Preface

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This special issue of “Environmental Geochemistry and Health,” compiles the output of the Symposium “Soils and their implication on Health,” one of 30 Symposia held at the “EUROSOIL 2008” in Vienna, an international conference attended by 1,300 participants from 77 countries.

The implication of soils and their characteristics on health is increasingly attending interest, as the importance for human beings becomes increasingly obvious. Soil functions prove to be not only important but necessary for human life. Directly related to human health are the production function—serving as source for food—as well as the filter, storage, and transformation function—providing clean water. The performance of these functions can be disturbed, reduced, or even destroyed either naturally or by human activities.

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A derogation of soil functions may affect human health in many ways. Depending on the pathways between soil and humans, diseases may occur. Pathogens in soils may be ingested, inhaled, or perceived through the skin, leading to specific diseases such as tetanus or infestations of hookworms. The inhalation of radon, a naturally occurring radioactive gas, might be responsible for lung cancer—as well as asbestiform minerals.

In many cases, the affection of human health is related to certain concentrations of elements in food and water, where soil acts as a source or sink. Human beings require a variety of elements in adequate proportions to serve for nourishment and good health. In addition to macronutrients, micronutrients play a key role in human life: each of the elements Fe, Mn, Ni, Zn, Cu, V, Co, and Cr as well as Mo, Sn, Se, I and F, has its specific role in the human physiology and cannot be replaced by any other element. If the concentrations are too low, deficiency symptoms may occur.

Toxicity effects may be related to potentially harmful trace elements such as As, Cd, Pb, Tl, and Hg but may also occur if essential elements like those mentioned above exceed a certain concentration.

A review of the relation “geology–soil–human health” is provided by Eiliv Steinnes, who gives basic information and an overview of the topics of concern.

Brian Alloway concentrates on Zn deficiency. Besides the geographical distribution of this phenomenon he also points out the main factors responsible for it.

Heide Spiegel et al. give us insight into the possibilities covering the daily need of elements directly by field crops grown in Austria and the dependencies on site and variety.

Holger Kirchmann et al. provide an overview about a long-term soil fertility experiment from Sweden and focus on a wide range of elements in wheat grain and its fertilization.

Thomas Reichenauer et al. bring us to mind the Tsunami disaster of 2004 at the coastline of the Indian Ocean, the affection of rice fields, and possible remediation strategies.

Wolfgang Friesl-Hanl et al. show the results of a 5-year remediation study from a lead/zinc smelter affected arable land and focus on a “gentle” remediation option in Austria.

In our role as guest editors, we are pleased to thank all authors for their manuscripts as well as the selected reviewers for their valuable remarks helping to improve contributions. Last but not least, we thank “EGAH” for the provided possibility to compile this special issue and for the excellent overall organization by Betty van Herk.