Identification of Asbestos Fibres from Soil Sediments

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Abstract. Asbestos is a term commonly used to describe silicate minerals that exhibit a typical fibrous form and crystallise as separable fibres. Due to its extraordinary properties (resistance to high temperatures, oxidation, corrosion, abrasion, biological degradation, etc.) it has been used for decades mainly in the construction industry. These minerals generally occur as naturally exposed friable fibers that can be readily released into the environment due to natural processes and anthropogenic activities. Therefore, there is a need to intensify geo-environmental monitoring globally. The study of this material is important not only for clarifying the impact of asbestos on public health. The aim of this paper is to summarise the partially up-to-date knowledge concerning the extensive issue of asbestos occurrence in general and in the Pilsen region, to establish a suitable methodology for detecting the presence of asbestos in soil deposits in the given locality based on experimental analyses motivated by analyses in other countries and to determine the exact types of asbestos from two series of samples. Samples collected were analyzed using scanning electron microscopy and X-ray diffraction analysis and compared to standards or available literature. Our measurements demonstrated the presence of asbestos in the sediments of the site and its types. The main conclusion of this work is that the presence of asbestos was confirmed in all samples, even its more dangerous types that can cause very serious diseases.