



Environmental and health effects of
toxic elements, metal ions, and minerals

2005 INTERNATIONAL SHORT COURSE

Medical Geology

METALS, HEALTH AND THE ENVIRONMENT

27–28 OCTOBER 2005

UPPSALA, SWEDEN

Jointly Sponsored by:

Geological Survey of Sweden (SGU)

U.S. Armed Forces Institute of Pathology (AFIP)

U.S. Geological Survey (USGS)

International Union of Geological Sciences (IUGS)

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<http://www.medicalgeology.org>

SEE ALSO THE BOOK "ESSENTIALS OF MEDICAL GEOLOGY"

PUBLISHED 2005

SCIENTIFIC PROGRAM

Day 1: Thursday, October 27, 2005

8.00–8.30 REGISTRATION

8.30–8.45 WELCOMING REMARKS

8.45–9.00 Objectives and Short Description of the Course
Dr. Jose A. Centeno
Dr. Robert B. Finkelman
Introduction of participants

9.00–9.45 Medical Geology: An emerging discipline in environmental and human health.
Dr. Olle Selinus, SGU

9.45–10.00 Coffee Break

A. ENVIRONMENTAL HEALTH : SOURCES OF EXPOSURE AND HEALTH EFFECTS OF TRACE ELEMENTS, TOXIC METAL IONS, METALLOIDS

10.00–10.45 The Diversity of Trace Elements and Toxic Metal Ions in Environmental Health and Human Diseases
Dr. José A. Centeno, AFIP

10.45–11.30 Natural and Anthropogenic Sources, Transport and Fate of Toxic Metal Ions in the Environment
Dr. Robert B. Finkelman, USGS

11.30–11.45 Discussion

11.45–12.45 LUNCH

B. ENVIRONMENTAL TOXICOLOGY, GEOCHEMICAL STUDIES AND HEALTH EFFECTS

12.45–13.30 An Overview of Health Impacts of Coal and Coal Use
Robert B. Finkelman, USGS

13.30–14.15 Arsenic Poisoning: Natural History, Toxicology and Health Effects
Jose A. Centeno, AFIP

14.15–15.00 Coffee Break

15.00–15.45 The health impacts of trace elements – A case study of arseniasis and fluorosis
Robert B. Finkelman, USGS

15.45–16.30 Clinical and Toxicological Effects of Mercury Exposure
Jose A. Centeno, AFIP

16.30–17.00 Group Discussion and Summary

19.00 DINNER

Day 2: Friday, October 28, 2005

B. ANALYTICAL TOXICOLOGY: TRACE ELEMENT SPECIATION, MICROSCOPY, DETECTION, AND QUANTIFICATION METHODS

- 9.00–9.15 Welcome and review
Dr. Jose A. Centeno
- 9.15–10.00 Analytical methods for the study of metal ions in biological and tissue samples.
Dr. José A. Centeno, AFIP, Washington, DC
- 10.00–10.45 Analytical methods for the study of trace elements and toxic metal ions in geological and environmental samples.
Dr. Robert B. Finkelman, USGS
- 10.45–11.00 Coffee Break
- 11.00–11.45 Trace Element Speciation in Environmental Medicine and Toxicology
Dr. José A. Centeno, AFIP
- 11.45–12.15 Development and Use of International Geological Databases on Medical Geology
Dr. Olle Selinus, SGU
- 12.15–13.00 LUNCH

D. SPECIAL TOPICS ON MEDICAL GEOLOGY AND HUMAN HEALTH RESEARCH

- 13.00–13.30 The health impacts of mineral dust
Dr. Robert B. Finkelman, USGS
- 13.30–14.00 Medical Geology Factors in the Emergence of Infectious Diseases
Dr. Jose A. Centeno, AFIP
- 14.00–14.30 Application of Medical Geology to vector borne diseases and other issues
Dr. Robert B. Finkelman, USGS
- 14.30–14.45 Coffee Break
- 14.45–15.30 Prostate Cancer and its Potential Link to Trace Elements: Roles of Cd, Zn, and Se
Dr. Jose A. Centeno, AFIP
- 15.30–16.15 Health benefits of rocks and minerals
Dr. Robert B. Finkelman, USGS
- 16.15–17.00 Discussion and distribution of Certificates of Attendance

SCOPE AND PURPOSE

The scope of this Workshop is to share the most recent information on the relationship between impacts of toxic metal ions, trace elements, natural dusts, and their impact on the environmental and public health issues. The scientific topics of the Workshop will include environmental toxicology, environmental pathology, geochemistry, geoenvironmental epidemiology, extent, patterns and consequences of exposures to toxic metal ions and dust in the general environment (with the stress on the water quality), biological risk assessment studies, modern trends in metal analysis and updates on the geology, toxicology and pathology of metal ion and dust exposures.

OBJECTIVES

At the completion of this Workshop, the attendees will be able to:

- Know and gain information on the type of evidence available about geological sources and processes, environmental health, toxicology, and pathological manifestations of exposures of toxic metal species.
- Know and gain information about geochemical processes, natural and anthropogenic sources, speciation, modes of occurrence; to assess the impact of trace elements and toxic metal ion species on human and environmental health.
- Have an elementary understanding of environmental toxicology, epidemiology, medical geology as applied to the study of toxic metal species and trace elements.

