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The medical geology revolution

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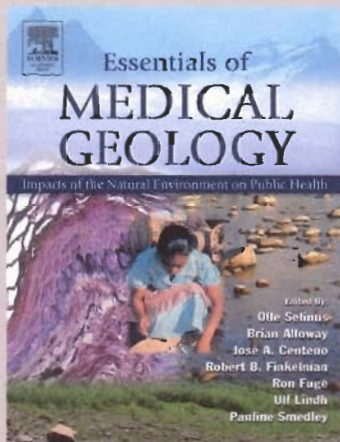
Although geologic factors play key roles in a range of environmental health issues that impact the health and well-being of billions of people worldwide, few actually realize how crucial a role these factors play in animal and human health. In 1996, this situation motivated the International Union of Geological Sciences (IUGS) to form an International Working Group on Medical Geology (MGWG), headed by Olle Selinus of the Geological Survey of Sweden (SGU). This working group's primary aim was to promote awareness concerning this issue among geoscientists, medical specialists, and the public at large.

Since the Working Group was established, steady progress has been made in this field. In October 1997, the group met in Vale, Colorado, USA. At this meeting, the term "Medical Geology" was adopted by the participants. The next meeting of the Working Group took the form of a workshop held in Uppsala, Sweden in 1998. Discussions focused on the feasibility of preparing a new handbook on medical geology. In September 2000, some 50 people participated in a second meeting and workshop in Uppsala, where a two-day seminar was held on medical geology, entitled "The Geochemical Environment and Human Health". A volume of proceedings was subsequently published¹. The workshop participants discussed future work to be undertaken by the group, including editing newsletters, creating an internet homepage, generating other informational materials, and publishing an interdisciplinary book on medical geology designed for a wide audience.

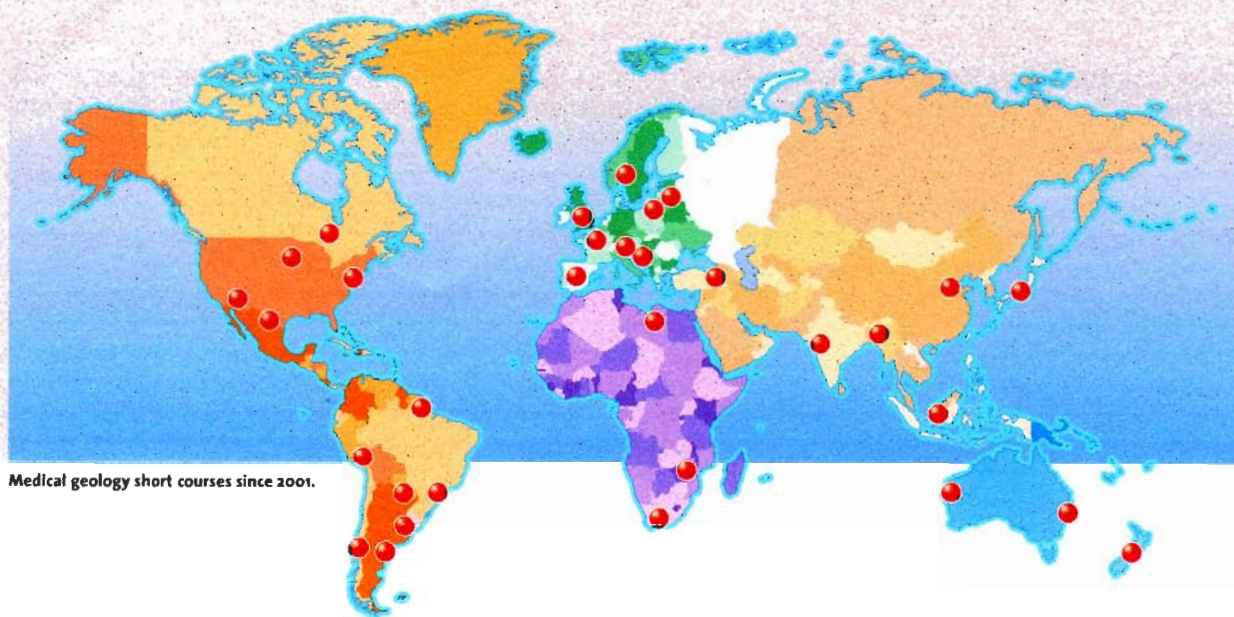
The International Geologic Correlations Programme (IGCP) launched a new project in

