Summary

This master thesis compares mercury concentrations in 64 samples of stream sediments from the Břehové Hory ore district (Příbram, Czech Republic), where lead and silver were mined and processed. Sampling took place in May 2003, September 2012 and October 2013 with intention to assess the influence of floods in August 2002 and June 2013 on changes of the level of mercury contamination in the stream sediments. In all three sampling campaigns, the background concentrations near the headwaters of the stream were about 0.2 mg Hg/kg, as a consequence of the weathering of geological units. Because of draining the historical mining and smelting region, the highest concentrations reach 3.2 mg Hg/kg downstream the Březové Hory ore district. The source of this contamination are probably former ore processing plants and the failures of tailing ponds. Extensive transport occurs especially during flood events and as the result, contamination can occur not only in the stream, but also in the alluvium materials.

The main point source of the contamination in the area is the secondary Pb smelter, but its influence on the concentrations of mercury in stream sediment is insignificant. Nevertheless, it is a possible source of the contamination of the stream sediments with lead, cadmium and zinc. The concentrations up to 43 100 mg Pb/kg, 618 mg Cd/kg and 15 800 mg Zn/kg in stream sediments in the vicinity of the smelter indicate an extreme enrichment, comparable with concentrations in soils influenced by the smelter. Reclamation of former ore processing plants between years 2012 and 2013 can be a source for redeposition of historically contaminated material.