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# GEOHEALTH I:

BUILDING BRIDGES ACROSS THE GEOLOGICAL  
AND HEALTH SCIENCES

4–6 March 2008, Reston, Virginia, USA

*Cosponsored by The Geological Society of America's Geology & Health Division  
and the U.S. Geological Survey*

**Christa Stratton**, Interim Director, GSA Communications & Marketing

Naturally occurring geology-based health hazards include environmental pathogens, radon, arsenic, coal, zinc, volcanic releases, dust, cadmium, asbestos, and volatile organic compounds (VOCs), among others. GSA's first specialty meeting on geology and health aimed to highlight these complex, Earth-linked human health issues and enhance communications between the geological and health sciences in the study of these issues.

This interactive conference explored successful cross-disciplinary interactions through featured case studies on airborne, soil-borne, and drinking-water contaminants and pathogens. Paired geologists and health scientists shared their perspectives to help identify and shape the research agenda on future needs in the geology and health arena. Meeting attendees included a fairly high percentage of people from the biomedical–public health community, and both the public sector and government agencies were represented.

**Geoffrey S. Plumlee**, research geochemist, U.S. Geological Survey; vice-chair of GSA's Geology and Health Division; and member of the GeoHealth I Science Advisory Committee explains that a primary goal of this meeting was to learn how earth and health sciences can improve cross-disciplinary communication and cooperation. Discussions presented perspectives from both earth and health scientists and addressed the following questions:

- How can earth scientists make their capabilities known to research partners?
- What types of studies can be done jointly?
- In which health arenas is earth-science input needed?
- Why is geohealth a timely and important subject?

Meeting participant **Robert B. Finkelman**, U.S. Geological Survey (retired) and research professor at The University of Texas at Dallas, describes geology and health as an emerging geoscience discipline with tremendous growth potential. "Geologists can make significant contributions to problems that are very understandable to the public and to politicians. There is growing recognition that disruption of the environment through global climate change, natural catastrophic events (tornados, hurricanes, volcanic eruptions), and so forth, leaves a

Go to [www.geosociety.org/meetings/08geohealthI/](http://www.geosociety.org/meetings/08geohealthI/) for details.



legacy of human health disruption. The need is becoming obvious, and geology has a significant role to play in helping to understand, prevent, and solve these kinds of problems.”

### Meeting Highlights

Plumlee says, “The biggest highlight for me was having the opportunity to interact with a number of people from the health sciences that I had not come into contact with previously.”

“The format turned out to be very stimulating!” comments Finkelman. “Case studies were followed by two or three hours of free-form discussion, which created a lot of good give and take. It turned out to be a much better formula for stimulating discussion than having a more traditional series of half-hour presentations with two or three minutes of questions.”

“I really enjoyed the case studies,” Plumlee says. “One of the most interesting addressed arsenic in Bangladesh. It followed researchers from Columbia University: a group of earth scientists working with epidemiologists to understand the distribution of wells that were providing high arsenic groundwater, and how that was linked to disease rates. It was a beautiful example of extensive collaboration. Hydrologists and geochemists provided input on what might be controlling arsenic in the groundwater and different hydrogeologic environments in which higher arsenic groundwater was occurring. Public health scientists collected all the biomonitoring data, and the two groups working together greatly enhanced overall understanding of the problem.”

Another insight that came out of the meeting was that health scientists must not only design studies from a scientific perspective but must also meet legal and policy requirements. Public health sciences have been far more constrained by privacy requirements, for example, than earth scientists. Earth scientists working in this realm are going to become increasingly familiar with institutional review boards, which monitor, approve, and review biomedical and behavioral research involving humans to protect the rights and welfare of these research subjects. The meeting exemplified how scientists working together were able to come to an understanding of the kinds of data and study processes that other disciplines need in order to be successful.

### Funding Issues

“Coordinated funding of collaborations is an issue that has been with us since day one,” explains Finkelman. “I returned from China with a colleague in 1996 and looked into funding for research on a horrendous problem of arsenic and fluorine poisoning. Basically, it was possible to get funding for the health issues from the health community, and for the geoscience aspects of the problem from the geologic community, but there was no way to coordinate those efforts. Unfortunately that situation still exists. I think this is a critical issue: not simply the funding per se, but the coordination of funding for geoscientists and public health–biomedical researchers to ... coordinate their efforts on these issues.”

“The ideal situation,” notes Plumlee, “is to get a common source of funding early on in a project that will provide the venue for both the health sciences and the earth sciences work. If you have both sides working from a common funding source, it increases the ability to collaborate. In the arsenic case ... one-hundred-thousand U.S. dollars in seed money was put into place by Columbia University, and that was a case where a common source of funding actually allowed a team to get going on the project.”

### Foundation for Future Cooperation

According to Plumlee, “The conference did create opportunities for people to start talking about future collaborations. There was recognition on both sides that a lot of opportunities exist, and there was clearly interest from all the attendees in

trying to figure out where to start, and how to continue to enhance collaboration between disciplines. There was also recognition, however, that within the broad descriptors of health sciences and earth sciences there are actually a lot of different subdisciplines. Toxicologists, epidemiologists, and clinicians deal with different things. The same is true of hydrologists, geochemists, and petrologists. It is easy to speak in broad terms, but you can’t lump them all together. Each discipline has its own particular way of going about research and the system is rather complex. I think people came away with a better understanding of that on both sides.”

“There were some very good ideas about what [scientists] can do going forward,” says Finkelman in summing up the meeting results:

- Participate in joint meetings between earth- and health-science societies;
- Pursue an American Association for the Advancement of Science (AAAS) Gordon Research Conference focusing on these issues;
- Submit more cross-disciplinary manuscripts to existing journals; and
- Investigate the need for a new geology and health journal.

The GSA Geology and Health Division has grown to more than 200 members since its inception in 2006. Plumlee is looking forward to further growth and credits GeoHealth I with being an important step in that direction. He foresees the Division serving as a catalyst for increasing involvement in interdisciplinary studies and future alliances between GSA and professional health science societies.



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