

MAGNETIC CHARACTERISATION OF URBAN DUST AND POTENTIAL USE OF MAGNETIC MONITORING AS A METHOD OF HEALTH RISK ASSESSMENT

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In recent years there has been a renewed interest in the magnetic properties of dusts, and in particular the potential of using magnetic techniques as a method of health risk assessment. To do this it is necessary to have a good understanding of the magnetic constituents of dust both of natural and anthropogenic origin. Although previous studies have been revealing, there are still uncertainties as to the nature and origin of the magnetic signature. In this study, we have conducted a detailed magnetic study of several dust samples collected from various localities in and around Munich, and attempted to characterise magnetic properties. We have utilized several different approaches; from standard techniques such as magnetic hysteresis and SEM analysis to non-standard rock magnetic techniques such as Mössbauer spectroscopy and rotational hysteresis. When used with magnetic techniques, Mössbauer analysis is a particularly powerful tool which has not been readily utilized in previous dust magnetic studies. Early results suggest that the magnetic signature is carried by a combination of near-iron and magnetite-like grains in the smallest and most dangerous grain size fraction ($< 1.1 \mu\text{m}$). In an attempt to correlate the dust studies with dust actually trapped within the lung, preliminary results from dogs' and cats' lung tissue are also presented, and compared to the dust measurements.