Newsletter

of the

International Association of Geochemistry and Cosmochemistry

Number 39, October 2003

Mel Gascoyne, Newsletter Editor

The International Association of Geochemistry and Cosmochemistry is a Nonprofit Organization

NEWS FROM THE ASSOCIATION

Please renew your membership in the IAGC today

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NEWS FROM THE ASSOCIATION

Why Should I Join the IAGC?

You might well ask this question, especially when you see the invoice accompanying this Newsletter that asks for $15 (US) for 2004. The answer is simple: you get 1) a much-reduced price for subscription to ***Applied Geochemistry***, one of the leading environmental and geochemical journals currently available, 2) symposia and conferences organised or sponsored by the IAGC on specific aspects of environmental geochemistry and 3) access to (and membership in) Working Groups in a number of areas of geochemistry. The annual fee is just a nominal amount; it pays for only about one-third of IAGC's funded activities. The remainder comes from Elsevier, the publisher of *Applied Geochemistry*, from royalties on institutional subscriptions to AG. So please read on, get your money's worth and send your comments, news items and details of future events to the Newsletter Editor.

IAGC Business Office

The IAGC Business Office commenced operations in the fall of 2002 with appointment of its Business Manager, Mel Gascoyne. The Office collects annual IAGC dues and subscriptions to its journal, *Applied Geochemistry*. A summary of the activities of the Office is as follows:

1. Initial invoices were sent out to all current and past members of the IAGC in November/December 2002 (about 900 envelopes) and this was followed up with a reminder notice to unpaid current members in February 2003.

2. As a result of this, there are now just over 400 members of the IAGC for 2003. Applications (from the invoices sent out) are still coming in, albeit slowly now. This is about the same level as last year's membership and is a little disappointing especially in view of the attempts made to reach previous members (about 50 previous members did renew, however).

3. The new membership application form is now being published in *Applied Geochemistry* issues and efforts are being made to advertise the IAGC more widely at its sponsored meetings

4. Several past members have complained of missing *Applied Geochemistry* issues. To resolve this problem, the Office has arranged with Elsevier to send it a package of 5 copies of each issue for 2002 as they are produced. These have been sent on to the affected members.

5. Payments from the IAGC (Pinawa) bank account have been made to Elsevier to support the IAGC's 10 gratis members in developing countries (set up by Gunter Faure last year) and to cover the subscriptions for Honorary Members.

6. Communications between the Business Office and Elsevier Science have gone smoothly this year, despite changes in contact personnel and Elsevier's office location, and most requests from members have been attended to quickly.

Any IAGC member that is paid-up and has a subscription to *Applied Geochemistry* subscription for 2003, but is not receiving copies of *AG* should contact Mel Gascoyne at the Business Office (address at the end).

The renewal process for 2004 begins with your receipt of this Newsletter. Please fill in the loose-leaf renewal invoice (or electronic version if you receive the Newsletter by e-mail), include payment (cheque or charge card preferred) and fax or mail it to the Business Office. If you are not on the IAGC e-mail list and would like to be, please indicate this on the invoice form.

THE FUTURE OF THE IAGC

Members are invited to attend IAGC meetings to be held in conjunction with the International Geological Congress in Forence, Italy, in 2004, August 20-28. A new Council will be voted in and Elsevier Science will brief Council and interested members on future directions, issues and ideas related to the publication of Applied Geochemistry.

CALL FOR NOMINATIONS

Positions on the Nominating Committee

Two IAGC ordinary members are needed to serve on a Nominations Committee chaired by Russell Harmon. This committee is set up to review nominations for Councillor. If you are interested in serving, please contact Russ (addresses at the end of Newsletter) and send him a copy of your resumé.

Positions on the Publications Committee

Two IAGC ordinary members are needed to serve on the Publications Committee chaired by Nick Sobolev to help in negotiating a new contract with Elsevier Science for the IAGC member rates for subscription to *Applied Geochemistry*. If you are interested in serving, please contact Nick (addresses at end of Newsletter).

Please use the attached form to renew your IAGC Membership today.

Minutes of the IAGC Council Meeting, Vernadsky Institute, Moscow, Saturday, May 31, 2003

Council members present were E. Galimov, A. Demény, R.S. Harmon, J. Hoefs, G. Kurat, N.V. Sobolev. Quorum was reached.

Minutes were recorded by A. Demény.

1. A New Working Group
   A proposal for a new Working Group was received by E. Galimov from Professor Kuzmin (Irkutsk, Russia). The title is "Geochemistry of Great Lakes". E. Galimov and N. Sobolev informed Council that Professor Kuzmin's group receives support from various international sources (e.g. from Japan) and has been active in the field for a decade. The Council members present approved the establishment of the new Working Group.

2. President's Report.
   As one of the major benefits of IAGC, the journal *Applied Geochemistry* runs well, the number and quality of manuscripts, as well as its impact factor is improving.

   The newly established Business Office is being run by M. Gascoyne; dues collection is done smoothly.

   The Council has to be revised soon as several members have served their final terms. The Treasurer's position has also to be filled as D. Long has resigned. The Newsletter Editor's position also has to be filled.

   Council meetings are always rather problematic. Electronic communication is a help, but personal discussion is also needed. The next meeting can be held in Florence at the 32nd IGC. Under the auspices of IAGC there will be sponsored three symposia: 1) a topical symposium (Geochemical environment of the genesis of life – E. Galimov and T.C. Owen), 2) a general symposium (Frontiers in analytical geochemistry – R.S. Harmon, J. Hoefs and R. Vannucci) and 3) a workshop (Global Geochemical Baselines

organized by IAGC WG leader D. Smith). Additionally, several symposia will be convened by IAGC Council members and WG leaders (Synergy of GIS technology and the Earth Sciences: current state and future prospects CGI – R.S. Harmon and H. Mitasova; Stable isotope geochemistry – G. Cortecci, J. Hoefs and A. Longinelli; short course on Medical Geology – R.B. Finkelman; Isotopic and chemical tracers of water-rock interaction in natural and contaminated systems – T.D. Bullen and Y. Kharaka; Early Earth systems – J.D. Kramers and H. Rollinson).

