GLOBAL GEOCHEMICAL BASELINES: THE SUSTAINABILITY OF THE EARTH'S LIFE SUPPORT SYSTEMS AND HUMAN HEALTH

1PLANT, J.A., 2SMITH, D., 1SMITH, B., 1WILLIAMS, L. 1BGS, KEYWORTH, NOTTINGHAM NG12 5GG, UK, 2USGS, DENVER FEDERAL CENTER, DENVER, COLORADO, USA.

There is increasing concern about potentially harmful chemical substances (PHCS) in the environment and their effects on human and animal health, crops, and the sustainability of the Earth's surface life support systems. The substances of concern include heavy metals, arsenic, fluoride, radioactive substances, and persistent organic pollutants. Throughout the developed world, PHCSs are subject to increasingly stringent regulation aimed at the progressive reduction in chronic exposure, and there is increasing recognition that developing countries need information to protect their citizens and environment. Also, intensive agriculture, particularly in poor countries, is extracting nutrients from soil, leading to degradation and even desertification.High-resolution systematic digital geochemical maps are a powerful method of addressing such problems at the national to local scale, and an IUGS/IAGC Working Group has been established, following the success of the IGCP 259 and 360 programmes, to extend such methods to the international and global scales. The aims are to prepare a standardised global geochemical baseline for multiple sample media, to document environmental problems, and to provide a means of monitoring future changes in surface chemistry. More than one hundred countries, including Brazil, China, Colombia, India, Russia, Korea, Canada, USA, South Africa, Morocco, Ecuador, Botswana, and the CCOP countries of SE Asia and the FOREGS countries of Europe are participating.The value of geochemical mapping at the international to global scale is described with particular reference to problems of human health in relation to the environment using studies of iodine, selenium, natural radioactivity and of mining and land use.