

Abstract

Mercury (Hg) is a global pollutant, released into the environment from both, anthropogenic and natural sources. The most significant Hg emission source is burning of fossil fuels, especially coal combustion (60%). Although Hg occurs in low concentration in coal, a large volume of coal combusted makes coal-fired power plants one of the largest sources of Hg emission into the atmosphere and consequently to the environment.

This bachelor thesis summarizes the knowledge about the geochemistry of Hg in coal and soil. At the same time provides information on the distribution of Hg in soils in the Frýdlant district, area that has been affected by emissions from coal-fired power plants. The total Hg concentration in soils, coal and wastes (fly ash and bottom ash) from power plant Turów was determined by AMA-254. The concentration in the coal ranged between 217-973 $\mu\text{g.kg}^{-1}$ Hg, the average concentration in fly ash was 94 $\mu\text{g.kg}^{-1}$ Hg and the lowest concentration of Hg was in the bottom ash, 1-2 $\mu\text{g.kg}^{-1}$ Hg. The average Hg concentration in soil organic horizons was 334 $\mu\text{g.kg}^{-1}$ with the highest value 510 $\mu\text{g.kg}^{-1}$ Hg. The obtained data were not consistent with previous study, where concentration of Hg in forest floor in Frýdlant district reached up to 1 148 $\mu\text{g.kg}^{-1}$. The Hg concentration in studied forest soils corresponds to the average concentration of Hg of the forest soils in the Czech Republic.

Keywords:

Mercury, emission, environment, coal, soil.