

## Book Review

*Environmental Mineralogy: Microbial Interactions, Anthropogenic Influences, Contaminated Land and Waste Management*

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This well presented and written book is based on a series of scientific papers and provides a combination of pure environmental science with applied industry applications and an up to date literature review. It is divided into four broad sections detailing environmental mineralogy and its role in modern day environmental science and engineering.

Section One is concerned with mineral transformations mediated by microbes and how the fate, behaviour and transformation of metals in sediments and soils are influenced by microbial activity. This is a specific aspect of soil chemistry that could be applied to contaminated land investigations by environmental scientists for the purpose of determining on a site specific basis the fate, mobility etc of metals in soils and sediments.

Section Two addresses the influences of human activity on the mineral – environmental interactions described in Section One. It describes how anthropogenic influences such as mining, pollution of the air and water etc may change the rate and scale of such natural mineral interactions or in the extreme case may cause the minerals to act as a source of pollution. Examples of acid rock and mine drainage and the degradation of granite buildings by soluble salts illustrate the ideology.

Section Three deals with environmental mineralogy in the context of contaminated environments. It details how minerals play various roles in controlling pollutant behaviour in terms of release into the environment or adsorption, precipitation, chelation reactions etc. Specific examples of the role of manganese oxides, expanding layer silicates, metal phosphates and the uranium cycle are presented to expand on the basic principles of soil chemistry as discussed in Section One. Again this section is of relevance to soil scientists investigating contaminated land and those researching remediation techniques.

Section Four concludes with an up to date review on the application of minerals and their engineering to waste management issues. Case examples of the use of clay and clay based geosynthetic liners, zeolites and carbonates for a wide range of uses including landfill liners, treatment of nuclear waste and fallout and waste neutralisation are presented. Researchers and managers in the field of waste management would find this section a useful reference.