

'Mineral particles and the environment': introduction

The study of mineral particles has become increasingly important in the earth sciences, especially in the emerging field of environmental mineralogy. The Mineralogical Society highlighted this by dedicating its Spring Meeting in April 2001, held in Kingston University, Surrey, UK, to the subject. The two-day meeting was split into four sessions reflecting the main themes of current research:

Session 1 – Volcanic ash and cosmic dust

The formation and physical properties of particles, dispersal in the atmosphere and the environmental, economic and health implications.

Session 2 – Radionuclide and heavy metal-bearing particulates in soils and sediments

Characterization, source and mechanisms of particulate transfer, particulate modification and fixation, stability and the environmental impact of such particles.

Session 3 – Particulates from quarrying and mining

Physicochemical and mineralogical characterization, dust suppression technology and the potential health effects of inhalation.

Session 4 – Anthropogenic airborne particles

Sampling, identification and quantification of particulates; hazard identification and risk assessment; chemistry, mineralogy and physical properties; origin and nature of harmful effects.

Keynote papers were invited for each session from internationally recognized researchers in their respective fields. Due to the great interest the meeting created, attracting 75 delegates, speakers were invited to submit manuscripts for the thematic set of papers which follows. The papers are mainly on the topic of atmospheric airborne particulates, which reflects a general trend of increasing governmental and public concern about their potential health effects, especially in urban environments and close to sites of industrial activity, including mining and quarrying. Current UK legislation on environmental airborne particulate matter is based on particle size and concentration, with little consideration for such factors as chemical/mineralogical composition, surface properties and particle shape which may also greatly affect particle toxicity. Other articles included in the set are on the environmental fate of airborne and mining-related particles in soils and river systems, mainly with respect to heavy metals and radionuclides. Determining the mineralogical form of potentially toxic substances in primary particles and weathering products is an important step in assessing their mobility and bioavailability in wider environmental studies. Although this set of papers by no means covers the breadth of current studies on mineral particles in the environment, it is hoped that their publication will increase the scope of the *Mineralogical Magazine* towards this important field of research.

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