2000, "IGCP 454 Medical Geology," chaired by Olle Selinus. The primary aim of the project was to foster contacts between scientists in developing countries working on medical geology issues and their colleagues in other parts of the world. For the first time, this afforded an opportunity for scientists from developed and developing countries to come together in a truly international and interdisciplinary forum and to identify and tackle significant environmental health problems.

In 2000, the group was joined by Bob Finkelman, U.S. Geological Survey (USGS), and Jose Centeno, U.S. Armed Forces Institute of Pathology (AFIP). Both had since 1996 been working independently in medical geology on issues that paralleled and complemented the objectives of IUGS-supported activities and had developed a popular short course on the health impacts of trace elements and metal ions that could easily be brought in line with MGWG objectives. They presented a short course in 2001 at a meeting in Lusaka, Zambia. The enthusiastic reception it received was a convincing demonstration that the



(1) H.C.W. Skinner and A.R. Berger, editors (2003) - *Geology and Health: Closing the Gap*. Oxford Press, Oxford, 179 p.



Medical geology short courses since 2001.

medical geology short course would be a powerful tool with which to advance the Working Group's objectives. A request for funding was submitted to the International Council of Science (ICSU), which responded with a \$50,000 grant, sufficient to cover a number of medical geology short courses. This was the first ICSU grant obtained for any IUGS activity.

Medical Geology Short Courses

The ICSU money actually allowed many more short courses to be funded than initially proposed. Since then, these courses, conducted by Centeno, Finkelman and Selinus, have been presented in over 30 countries; they have been attended by thousands of students and professionals with backgrounds in geoscience, biomedical/public health science, environmental science, geography, engineering, chemistry, etc. In addition, local scientists are invited to describe medical geology work in progress in their own regions. We have produced a 300-page syllabus and a CD containing the lecture materials used in the short course, as well as supplementary materials. It is our hope and expectation that this material will be used by participants to conduct courses of their own in medical geology.

Symposia and Congresses

The working group and the IGCP project have also been active in promoting medical geology at meetings around the world by organizing and/or sponsoring special sessions or symposia on medical geology; they have also provided financial support to allow students and professionals from developing countries participate.

The Swedish Royal Academy of Sciences was the venue for the most recent International Symposium on Medical Geology, which was organized in May 2006 under the auspices of the Academy. The activity succeeded in bringing together more than 100 scientists from all over the world to discuss the current state of medical geology and future directions.

Book

In 2005, Elsevier published a book entitled *Essentials of Medical Geology*, edited by Olle Selinus and six associate editors². The work contains contributions from over 60 distinguished authors from around the world, about 50% of whom are geoscientists and the remainder physicians, veterinarians and scientists from other branches. More than 800 pages long, the book has illustrations in

full colour. It was awarded recognition by the British Medical Association as a major contribution to Public Health, and by the Association of Scholarly Publishers in the geology/geography category.

The International Medical Geology Association (IMGA)

As a recent step in the development of medical geology, the International Medical Geology Association (IMGA) was established in January 2006. The Directors of the Association are the authors of this paper. We have also appointed an executive committee and six Councillors to represent the broad geographic distribution of Medical Geology and the wide range of disciplines that are embraced by this topic. Information can be found on the website <http://www.medicalgeology.org>.



(2) O. Selinus, B. Alloway, J.A. Centeno, R.B. Finkelman, R. Fuge, U. Lindh and P. Smedley, editors (2005) - *Essentials of Medical Geology*. Elsevier, Amsterdam, 820 p.