E. Galimov suggested organizing sessions coupled to the Council meeting where the members would present their state-of-the-art research. The meeting in Moscow was organized this way (see later).

The Vernadsky Medal has been established; 10 medals have been produced.

An Ingerson Lecture will be organized for the next IGC.

JOIN THE IAGC

If you are not a Member or if your Membership has lapsed, contact the IAGC Business Office at <IAGC@granite.mb.ca>. Annual dues are only $15US. For that you get two Newsletters per year and a low cost subscription to ***Applied Geochemistry***.

3. Treasurer's Report
   The current financial situation was reported by D. Long:
   Beginning 2002: $42,874.87
   Closing 2002: $54,711.55
   Current worth as of May 2003: $98,681.22

4. Secretary's Report.
   A. Demény reported on the actions and matters that arose during the period from December, 2002 to May, 2003. There were 5 requests for funding support: 4 were supported, 1 request from an individual was not approved. The overall support policy may be revised according to the problems encountered in reviewing these requests.

5. Business Office Report.
   M. Gascoyne prepared an account list of the budget of the Office to collect dues and subscriptions for *Applied Geochemistry*. The cost of running the Office was approved by Council members.

   R. Harmon suggested that the Statutes should contain the tasks of the Business Office. The appropriate revision of the statutes may be approved during the next meeting in Florence. The Business Office should also advertise the International Geological Congress to have a wider IAGC participance.

6. Newsletter Editor's Report
   At present there is no Newsletter Editor. R. Harmon suggested that the Business Office might take the task. M. Gascoyne should be contacted if he can accept and to discuss the conditions.

7. Reports from Working Groups
   Three reports were received from the Working Groups: "Geochemistry and Disease", "Water-Rock Interaction", "Thermodynamics of Natural Processes". The first two working groups are very active, they have organized well-recognized conferences and attracted a large number of participants.

   The Council members discussed the causes of working group inactivity and possible measures to be taken. They agreed that inactive WGs should be terminated. Exact descriptions of activities should be collected from the WGs before the next meeting in Florence when the appropriate decisions can be made.

   The new Working Group (Geochemistry of Great Lakes) was discussed. A. Demény will contact Professor Kuzmin for further information.

   Many WG participants are not IAGC members. IAGC should be advertised among these colleagues by the Business Office.

8. Report of the Publications Committee

R. Harmon reported the Committee's situation and activity. The Statutes state that the Committee consists of four members and a chairperson. The chairman, R. Harmon has resigned, but he expressed he would take the position of a member.

The major tasks of the Committee were: overseas publications, negotiations with Elsevier about subscription rates, the editorial board. A new 3-year contract will be made in 2004, thus the new Committee will have an important negotiation to perform. There are cc. 400 subscriptions at present.

The Council has voted and approved N.V. Sobolev as Chairman of the Publications Committee.

9. *Applied Geochemistry* Editor's Report.

R. Fuge prepared a report of the present state of *Applied Geochemistry* (see elsewhere in this Newsletter). The journal is well-recognized in the scientific community, Elsevier is satisfied with this improvement. R. Fuge suggested that IAGC-sponsored meetings may have special *Applied Geochemistry* issues. The Council members discussed the question and agreed that only the possibility should be given, otherwise the paper selection should be as strict as in general papers' case. One to two special issues should be released in a year.

Some of the Associate Editors are not IAGC members, the Business Office may distribute IAGC information among them.

10. New business

10.1 The V.I. Vernadsky Medal Award

E. Galimov informed the Council about the Medal's background. The Russian Academy of Sciences has also permitted the use of the name. Ten medals have been produced at a total cost of $2000 US.

The duties of the Nomination Committee for the Vernadsky Medal were discussed. The Committee should decide on the medallist in 2004. The medallist should deliver a lecture at an international meeting. The lecture would be called Vernadsky Lecture and it can be linked to the Ingerson Lecture. The IGC organizers will be informed by the Secretary.

After discussion, J. Hoefs was elected as chairman of the Vernadsky Medal Nomination Committee; members are E. Galimov, R. Harmon, G. Kurat, N. Sobolev. The Business Office will contact the IAGC members for nomination. The nomination should include one page of scientific background and publication list.

The procedure's description should be included in the Statutes that can be approved at the next IAGC meeting.

10.2 New Council members

Several Council members have served their last term, and thus the Council must be reformed. It was suggested that inactive Council members (after one year of inactivity) may be replaced by the President. The procedure should also be included in the Statutes.

R. Harmon was elected by the Council members as chairman of the Council Nomination Committee. The nominations should be open until April, 2004, then voting may be done electronically.

10.3 Treasurer's Position

E. Galimov suggested that J. Ludden should propose a name for this position, most likely from the U.S.A. as the bank account is kept there. R. Harmon expressed that D. Long should be asked for the exact bank account details.

10.4 Next Council Meeting

The next meeting will be held in Florence at the 32nd IGC. A. Demény should ask the IGC organizers for an appropriate date and room.

11. Other business

Discussion on the future of IAGC. R. Harmon expressed that the strengths of IAGC are the journal *Applied Geochemistry*, the Working Groups and sponsoring the conferences. The conditions of sponsoring may be an advertisement of IAGC in the meetings' proceedings.

The Statutes should revised in order to control Working Group activities. The WGs should be reconsidered every fourth year.

