

IODINE GEOCHEMISTRY AND ENVIRONMENTAL CONTROLS IN IODINE DEFICIENCY DISORDERS: A NEW APPROACH TO A CLASSIC GEOCHEMISTRY AND HEALTH PROBLEM

1) Johnson CC, 2) Fordyce FM, 3) Stewart AG

1) British Geological Survey, Keyworth, Nottingham

2) British Geological Survey, Edinburgh

3) Specialist Registrar in Public Health, CDSC (NW), Chester

A lack of iodine in the diet is the classic example of how the deficiency of a trace element in the environment can impact on human health. It is reported that globally 2.2 billion people (38% of the world's population) live in areas with iodine deficiency and risk its complications. The problem is to a large extent successfully being tackled with medical intervention techniques leaving many questions about the role of iodine's behaviour in the environment unanswered. What, for example, do we mean by an iodine deficient environment? If this is defined as an area providing inadequate iodine in a diet of locally produced food, all but the coastal areas of the world would be considered as being iodine deficient.

The need to understand iodine's geochemical behaviour is further emphasised by the hazard of radioactive isotopes introduced to the environment through fission processes. Under certain conditions these isotopes will migrate rapidly through the food chain to the human population greatly increasing the risk of thyroid cancer.

The British Geological Survey has been commissioned by the UK Department for International Development as part of its Knowledge and Research programme to look at environmental controls in iodine deficiency disorders. Bibliographic, soil, foodstuff and water databases have provided a wealth of information for us to better describe the behaviour of iodine in the environment. It is an element with an atypical geochemical cycle where transfer from the oceans to the atmosphere and volatilisation from the soil-plant system are very important processes and the results of the three year study will be presented.