mineralogy Group](#) and the [Applied Mineralogy Group](#) of the [Mineralogical Society of Great Britain and Ireland](#), this workshop will focused on key aspects of the occurrence and impact of arsenic in shallow groundwaters in SE Asia, particularly Cambodia and Vietnam. It was attended by all AquaTRAIN researchers who enjoyed some fantastic presentations and posters.

Currently 16 submitted manuscripts are being considered for publication in the Special Issue of "Applied Geochemistry" arising from this meeting. Mickey Sampson and David Polya were interviewed by BBC World Service (Health Check programme) immediately after the meeting on issues related to groundwater arsenic and human health impacts in Cambodia.



Participants of the Workshop on Arsenic in Groundwater in SE Asia, Manchester, UK

Forthcoming

22nd-23rd January 2008 – AquaTRAIN Management and Steering Committees, Dubendorf, Switzerland

To be attended by all members of the management and steering committees. This meeting will also be attended by researcher Chris Parsons to present his report into study site selection. The event is organized by Stephan Hug of EAWAG.

Researchers are reminded to contact Helen Rowlands or Julia Leventon with any questions they would like raised.

26th – 29th February 2008 – Geostatistics Workshop, ISPRA, Italy

To be attended by all researchers and scientists. The event is organized by Luis Rodriguez-Lado. Researchers will present their progress so far as well as learn about the theory and application of Geostatistics and GIS.

Publications

Thank you to Michael Berg for sending in this forthcoming publication.

Michael Berg *, Pham Thi Kim Trang, Caroline Stengel, Johanna Buschmann, Pham Hung Viet, Walter Giger and Doris Stüben. Hydrological and Sedimentary Controls Leading to Arsenic Contamination of Groundwater in the Hanoi Area, Vietnam: The Impact of Iron-Arsenic Ratios, Peat, River Bank Deposits, and Excessive Groundwater Abstraction. *Chemical Geology*, In Press (2008).

Fieldwork

Many of the researchers have undertaken fieldwork before Christmas.

This has served a multitude of purposes, from giving practice at sampling techniques, preliminary data collection, and gaining insight into appropriate research design. Jasmin has provided an excellent report about the work conducted by herself, Helen Rowlands, Enoma Omeregie and Christina Jimenez. Helen then continued to Hungary to meet up with Julia Leventon where they took more samples, interviewed water users, and met with a water authority to find out about policy implementation and data management.

At a similar time, Claudia Cascio conducted fieldwork in Sicily, and Geerke Floor headed to the Ebro Delta. Their photos are provided below.

First groundwater samples and impressions from W-Romania.
By Jasmin Mertens

The propeller-driven airplane descended very closely above the houses of Cluj-Napoca, while the sun was setting on Thursday, 6th Dec. Surrounded by smooth hills and located in North Transylvania, Cluj with its population of 310 000 is the second largest city of Romania.

The building of the small airport has the familiar atmosphere of a waiting room: the passport control, the luggage belt and the arrival hall are placed all in the same room. While Calin drives us through the city, Helen and I get a first impression of the Romanian life: of the new, Western grocery stores, of the advertisement for computers and cellphones on one hand, and the traffic signs for horse carriages on the other hand. But the street is dominated by cars, mainly of the brand "Dacia" that is

built in Romania, now stuck in the traffic like everywhere else in the rush hour. After a dinner with Cristina and Calin (where we first tasted the "ciorba", the Romanian soup), we all went to the airport to form the arriving committee for Enoma and his two shiny field boxes.

The first day in Cluj passed quite quickly with the pick-up of a rental car and the visit at Prof. E. Cordos` (Cristinas' other supervisor, fig.1) office and his institute of chemistry and instrumental analysis (ICIA; www.icia.ro). The institute specialized on analytical chemistry and spectroscopy was just renovated. While sitting in Cristinas' office we noticed with some astonishment the speaking system, which functioned as an easy way of communication between the different laboratories and the offices. Finally, in the evening, we had a meeting in Calins' office at the University Babes Bolyai (UBB, www.ubbcluj.ro) to discuss the exact outline of the sampling trip.



Fig. 1: Helen in a conversation with Prof. Emil Cordos (note the map on the table!)