Authors of accepted papers in *Applied Geochemistry* should receive an IAGC membership form. The Statute's revision should be done before the end of February, 2004.

ADDITIONAL PROGRAM: LECTURES
May 31 – June 1, 2003

As a new feature, the Council meeting was organized to include a scientific session of the members. The councillors delivered lectures in which they presented the state-of-the-art results of their research fields. The session took place over two half days. All the lectures were followed by stimulating discussions. The list of lectures is given below.

Eric M. Galimov
Biochemistry and radioecology of Kara Sea

Russell S. Harmon
Laser-Induced Breakdown Spectroscopy (LIBS) – A New Analytical Technology for Real-Time, In-Field Geochemical Analysis

Attila Demény
Amphibole degassing and its implications

Jochen Hoefs
Fluid evolution of ultrahigh-pressure rocks from the Dabie-Sulu area in China.

Gero Kurat
Iron meteorites: hot or cold?

Nikolai V. Sobolev
Diamond formation in mantle and crustal rocks

APPLIED GEOCHEMISTRY: EDITOR'S REPORT BY RON FUGE

In volume 17 (2002), a total of 105 full papers were published together with 3 critical comments and replies and 3 prefaces for special issues. The total page length was 1582 which was some 140 pages less than the previous year. This was due to the accelerated publication undertaken in 2001, and an emergency increase in page budget in an attempt to decrease a large backlog of manuscripts. We have reverted to 12 issues a year, the previous volume having been 15 issues due to a mistake by Elsevier. Three of the papers published were reviews. Of the 12 issues, 3 were specials: a Yucca Mountain issue, edited by Mel Gascoyne and Zell Peterman, selected publications from the 5th International Conference on Environmental Geochemistry edited by myself, and an issue on geochemistry of hydrothermal systems in the northeastern Pacific, stemming from DSDP work and edited by Bernd Simoneit.

During 2002 a total of 187 manuscripts were received (this does not include special issues) which is the highest ever number for a year, the previous highest being 158 in 2001. To date (September 16th 2003), I have received 165 manuscripts, so I suspect that the record may be broken again this year! The rejection rate, which was running at about 40%, has increased slightly and is now closer to 45%. On this point it should be noted that the increase in numbers of submitted manuscripts is, I feel, due in part to the increasing impact factor of *Applied Geochemistry*, which now stands at 1.45, a figure that I am very pleased with.

THOUGHT FOR THE DAY

The best way to have a good idea is to have a lot of ideas.
Linus Pauling

At the end of 2001, despite an accelerated publication schedule and an increased page budget, there was still some backlog. This was reduced again in 2002, and in the current volume (18), another accelerated publication rate and an increase in page budget has resulted in improved publication times. Issues 1 – 11 are already on the shelves and issue 12 is "ready to go", as soon as I have indexed the volume. I note that in issue 11,

which appeared in early September, most of the papers were accepted in February to April, while one was accepted in May. While this needs to be improved further I feel much progress has been made.

As I noted in my last report, I have been attempting to increase the number of reviews published. In 2002, three were published, however, currently only one is included.

During this year the journal has published two special issues on "Contaminants in Sediments" and "Arsenic Geochemistry" (from a session held at the last IAGC-sponsored Water/Rock Interaction conference). On the topic of special issues, I am aware that publishing too many of these could result in the journal being labelled "a special issues journal". However, I feel that good quality special issues enhance the reputation of the journal. Notwithstanding this I am hopeful that, under normal circumstances, the number of special issues will be limited to no more than two a year. At the moment two are planned for next year: another on arsenic in groundwater (from the 31st IGC congress in Rio de Janeiro) and a special issue in honour of Gunter Faure, based on papers presented at the IAGC symposium held at the GSA meeting, October 2002.

Concerning special issues I feel strongly that for any conference held under the banner of, or sponsored by, IAGC, where a publication is envisaged, consideration should be given to publishing in *Applied Geochemistry*. To this end I would suggest that any conference which requests sponsorship from IAGC should be asked to provide details of proposed publications. I note, for example, that in the 6th International Symposium on Environmental Geochemistry, one of the theme meetings on mapping and backgrounds, sponsored by IAGC, is being published in another journal.

In 2002, two Associate Editors stepped down, Dr. Janet Herman, an Associate Editor since 1992, and Dr. Nils Gustavsson, an Associate Editor since 1996. In addition Dr Randy Bassett, an Associate Editor since 1998, has informed me that he wishes to resign. We owe these three a vote of thanks for their fine contributions to *Applied Geochemistry*.

During 2002, two new board members were appointed Dr. Xiangdong Li (Hong Kong) and Dr. Rob Comans (Netherlands). During the first part of this year we have appointed another four Associate Editors, Dr. Simon Bottrell (UK), Dr. John Gray (USA), Dr. Andrew Herczeg (Australia) and Dr Åsa Danielsson (Sweden). In inviting these additional Associate Editors I have tried to take into account the expertise necessary for the journal and the geographical distribution of board members. Again I would say that more Associate Editors are needed, particularly in the area of soil chemistry and water/rock interaction.

In my report last year I advocated the appointment of Dr. Nick Pearce, my colleague at Aberystwyth, to be my Editorial Assistant. This has occurred and has helped ease my editorial burden. I would also say that during 2002 and to date this year I have had little cause for complaint with regard to the publishers, Elsevier. For this I would like to acknowledge the help of Friso Veenstra, who has handled all problems efficiently, and Rob Webb who, until recently was the production editor handling the journal in Oxford.

THOUGHT FOR TOMORROW

Anyone who has never made a mistake has never tried anything new.
Albert Einstein

WORKING GROUP ACTIVITIES

Geochemistry and Disease (R. Finkelman)

Several Working Group Members attended the International Society of Environmental Geochemistry meeting held in Edinburgh in September 2003. The IAGC granted $3,500 to fund student participation at ISEG.