WORKSHOP LEADERS / SPEAKERS

Dr. José A. Centeno, U.S. Armed Forces Institute of Pathology, Washington, DC

Dr Robert B. Finkelman, U.S. Geological Survey, Reston, VA

Dr. Olle Selinus, Geological Survey of Sweden

ABOUT THE SPEAKERS

Dr. José A. Centeno is a Senior Research Scientist and Chief of the Division of Biophysical Toxicology and the Education and Research Branch at the Department of Environmental and Toxicologic Pathology, U.S. Armed Forces Institute of Pathology (AFIP) in Washington, D.C. He has presented over 170 invited seminars and lectures, and published over 65 manuscripts on various topics of environmental toxicology, biomedical research and environmental health issues. He has served on the organizing and scientific committees of several international conferences, including as General Chairman of the 6th International Symposium in Metal Ions in Biology and Medicine (ISMIBM) (May 7-10, 2000), and co-chairman of the 7th and 8th ISMIBM (2002&2004). He has served on several international environmental and human health committees including the International Agency for Research on Cancer, the U.S. TOSCA-Interagency Testing Committee and the International Working Group on Medical Geology, and is currently serving as a committee member for the National Research Council Committee on Research Priorities for Earth Science and Public Health. He serves on the Editorial Board of three scientific journals, and as Director of the International Registry on Medical Geology. Dr. Centeno holds adjunct faculty professorships at four universities, is the recipient of the 1999 Distinguish Alumni Award on Science from the University of Puerto Rico-Mayaguez, Guest Professorship Award from China University of Mining and Technology (2002), Distinguished Professor Award from Turabo University in Puerto Rico (2003), and William Evans Visiting

Fellow from University of Otago, School of Medicine in Wellington, New Zealand (2004). Over the last decade, he has focused attention on environmental toxicology, environmental pathology, and health effects of trace elements, toxic trace metals and metalloids, and has conducted research and teaching activities on medical geology in over 25 countries.

Dr. Robert B. Finkelman, a senior research scientist at the U.S. Geological Survey (USGS) in Reston, VA, is widely known for his work on coal chemistry and as a leader of the emerging field of Medical Geology. Dr. Finkelman has a diverse professional background having worked at the USGS for 32 years, 7 years for Exxon, and has experience as a consultant and as a college instructor. For the past 10 years he has devoted his efforts to developing the field of Medical Geology. Dr. Finkelman is the author of 500 publications and has been invited to speak in more than 30 countries. He is an officer in several professional societies, associate editor of two scientific journals, and holds adjunct professorships at five universities. Dr. Finkelman was Chairman of the Geological Society of America's Coal Geology Division, 1990; Chair of the International Association for Cosmochemistry and Geochemistry, Working Group on Geochemistry and Disease, 1998 to present; founding member and co-chair of the International Medical Geology Association; recipient of the Nininger Meteorite Award, 1969; recipient of the Gordon H. Wood Jr. Memorial Award from the AAPG Eastern Section, 1999; a Fellow of the Geological Society of America since 1988; and the 2004 recipient of the Cady Award from the GSA's Coal Geology Division. Dr. Finkelman is currently the President of the Society for Organic Petrology and was a recipient of a 2004 U. S. State Department Embassy Science Fellowship in South Africa.

Dr. Olle Selinus is a Ph.D. geologist working with the Geological Survey of Sweden (SGU). During the 1960s and 1970s he worked in mineral exploration with a mining company and at the GSS. Since the beginning of the 1980s, Dr. Selinus research work has been focused on environmental geochemistry and geostatistical methods, including research on medical geology. He has served as the organizer of several international conferences in this field and has published over 80 manuscripts. Dr. Selinus is currently the Deputy Head of the Geochemical Division at SGU in charge of external research and development. He serves as Editor-in-Chief for the book on "Essentials of Medical Geology", as chairman of the international Initiative on Medical Geology, co-chairman of the International Medical Geology Association, and co-chairman of the IGCP project #454 Medical Geology.

WHO SHOULD ATTEND?

The Workshop is intended for geologists, geochemists, ecologists, chemists, biologists, occupational and environmental scientists, medical professionals, toxicologists, epidemiologists, environmental pathologists, bio-statisticians and any other health, environmental and geo-sciences professional with interest on Medical Geology issues, particular interest on the effect of toxic metal ion species on environmental and human health. An important aim of the Course is to provide the opportunity for forming contacts and networks between professionals working in different areas of environmental and human health.

The participants will receive Certificates of Attendance. The Workshop is limited to only 80 participants.

REGISTRATION FORM

Please complete and return no later than 1 October to:

Olle Selinus
Geological Survey of Sweden
Box 670
SE-751 28 Uppsala
Sweden

Surname

First Name

Title/Position

Organization

Mailing Address

Postal Code

Country

Telephone

Fax

E-mail

I intend to: Attend the Workshop

Registration fee 1500 SEK which covers all course material (syllabus and CD), two lunches and one dinner.

Registration fees for students 800 SEK

Pay before 15 October to
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