GROUNDWATER AND HUMAN HEALTH

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The study of the effect of the physical environment in the epidemiology of human cancer, dental diseases and goitre in Sri Lanka forms one of the main objectives of the Soil, Vegetation and Health Group of the Institute of Fundamental Studies. In view of the fact the vast majority of the people of Sri Lanka live in very close contact with the physical environment, the health of the community depends to a marked degree, on the chemistry of the environment.

The link between iodine and goitre is one of the first associations recognized between a trace element in the environment and human health and nutrition. Eventhough iodine has long been recognized as an important element environmentally, the geochemical behaviour of iodine and its distribution in the environment has been poorly described and somewhat neglected in geochemical literature.

Endemic goitre is a health problem of national importance in Sri Lanka. The marked geographical variations as observed in Sri Lanka clearly point to the wide variation in the abundance of the element iodine and perhaps to other factors that control the geochemical mobility of iodine.

Previous epidemiological surveys in Sri Lanka revealed that goitre is endemic in the Central, Western, Sabaragamuwa and Southern provinces of Sri Lanka. Recent investigations show that the endemic belt should be enlarged to include the whole of Uva province and at-least a part of the Northwestern province.

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However, our studies reveal some interesting facts :

1. Endemic goitre regions are mostly restricted to villages and show extremely sharp boundaries.

2. Even in the goitre regions, the daily intake of iodine is well above the critical levels specified by the W.H.O. for endemic goitre. The levels in the 'non-goitre' regions however are higher.

3. The presence of pockets of goitre regions appear to indicate multifactorial causes closely linked to the geochemistry of trace and major elements in the soil and water of the regions concerned. Cobalt and Manganese for instance are two elements worthy of detailed study.

4. Even though iodine deficiency in the diet is the chief causative factor, other geochemical factors appear to exert a controlling effect on the iodine availability.