Oxford University Press has published a book on Geology and Health – Closing the Gap. It is the proceedings of a Medical Geology conference held in Uppsala, Sweden in September 2000. The book, edited by Cathy Skinner and Tony Berger, has some excellent articles.

Olle Selinus is continuing to make progress with the book "Medical Geology". It is being edited by Olle and several members of the Working Group and is nearing completion. It should be in print early next year.

The conference on Natural Science and Public Health - Prescription for a Better Environment was held at the USGS headquarters in Reston, VA on April 1-3, 2003.

Based on verbal and written feedback the conference was an unqualified success clearly demonstrating that the Public Health community not only accepts USGS involvement in human health related research, but enthusiastically welcomes the opportunity for collaboration and teaming.

There were 187 registered participants (at least 200 people attended the conference over the three day period). Of these 46% were from outside the USGS. The proportion of outside participants far exceeded our expectations.

A USGS Open-file report (no. 03-097) was produced for the conference. An electronic version of the report is online at http://pubs.usgs.gov/of/2003/of03-097/.

In their Public Health GIS News and Information Newsletter http://www.cdc.gov/ nchs/gis.htm. the Centers for Disease Control gave extensive coverage to our conference, the new book on Geology and Heath, the Medical Geology Working Group activities, our environmental and Human Health web page, some of our health-related publications, and the USGS Epidemioecology newsletter. The USGS newsletter is now called GeoHealth News and is available online at http://energy.er.usgs.gov/ medical_geology.htm. In November, Jose Centeno and I participated in the annual COGEOENVIRONMENT (Commission on Geosciences and Environmental Planning; a component of the International Union of Geological Sciences (IUGS)) in Chiba, Japan. We presented an invited 2-day workshop on Medical Geology. About 75 Japanese geoscientists and one biomedical researcher attended the workshop. Jose and I presented most of the lectures; Olle Selinus and two Japanese scientists contributed individual lectures.

Jose and I then presented the workshop on Medical Geology at the China University of Mining and Technology. The National Natural Science Foundation, the State Key Laboratory of Environmental Geochemistry, and the Key Laboratory of Coal Resources sponsored the workshop. Baoshan Zheng and one other Chinese scientist presented lectures. More than 200 people attended the workshop.

Medical Geology Workshops are scheduled for the ISEG conference in Edinburgh (September), Uruguay and Brazil (October), Malaysia and Australia (December).

Also, in March, Jose, Olle, and I presented a workshop on Medical Geology: Health and the Environment. Welcoming addresses were presented by the Undersecretary of Health,

Republic of Lithuania and by the Director of the Geological Survey of Lithuania. About 60 people attended the workshop; almost one-third were from the medical professions. A record seven countries were represented: Lithuania, Estonia, Latvia, Russia, Romania, Belarus, and Poland. Six local presenters and about a dozen posters were included in the workshop.

Thermodynamics of Natural Processes (G. Kolonin)

The activity of the WG on TNP in 2002 was carried out only in the form of private participation of its members in various international meetings (e.g. the oral presentation by Prof. G. Kolonin at the 18th General Meeting of IMA, Edinburgh; presentations by Drs. G. Palyanova and O. Gaskova at the Goldschmidt Conference in Davos).

The main scientific event of this year was the participation of a large group of the WG members from Russia and other countries in the International Symposium on Hydrothermal Reactions-7 in Changchun, China (August 10-14). In December 2002, recommendations were sent to a number of the WG members to participate in this meeting. Prof. V. Valyashko was advised to get in touch with the OC as a potential head of this group. As a result, the presentations by Prof. V. Valyashko (Inst. of General and Inorganic Chemistry, Moscow), Dr. A. Bychkov (Moscow State University), Dr. G. Pavlova (Institute of Geology, Novosibirsk), Dr. G. Likhoidov (Far East Geological Institute, Vladivostok) were included in the Program of this Symposium with coverage of registration fees and part living expenses for speakers. However, changes to this program were caused by the SARS outbreak.

Suggestions for improving IAGC activity include more active and systematic use of cooperation with other international associations and societies in the field of the earth sciences, chemistry, etc., to arrange scientific symposia or special sessions within the IGC and other general meetings

Water-Rock Interaction (Y. Kharaka)

Seven Executive Members of WRI Working Group (Paces, Armannson, Edmunds, Kharaka, Robinson, Fanfani and Brantley) met on 14-16 August at the British Geological Survey (Wallingford, England) to discuss plans for WRI-11 (2004) and to make a preliminary selection of a venue for WRI-12 (2007). With regard to WRI-12, we had excellent proposals from Australia and China. We decided to submit the names of both China (Yanxin Wang as SG) and Australia (Ian Cartwright as SG) to the Business Meeting of WRI-11 for the final decision.

The Eleventh International Symposium on Water-Rock Interaction (WRI-11) will be held June 27-July 2, 2004, in Saratoga Springs, New York, USA.

The Secretary General for the symposium is Dr. Susan L. Brantley, Director of the EMS Environment Institute and Professor of Geosciences at Penn State University. She is being assisted in planning the symposium by Penn State Conferences & Institutes, which will coordinate symposium registrations, marketing and program logistics; the Saratoga Convention and Visitors Bureau, which will handle hotel reservations; and members of the symposium organizing committee. The interested reader should visit WRI web site at: http://www.outreach.psu.edu/C&I/WRI"

More details of WRI-11 are given below.

COMING EVENTS

IAGC-Sponsored Meetings

WRI 11

The IAGC Working Group on Water-Rock Interaction (Chairman, Yousif Kharaka) is planning WRI 11, (Secretary-General Susan Brantley), the Eleventh International Symposium on Water-Rock Interaction to be held in Saratoga Springs, New York, USA, June 27-July 2, 2004.

