



School of Population Health

Ecology and Health/ Environmental Toxins and Medical Geology units

Summer School 2011

The School of Population Health is proud to add to our range of out-of-semester Summer School two additional options: 1) Ecology and Health 2) Environmental Toxins and Medical Geology.

With guest lecturers from the University of Texas and the Institute of Environmental Medicine at Sweden's Karolinska Institute, take advantage this rare opportunity to attend a unit for course credit, professional development or both.

Five-day Ecology and Health/ Environmental Toxins and Medical Geology unit

Dates: Monday 12 – Friday 16 December 2011

MPH Unit PUBH8783

Credit: 6 points

This 5-day postgraduate unit provides a regional and global perspective on health impacts from environmental disturbance. Lectures will be supported by case studies of recent national and international issues. The following topics will be covered:

- historical, current and emerging perspectives of ecological change and disease
- health perspectives of indigenous cultures and the environment
- health consequences of human population growth, urbanisation and industry
- global processes and health, including the effects of climate change, biodiversity loss and extinction
- environmental change and infectious disease ecology
- the future for Australia's ecosystems and human communities.

Ecology and Health - background

In recent decades it has become apparent that many emerging health problems cannot be solved using 'traditional' disease models alone. We require broader approaches to analyse interactions between humans and environmental factors, often drawing on ecology and environmental sciences.

The Ecology and Health research group is committed to providing quality teaching, research training and solutions related to this interdisciplinary perspective. Together with the



familiar areas of interest in the environmental health arena - impacts on health from water, soil, food and air contamination - our approach also focuses on examining the changes in health that may result from major ecological shifts, including urbanisation, loss of food and water resources, bioinvasion, climatic events and other environmental disturbances in a world out of balance.

Teaching team

Associate Professor Angus Cook is a leading researcher in environmental epidemiology and the Director of the Ecology and Health research group at the School of Population Health (SPH), UWA. Dr Cook has close research and education links with the public health community and has coordinated risk assessments/studies of major WA environmental health issues.

Professor Philip Weinstein is a former Professor at SPH. He is a graduate in both medicine and zoology, with specialist qualifications in public health (FAFPHM) and ecology (PhD). With this dual training he has become involved in research on the relationship between human health and ecosystem health and has published extensively on the environmental determinants of disease.

Ecology and Health/Environmental Toxins and Medical Geology combination

For 2011 the Ecology and Health unit will be taught in combination with the special topic of Environmental Toxins and Medical Geology. This component can also be done as a self-contained three-day unit for professional development and is described overleaf.

Three-day Environmental Toxins and Medical Geology unit

Dates: Wednesday 14 – Friday 16 December 2011

Not for course credit: 3-day partial unit of Ecology and Health unit, available for professional development.

This 3-day unit explores the role of geological processes in the environment and their impact on human health.

Introducing the emerging discipline of Medical Geology, this unit focuses on the origin, distribution and fate of geological/geochemical agents in the environment and their impact of human health. It provides a multi-disciplinary grounding in medical geology theory and practice, drawing on biomedical, geological/geochemical and toxicological disciplines to offer an integrated view of the entire field. After exploring the origins and development of Medical Geology, we will examine the metals and other geogenic agents that impact on human health and disease. An analytical framework is introduced to assess and develop interventions, illustrated by practical examples of current issues. Topics to be covered include:

- sources, transport and fate of geological agents in the environment
- trace elements in environmental health and disease
- foundations of toxicology and environmental pathology
- health impacts of natural geological processes.

Environmental Toxins and Medical Geology - background

The human body is affected in many ways by the toxic elements, metal ions and minerals on our planet. Medical Geology encompasses issues such as the impacts of deficiency or excess; exposure to trace elements and minerals; inhalation of ambient and anthropogenic mineral dusts; transportation, modification and concentration of earth materials/compounds; and exposure to radionuclides, microbes and pathogens in a geological setting.

Medical Geology is a major emerging topic which defines and explores the impacts of geologic materials and processes on animal and human health. Based on collaboration among geologists, earth scientists, environmental scientists, toxicologists, epidemiologists and medical specialists, the field aims to understand human health effects by characterising the properties of geological processes and determining the dispersal patterns and exposure pathways of particular agents.

Teaching team

In addition to Assoc/Professor Angus Cook and Professor Philip Weinstein (above), the following international experts will be participating in the program:

Professor Bob Finkelman, formerly with the U.S. Geological Survey, is currently a Research Professor with the University of Texas, Dallas. He has promoted the emerging discipline of

medical geology for the past 15 years and conducted research primarily on the health impacts of coal and coal use. A founder of the International Medical Geology Association, he is the first vice-chair of the Geological

Society of America's Geology and Health Division. Professor Finkelman has co-edited two books and over 100 publications on medical geology and has presented courses and lectures in 50 countries.

Dr Karin Ljung is Adjunct Research Fellow at UWA and postdoctoral Fellow at the Institute of Environmental Medicine (IMM) at the Karolinska Institute in Stockholm, Sweden. A Soil Science graduate (MSc and PhD), she is actively involved in the International Medical Geology Association. Her research focuses mainly on metal exposure to children via soil, water, dust and food.

Dr Maria Kippler is a postdoctoral Fellow at the IMM, Karolinska Institute. She has a Master's degree in Toxicology and a PhD in Medical Sciences with focus on Environmental Medicine. Her research focuses mainly on toxic metal exposure in pregnant mothers and early life and the potential interactions with essential micronutrients.

Dr Renee Gardnew is a postdoctoral Fellow at the IMM, Karolinska Institute. She works within the areas of toxicology, epidemiology and human health risk assessment. Her main study is on exposed mothers and infants and how early-life exposures to toxic chemicals, especially metals, affect immune system development.

Who should consider participating in these units?

The units are of relevance to anyone interested in health or environmental issues, particularly:

- graduates in any health science field, including medicine, nursing, public health, pharmacology and toxicology
- graduates in geology, earth sciences, environmental engineering and other science fields
- individuals whose work directly or indirectly relates to health science/earth science issues
- managers in earth science or health science fields
- environmental health workers or health and safety officers
- food scientists and nutritionists.

The units assume basic science knowledge but students are not expected to be familiar with advanced topics in either health sciences or earth sciences.

Enrolment, fees and further details

For more details including fees, enrolment information and links, simply visit our website www.sph.uwa.edu.au/courses/summer-school

Want to know more?

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