MEDICAL GEOLOGY IN AFRICA

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A large body of evidence points to significant health effects resulting from our interactions with the physical environment and we continue to recognise connections between geological materials and processes, and human and animal disease. In Africa, these relationships have been observed for many years, but only recently have any real attempts been made to formalise their study. Africa is a continent with a diverse geography, characterised by a range of altitudes, a peculiar hydrological network created in part by the formation of the Great Rift valley on the eastern flank, and arid lands typified by the Sahara and the Mega Kalahari. Volcanic activity accompanying rifting and formation of most of the highlands and mountains, has released various trace elements, mostly above background levels, into the environment. A unique distribution pattern of these elements has developed in more recent geological times, following pronounced separation due to extreme tropical conditions of weathering, leaching and eluviation. It is therefore possible to delineate large areas of the continent containing element deficiencies or toxicities which are closely related to the local geology and/or geographical location. In a region where rural communities are still largely dependent on water and food sources that are locally derived, the above setting provides an attractive opportunity for studying the influence of geochemical factors on the distribution of diseases in man and animals. According to this definition, the influence of the indoor environment, for example in factories and offices, falls outside the scope of Medical Geology and comes within the area of occupational medicine. To attain completeness in the present review, however, industrially derived exposure to known toxic elements (originating from mining or ore-processing, such as are contained in mineral dust, for instance), is also briefly considered. Of the elements for which there are proven or suspected direct causal relationships with man's health, significant data exist for fluorine, iodine, silicon, arsenic and certain trace metals (both micronutrients and potentially harmful elements).

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