Four-page extended abstracts are requested for the Symposium and were due 15 October 2003. Late abstracts will only be accepted if peer review is possible within the publication timeframe.

Registration for WRI will be open until 15 January 2004. After that date a late fee will be assessed. Registration and abstract submission information can be found at the Web site: http://www.outreach.psu.edu/c&i/wri. Field trip information, including a raft trip to the Hudson River gorge, is also posted.

Plenary Speakers for WRI-11 include:

Janet Hering, California Institute of Technology, USA
Liane G. Benning, University of Leeds, UK
C. Page Chamberlain, Stanford University, USA
Craig E. Manning, University of California at Los Angeles, USA
Oliver Chadwick, University of California, Santa Barbara, USA
Max Coleman, Caltech NASA Jet Propulsion Laboratory, USA
Giovanni Chiodini, Osservatorio Vesuviano, Italy.

Special Oral and Poster Sessions:

Geomicrobiology: A Symposium in Honor of Henry Ehrlich, Jun Abrajano, Jeremy Fein
Radionuclide Interactions with Minerals and Microbes, Rich Reeder, A. J. Francis
Advances in Spectroscopic and Microscopic Techniques for the Study of Water-Rock Interactions, Brian Phillips, Michael J. Borda, Wayne Nesbitt
Reactivity of Organic Compounds during Water-Rock Interactions, Everett Shock
Carbon Dioxide and Hydrogen Sulfide Sequestration, Martin Schoonen
Weathering Studies at All Space and Time Scales, Lee Kump, Lou Derry
Complexity of Mineral Surfaces: Experimental and Theoretical Studies, Kathy Nagy, Patrick Brady, Patricia Maurice
Volcanic-Geothermal Water-Rock Processes and Degassing: A Symposium in Memory of Donald White, Jen Lewicki, Bill Evans
New Isotope Techniques in Water-Rock Interaction, Gray Bebout, Ariel Anbar
Iron Biogeochemistry, Jon Chorover
Crustal Fluid-Rock Interactions, Mass Transfer, and Cycling of Volatiles, Gray Bebout, Jay Ague
Geochemical Modeling from Molecular to Global Scales, Jim Kubicki, Carl Steefel

General Oral and Poster Sessions:

Thermodynamics and Kinetics of Water Rock Systems,
Redox Processes: from Bugs to Wastes to Ore Deposits,
Biogeochemistry,
Water-Rock Interaction Processes in Groundwater and Sedimentary Systems,
Water-Rock Interaction Processes in Watershed
Aqueous Geochemistry

Contact Martin Schoonen, Sue Brantley, Dave Cole for further details.

2004 IGC

The 2004 International Geological Congress will take place from 20-28 August 2004 in Florence, Italy and your participation in the IAGC-sponsored general session G-04.01 on Frontiers in Analytical Geochemistry is invited. The frontiers of research are rapidly moving forward as a result of revolutionary advances in technology. Complete information about the Congress is

available from the web site http://www.32igc.org. Session convenors are Russell Harmon, Jochen Hoefs & Riccardo Vannucci.

The session on Frontiers in Analytical Geochemistry, will focus on the applications of recent advances in technology for in-situ, spatially resolved chemical and isotopic analysis of geologic and environmental samples. This session will highlight the latest technical developments and their contribution to a better understanding of natural processes across a broad spectrum of both organic and inorganic geochemistry and cosmochemistry.

Abstract Submission & Review: Abstracts for oral or poster presentations may be submitted until **January 10, 2004**.

The abstract review processes will take place from 11 January to 29 February 2004. Presenters of accepted abstracts must meet the payment deadline for Congress registration fees of 31 March 2004.
Proceedings: We anticipate a publication as a special volume of the journal *Applied Geochemistry*.

NEW BOOK BY GUNTER FAURE

Gunter Faure and Teresa M. Mensing, *Principles of Isotope Geology; A New Presentation of the Subject*. Third Edition. Wiley and Sons, 111 River St., Hoboken, New Jersey, 07030. Price to be determined.

The book contains a comprehensive presentation of all aspects of isotope geology. It is intended to be used both as a textbook for beginning graduate students in Earth Science and as a reference book for professionals. The subject matter is presented in 30 chapters, each of which ends with a summary, numerical problems, and extensive references to the literature.

Other Meetings

IAEA Meeting in Vienna

A Joint European Stable Isotope Users group Meeting, (funkily known as JESIUM) is being organized in Vienna, 30 August – 3 September 2004. For details and expression of interest see http://chemsrv0.pph.univie.ac.at/JESIUM/. The aim of the meeting is to bring together stable isotope scientists from eclectic backgrounds to exchange ideas, methods and experience, thus creating a forum for free and open discussion, to initiate innovation and new collaborations. We hope to encourage communication across disciplines and country boundaries; we would also like to encourage participation from outside Europe.

Scientific Programme
On October 1st there will be an opportunity to visit one of the many stable isotope laboratories in Vienna: Soil Science Unit, IAEA Seibersdorf, IAEA, Isotope Hydrology Laboratory, Vienna, Austrian Research Centre Seibersdorf or the University of Vienna.

Selected papers presented, will be published in Rapid Communications in Mass Spectrometry and Isotopes in Environment and Health Studies.

WHAT'S IN A NAME?

Did you know that the IAGC acronym applies to more than just ourselves in the world of societies? An electronic search of "IAGC" on Google got 2360 hits (!) and in the first 30 there were:

1) the International Association of Geophysical Contractors,
2) the Illinois Association for Gifted Children,
3) our IAGC page under Dave Long (plus other sites under our Global Geochemical Baselines Working Group),
4) something about IAGC rights of students,
5) the India Association of Greater Charleston,
6) an IAGC Metadata Working Group (not one of our IAGC Working Groups),
7) the Indigenous Australians Goodwill Committee, and numerous others that were not defined in the title. So we are not alone out there!

