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Asbestos, elongated mineral particles and other hazardous geomaterials: occurrence, use and health implications

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This special issue entitled “Asbestos, Elongated mineral particles and hazardous geomaterials: occurrence, use and health implications” presents the results obtained by several research groups on anthropogenic and Natural Occurrences of Asbestos and asbestiform minerals (NOA) as sources of possible environmental risks to public health. In particular, this issue shows the state-of-the-art research findings on asbestos-bearing rocks and soils from natural outcrops and asbestos-containing products such as dimension stones, mortar, concrete and asphalt, bringing out their potential to release airborne mineral fibres into the environment due to human activities. Case studies from various environments and contexts are described, reporting novel and classical approaches for asbestos outcrop mapping and monitoring, also highlighting the risks related to cultural heritage restoration works and waste management.

Monterrubio et al. (2020) address the need for the mineralogical characterization of economically valuable rocks, such as the serpentinites extracted as dimension stones in an abandoned quarry in Galicia (North Western Spain) in order to determine the amount of fibrous minerals they contain and to safeguard miners from the health hazards posed by exposure to fibrous mineral fibres in case of a potential re-opening.

Marrocchino et al. (2020) describe examples of rationalist architecture in rural villages, paying particular attention to the characterization of natural asbestos fibres present in the decorative plasters used for manufacturing artificial stones, and highlighted the importance of implementing measures aimed at minimizing post-degradation fracturing and transformation into potentially harmful elements to human health and the environment.

Cavallo (2020) presented an example of environmental contamination by naturally occurring asbestos in Val Malenco (central Alps, northern Italy) by carrying out extensive sampling and analysis of mine tailings, soils and alluvial sediments in an abandoned chrysotile asbestos mine.

Ricchiuti et al. (2020) provide a summary of an asbestos-containing soil investigation. They analysed the most relevant available literature on the presence of fibrous minerals in soils. They also presented

a global territory mapping to illustrate the distribution of natural asbestos in soil worldwide.

Militello et al. (2020) describe the effects of comminution on tremolite asbestos and regulated and unregulated actinolite fibres using SEM-EDS on a statistically valid sample size population containing tremolite-actinolite amphiboles with asbestiform and non-asbestiform habits.

Marrocchino et al. (2020) reveal the results of a study carried out on aggregate used as a filler in hot mix asphalt pavements that are susceptible to wear and tear by vehicular traffic and the aging of materials, highlighting that dust produced by the degradation of asphalt surfaces can disperse tremolite asbestos fibres into the environment.

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