Challenges in Environmental Geochemistry & Health: Health and its Costs?

Invited Speaker: Dr Alex G Stewart, Health Protection Agency, Liverpool, UK

Abstract: The environment has long been known to affect health, with the details beginning to become clear over the past 300 years, through such developments as verifiable theory (e.g. the emergence of the germ theory of infection), systematic and comprehensive observations (all sciences) and enhanced analytical techniques (e.g. in chemistry, clinical sciences, epidemiology).

Health is multi-factorial, with influences ranging from genes and diet through lifestyle and culture to international pressures (including trade and war). Nevertheless, our understanding has largely been built through a reductionist approach to ill-health and disease, by focussing on ever narrower spheres of interest. This method has been very successful in detailing the health effects of many substances: metals and metalloids (e.g. Pb, As, Cr); radioactivity (e.g. U, Rn, Cs) and organic compounds (petroleum hydrocarbons, pesticides).

Public Health action arising from this knowledge concentrates on communities rather than individuals, resulting in the prevention paradox, where the majority of cases of a disease come from a population at low or moderate risk, with only a minority of cases arising from the much smaller population at high risk. So, in environmental terms, interest is often focussed on high profile situations with, as yet, not enough attention paid to more moderate risks and exposures. The burden of disease approach pioneered by WHO is starting to resolve this, showing that, globally, from a few chemicals with available data, there are around five million deaths annually, with over 50% of them in children under 15 years of age.

However, communicating such scientific understandings to the lay community (which really includes scientists of other disciplines as well as the public) brings particular joys and problems, some arising from different perceptions and paradigms.

The challenges (and delights) of partnership working between geochemists and health professionals have never been greater, nor more rewarding: chemical mixtures and statistical confounders, new sciences such as genomics and environmental toxi-

cology, social and health inequalities and deprivation. How will this affect future research opportunities? What is the role of health professionals? What can they offer the environmental geochemist?

Short Curriculum Vitae: Alex Stewart is a Public Health doctor working for the Health Protection Agency in Liverpool, UK where he leads on environmental issues affecting health. His interests include the aetiology, epidemiology and effects on health of iodine deficiency, air pollution and emerging environmental threats, as well as communicating with the public and other professional groups. Before working in Public Health, Alex was a General Practitioner in the Karakoram mountains in northern Pakistan, where his embryonic interest in environmental issues developed through his work on endemic goitre. He sits on the European board of the Society for Environmental Geochemistry & Health and is a Coordinating Editor for Environmental Geochemistry & Health.