International Workshop on the Application of Isotope Techniques in Hydrological and Environmental Studies

This meeting in Paris, France, September 6-8, 2004 honours the memory of Jean Charles Fontes – ten years after his death.

First Announcement

The following sectors of isotope investigations and applications will be covered:

Precipitation
Atmospheric vapour and green-house gases
Surface waters and dissolved compounds
Evaporation studies
Groundwater (including thermal waters) and dissolved compounds
Groundwater age determination
Contamination and protection of water resources
Palæohydrology
Climatology, palæoclimatology and climatic change
Environmental and palæo-environmental changes

A round-table discussion on the future of isotope techniques in hydrological and environmental investigations will conclude the Workshop. The emphasis will be on recently introduced isotopes and new developments and applications.

Oral and poster presentations are scheduled. Articles based on selected oral presentations are planned to be published in a special issue of a scientific journal.

Anyone interested in taking part in the workshop is kindly requested to contact Jean-Luc Michelot, "OrsayTerre", CNRS-Université de Paris-Sud, Orsay (e-mail: michelot@geol.u-psud.fr). The deadline for submitting presentations proposals will be communicated later, but an early indication of the intention of making an oral and/or a poster presentation would be appreciated.

4th International Conference on Applications of Stable Isotope Techniques to Ecological Studies Wellington, New Zealand, April 19-23, 2004

Measurements of the relative abundance of stable isotopes of the lighter elements (e.g. C, H, N, O, and S) have become crucial research tools in the investigation of individual and community ecology, as well as large-scale ecosystem function and processes. Stable isotope approaches and methodologies are well suited to understanding trophic relationships, sources and processing of nutrients, behavior of contaminants in complex food webs, studies of nutritional pathways, and wildlife research in marine, terrestrial and aquatic systems, among many others. With continuing technological advancements that now include compound-specific measurements and the assay

of large suites of stable isotope species including the heavier elements, applications of these tools to ecology continues to grow dramatically. As a result, stable isotopes are becoming more and more accessible and key to researchers working on various aspects of terrestrial, marine and freshwater ecosystems, from microscopic to macroscopic scales.

The goal of this Conference is to assemble a wide range of scientists engaged in ecological research that use stable isotope techniques, and to share ideas and state-of-the-art science with the broader scientific community.

For details and registration:
http://207.195.94.13/isoecol/.

Symposium Announcement: Microbially mediated Mn and Fe oxidation

A symposium on Microbially Mediated Manganese and Iron Oxidation in the Biosphere, will be held at the 227th ACS National Meeting in Anaheim, California, USA from March 28 - April 1, 2004. Several half-day oral and poster sessions are planned.

The symposium will focus on the molecular mechanisms by which manganese and iron are oxidized in the environment, with emphasis on microbially driven processes, the products of these oxidation reactions, and their impacts on the chemistry of natural waters. We encourage papers on the full range of subjects within this area, including:

- Acidophillic oxidation of Fe(II) sulfides and acid mine drainage.
- Neutrophilic oxidation of Fe(II) in terrestrial and marine environments.
- Structures, compositions, and reactivity of biogenic manganese and iron oxides.
- Bioinorganic chemistry of manganese and iron oxidation processes.
- Chemistry of manganese- and iron-ligand complexes.
- Mechanisms of heavy metal sequestration by biogenic Mn and Fe oxides.
- Abiotic manganese and iron oxidation processes as analogs or competing mechanisms.
- Coupling between biotic and abiotic processes.
- Microbial manganese and iron oxidation in bioremediation and/or permeable reactive barrier applications.
- Controls on micronutrient availability and carbon cycling in microenvironments.
- Occurrence and roles of manganese- and iron-specific ligands in aquatic environments.

For more information, please visit
http://membership.acs.org/g/geoc/upcoming.html

Multi-tracer studies in Geochemistry- When the sum is greater than the parts

Sponsored by the Division of Geochemistry (GEOC) at the 227th ACS National Meeting, Anaheim, CA, March 28 – April 1, 2004. The breadth, sensitivity and specificity of analytical techniques used to examine environmental samples have evolved considerably over the past decade. Where once samples analysis was limited by cost, time or instrumental resolution, now large suites of data can be collected which can greatly improve the investigator's ability to gain critical information on source, alteration and breakdown pathways. In many cases the additional data gained by newer analytical techniques can resolve ambiguities and apparent conflicts in data interpretation. Some examples are the combined use of ^{13}C and ^{14}C analyses on organic matter, biomarkers (e.g. lignin) and bulk percent composition measurements, trace elemental and isotopic measurements on inorganic constituents, Chemical imaging of elemental distributions with detailed speciation studies, and multi-stable isotopic studies (H, C, N, O and S) of organic and

THE CHEMISTRY OF NUCLEAR FUEL WASTE DISPOSAL
A New Book By Professor Don Wiles, Carleton University, Ottawa, Canada

This book, written for non-specialists, should be important for anyone seriously interested in nuclear waste disposal. They will find here information and easily understandable explanations of the processes involved, the areas of certainty and uncertainty and the bases for statements about the risk and safety to humans and their environment.

Policy makers and their advisors will find this book a reliable source of information on the state of knowledge, the necessary assumptions and the scientific background for the recommendations on which policy decisions and investments will be made.

Published by Polytechnic International Press, Montreal, Canada; $36 (CDN) plus shipping, obtainable from D.R.Wiles, BDW Enterprises, Ltd., 2227 Peter Robinson Road, R.R.#2, CARP, Ontario, K0A 1L0, Canada

inorganic compounds. This session seeks studies that use these suites of data to address the classic questions in geochemistry and environmental sciences: What are the sources of the compounds studied, how are they altered or degraded, what are the transport mechanisms, and how are they preserved?