After a long night of field trip preparation, the car was packed at 6.30 am, and everyone's tired eyes looked towards the starting adventure in the West. Helen drove us keenly to

Oradea, the first stop for a brunch after two hours on a bumpy and sometimes winding road. Driving in Romania in general was an adventure to us. Not because of the horse carriages and bikers (the rental car manager warned us, the drivers of those vehicles were often drunk), but because of the car drivers with scary passing maneuvers. We were told that a highway system for the entire state is on its way. It is needed! The road that leads southward from Oradea, parallel to the border to Hungary got worse. But we were close to our first stop: Salonta, 35 km south of Oradea. Our first well was an artesian, public well, frequently used by the habitants of the village (fig. 2). And our work started: getting out the pH-, Eh-, O₂- and conductivity probes, GPS, the syringes and sample bottles, and pressing water through the filters for the analysis of anions and cations and through the SPE-cartridges and the aluminum column for on-field Arsenic speciation... A busy concentration took over our small group. Meanwhile, Calin was interviewing the curious crowd of water users, which started to surround us, about the water, the well, and the water use. The spectacle "scientists at work" got more and more professional with every day of sampling.



Fig. 2: The group at an artesian well in Salonta: Cristina, Helen, Calin and Enoma (from left to right).

To get samples from shallow wells (fig. 3), we needed to find locals with the possession of a private well, which were willing to let us to do our measurements. Most of the times this was not a problem, even if we once needed to be quiet because the husband was sleeping. Almost every house had a well in their yard used mainly for irrigation of vegetables and for animals, and people opened their doors for us very welcoming.

Helen and Calin left after the second day: Helen went off to Hungary to meet Julia and to get samples from the other side of the border; Calin went back to important office work. Together with our new interpreter Bogdan Rentea, Enoma, Cristina and I continued our quest for artesian and shallow wells in the North of Oradea, a blank spot in terms of well locations and water quality.



Fig 3: Typical shallow wells



When we came...



When we left...

Figure 4: Sampling is a social task

During these four days of sampling we have reached the goals we had: get water samples from artesian and shallow groundwater wells with a good north-south distribution along the Hungarian – Romanian border, find new well locations, and get an overview on water uses and on the water distribution situation. Water samples will be used for cation and anion analysis, the determination of total arsenic concentration and arsenic speciation, and O- and H-isotope analysis.

With this first success in our minds and in our suitcases, we were back at Cluj International airport escorted by Calin one week after our arrival. Back to our labs, to the analysis and the results... next year!

Claudia Cascio in Sicily

Claudia has been sampling water in the Etna region in November; and human sampling in Sicily in December.



Photo on Mt. Etna from Biancavilla



People collecting groundwater for drinking purpose (Well Currune)



Mt. Etna from Bronte City and Lava of the 17th century

Ebro Delta, Spain

The Ebro Delta will be one of our key field sites. Not everybody is able to visit the site so easy. Therefore a photo-impression. Enjoy your trip!



The delta attracts many birds. On this photo: flamingos!



Punta del Fangar

The system is very dynamic



Poblenou and Lake L'Escanyissad



Canals (Your reporter feels at home)



Agriculture, mainly rice, is important.



Your reporter

Copyright: satellite photo NASA. Photos: Geerke



Beautiful skies everywhere



Useful Information Sources

From Claudia Cascio.

The International Volcanic Health Hazard Network (IVHHN) -

<http://www.dur.ac.uk/claire.horwell/ivh/hn/>

It was launched in February 2003 through a Leverhulme Trust Research Interchange Grant.

Members of IVHHN work in diverse scientific disciplines such as volcanology, epidemiology, toxicology, public health and physical chemistry with a common aim of trying to determine the health effects of volcanic emissions. IVHHN currently involves 31 expert members from 25 international institutions and over 130 corresponding members.

Claudia has joined the newsletter as a Corresponding Member (Members who have a broad interest in IVHHN and would like to be kept informed of workshops and information).

Should be interesting for someone else!

Geography Challenge

A little challenge for your next break. Which European (on European Continent, not necessarily EU) country is this?

Flag: red, white and green.

Borders: No coastline, bordered by five countries.

Main Religion: Russian Orthodox.

Highest Point: Dzyarzhynskaya Hara (345m a.s.l).

Lowest Point: On the Nemen River (90m a.s.l).

Predominant Landcover: Forest (34%).

The Next Issue

The next issue will be produced in mid-April 2008. The deadline for anything to be included in the newsletter is Friday 28th March. News of conferences, publications, project developments, fieldwork etc is all welcome.

Additionally, the below is some of the content that I would like to include, and the information I need you to send in order for it to happen. Please help! But don't limit it to this – if there is anything you would like included, all you need to do is write it!

Feature	Information Needed
Researcher activity updates	One sentence from all researchers on what is occupying your time e.g. "I am writing a newsletter and transcribing interviews"
Challenges	What challenges have you faced and how have you overcome them? This could include practical issues with mobility or research, or any theoretical points that you have been struggling with. If you have any questions remaining, include them and maybe someone can help.