Radiation and Heat Treatment of Sediments Contaminated with the PCBs and PCDD/Fs

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Abstract. This study was based on the alarming situation with the persistent organic pollutants in eastern Slovakia. Contaminated sediments from canal Strážsky kanál were treated by radiation and heat treatment method to decrease the concentration of dangerous substances in them. The chlorinated dibenzo-p-dioxins, chlorinated dibenzofurans, non-ortho and mono-ortho substituted polychlorinated biphenyls were analyzed to measure distribution of their congeners after radiation and heat treatment and to determine their toxicity. The sediments were decomposed into three pyrolysis fractions – dry matter, oil and water during heat treatment. Due to hydrophobic properties of analyzed compounds, their concentrations in water fraction were minimal. The highest concentration of analyzed congeners as well as the highest toxicity were attributed to the dry matter pyrolysis fraction. However, their concentration decreased compared to the reference value. Based on the results, the heat treatment method proved to be more efficient compared to the radiation method.