Abstracts may be submitted online at: http://oasys.acs.org/. Deadline for online abstract submission: Nov 21 2003. Deadline for hardcopy abstract submission: Nov 14 2003. Check the Geochemistry Division web site for updates: http://membership.acs.org/g/geoc/.

INVITED ARTICLE: Applied Geochemistry & Environmental Health: The Balkan Example

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It is well recognized that the chemistry of the environment can influence health. Iodine deficiency in soil and water and the incidence of goiter in the Great Lakes region is just one example. There are times, however, when a population's health has been adversely affected, the environment is thought to play a role, but the causative agent is unknown. To solve such a problem multidisciplinary teams are needed. For example, environmental geochemists are needed to link the chemicals to environmental media through the study of their sources, form, and mobility. Environmental toxicologists are needed to link the chemical to humans through the study of routes of exposure. Medical practitioners are needed to link the chemistry to the cause of the disease.

The study of Balkan Endemic Nephropathy (BEN) is one example of such a multidisciplinary program. BEN is a slowly progressing, primarily tubulointerstial, distinct nephritis, affecting people in Bosnia, Croatia, Serbia, Bulgaria, and Romania. BEN becomes overt usually in the fourth or fifth decade of life, eventually leading to renal failure and death. After decades of research, an understanding of BEN has not progressed significantly beyond its prominent features, such as its stable geographic foci, the presence of unaffected households living in close vicinity to affected families in endemic villages, and the close spatial association of endemic and non-endemic villages. Researchers seem to agree that BEN may result from prolonged exposure to one or more environmental toxicants acting alone or synergistically on genetically predisposed individuals. This is known as the environmental hypothesis for the etiology of BEN. The

causative agent could be elemental or compound (inorganic or organic), microbe, virus, or some combination of chemicals. The chemical or compound could occur naturally in the environment, have had its concentration altered by human influences, or be synthetic. BEN might result from short-term exposure to high levels of a toxin(s), long-tem exposure to low levels of a toxin(s), and/or exposure to an environment deficient in some key chemical(s).

A study area is the Vratza region of northwest Bulgaria, lying just north of the Stara Planina or the Balkan Mountain Range. The endemic area covers approximately 2,500 km^2 with over 40 affected villages. Topography of the region is characterized as low mountainous terrain with elevations between 200 and 600 meters. Geology is characterized by Lower Cretaceous marls, sandstone siltstones, glauconite; Miocene clays, sandstones, limestones; and Quaternary alluvial deposits.

The applied geochemistry contribution of this study is testing the hypothesis that that the spatial occurrence of BEN is linked to the chemistry of the environment (soils, water, and or food). In order to test the hypothesis we have been comparing the chemistry of environmental media between BEN and non BEN villages. We use clean techniques for sampling and in addition to the major elements and parameters we obtain extensive geochemical data from ICP-MS measurements.

Interestingly, little is known about the hydrogeochemistry of groundwater from endemic regions, where there are three major sources of drinking water. One is reservoirs, which were constructed to collect spring water from remote sources, provide treatment with hypochlorite for disinfection purposes, and deliver it as "tap" water to villages or groups of villages. These supplies can be seasonally intermittent and are often not available during the dry summer season. The two other sources are springs, that are abundant in the karst terrain of this region, and shallow wells (<15 meters in depth) that are commonly located within individual household gardens. Both can serve groups of households or whole villages.

Although our study of these waters is not complete, results to date are interesting. For example, most chemicals in both types of locations were not above recommended drinking water standards, arsenic concentrations were typically higher in BEN samples than non-BEN samples and uranium concentrations were above WHO suggested limits in many well and spring water samples, whether from a BEN or non-BEN village.

A result we would like to share with you is how simple geochemical indicators might be used to gain a better understanding of such complicated environmental problems. For example, Figures 1a, b, c are the Piper Diagrams for water from wells, springs, and tap respectively. The three sources for water in the study area are mainly a $Ca\text{-}HCO_3$ type as most of the waters cluster in respective portions of the cation and anions triangles. This might be expected in a karst terrain. The figures show differences among some of the BEN and non BEN villages. A few of the non-BEN villages contain a relatively higher amount of Mg than BEN villages. This pattern is observed for the same villages whether the samples are from wells, springs, or tap water. This suggests that there are differences in the groundwater chemistry between BEN and non-Ben villages, but the cause of the differences (e.g., bedrock composition or human influence) is unclear.

There are various lines of evidence that humans have to some degree altered water quality. For example, Figure 2 is an illustration of NO_3^- concentrations from the various water sources. The WHO recommended drinking water concentration (50 mg/l NO_3^-; acute) is shown for reference. The villages are plotted from lowest to highest NO_3^- concentrations for comparison. This

type of plot has no biogeochemical significance and is only used to show the range of NO_3^- values.

Highest NO_3^- levels were found in the wells of both types of villages with little differences between them. In all but one sample, concentrations were above or well above the recommended guideline value. Springs in BEN villages also contained NO_3^- values that often were higher than the recommended guidelines and in general the values are significantly (90% confidence limit) higher than in springs from non-BEN villages. In most cases NO_3^- concentrations in tap water were below the recommended values, but some tap water from BEN villages contained high concentrations.

It is generally accepted that NO_3^- concentrations in uncontaminated groundwater is typically below 1 mg/L (as NO_3). The high values present in the Vratza area most likely represent NO_3^- from agricultural contamination. Wells are generally located within or very close to household gardens. They are shallow (< 15 meters) and application of fertilizers or other farm runoff could easily influence nitrate concentrations in the wells. Nitrate concentrations in the springs and taps are interesting in that contamination sources might be considered to be on a larger scale than that of local gardens. In addition, NO_3^- concentrations are clearly higher in BEN villages. There does seem to be some differences in BEN and non-BEN villages as observed from NO_3^- in springs and tap. Unfortunately, the hydrogeology of the region is poorly understood, precluding an understanding of sources for and pathways of NO_3^- in the springs and taps. High nitrate concentrations also might indicate the susceptibility of these waters to other forms of contamination such as pesticides.

Further evidence for the influence of human activities on water chemistry is illustrated in Figure 3, which is a plot of Na^+ versus Cl^- in the study area groundwater. There does not appear to be a likely major natural source for Cl^- in the groundwater based on the geology. Less than 5 mg/L might be expected. However, Cl^- levels are quite high (up to 270 mg/L in well samples and 120 mg/L in springs, and 35 mg/L in taps), which indicates contamination (note that sodium hypochlorite additions could influence these ion concentrations in tap water). Of the many possible sources for human-induced Cl^- to the environment table salt (halite) might be the most common. If halite were the dominant source, then water samples would have Na:Cl (mmol/L) ratios of one. From the clustering patterns, halite could be the dominant Cl^- source in most wells and in tap water from BEN villages. There are clearly other sources for Cl^- (most likely anthropogenic) but their nature and pathways are unclear.

Little work has been done on the aqueous geochemistry of drinking water in the Balkans. This initial study of the groundwater system in the BEN endemic region of Vratza, Bulgaria, shows that the waters have evolved from the dissolution of rocks such as limestone (calcite). Except for possibly U, heavy-metal concentrations do not seem to be a concern. Nitrate levels are high, most likely from agriculture practices and might be considered a health risk. Nitrate and other indicators (Na, Cl) show evidence of the influence of human activities on water quality both at the household level and at the village level or larger scales.

The study shows differences in drinking water between BEN and non-BEN villages, consistent with the working hypothesis for the research. However, these differences cannot at this time be related to the cause or distribution of BEN because these differences are not fully understood. This poor understanding is in part related to lack of data on groundwater geochemistry and hydrogeology. In addition, how these findings relate to BEN endemic foci in other areas of the Balkans is not known. Clearly, more work needs to be done on understanding the chemistry of water supplies in the Balkans to address not only

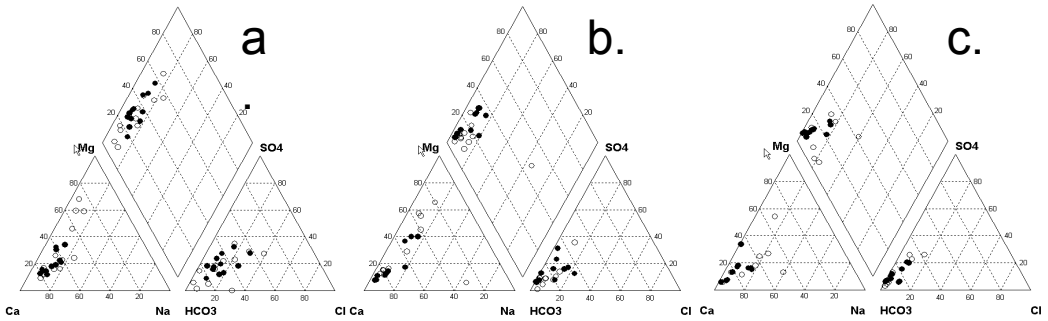

Figure 1. Piper diagrams for a. wells, b. springs, and c. tap waters. Samples are for endemic villages, solid, and non endemic, open circles.

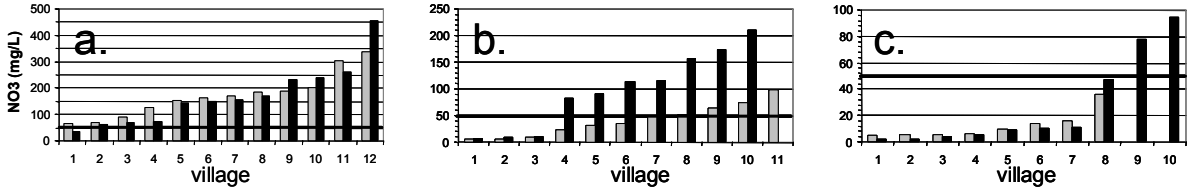

Figure 2. Nitrate (as NO_3^-) in endemic (black) and non endemic (gray) villages: a. well, b. springs, c. tap. WHO 50 mg/L guideline for acute exposure is indicated.

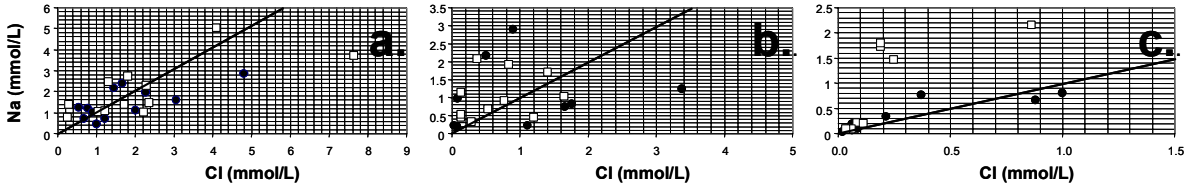

Figure 3. Na versus Cl in a. well, b, spring, and c. tap waters in study area. Samples from BEN villages are solid and from non-BEN open. The line represents the expected ratio of Na versus Cl if their concentrations were controlled by halite (NaCl).

historical heath issues (e.g., BEN) but also new and immerging environmental health issues.

Acknowledgements

This research is funded by grants to the Institute of International Health at Michigan State University from the Forgarty International Center (NIH) (# 5D43 TW00641-03) and NATO (# SfP 971905).

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