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**Heavy metals leaching from different particle sizes of MSWI bottom ash by various solid-liquid ratios**

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Municipal solid waste incineration bottom ash (MSWI-BA) is one of main by-products of incineration process. Landfilling of untreated MSWI-BA may cause soil and water contamination problems because it contains a variety of heavy metals and other toxic compositions. This study investigates the heavy metal leaching characteristics from different particle sizes of MSWI-BA by using various solid-liquid ratios. The fresh MSWI-BA was divided into four groups: 4.75~9.5mm, 2.36~4.75mm, 0.075~2.36mm and <0.075mm. The chemical composition determination was carried out. The results indicate that Zn (0.5~1.9%), Cu (0.1~0.2%) and Pb (0~0.2%) are the major heavy metals in MSWI-BA, but microstructures are different with different particles. The smaller the particle size is, the more C-S-H products it contains. Leaching tests with two solid-liquid ratios of 1:10 and 1:40 were then carried out in 28 days; leachate samples were collected at every 24 hours. The results showed that MSWI-BA of 0.075~2.36 mm and 2.36~4.75 mm were more stable than other particle sizes. Meanwhile, the concentrations of detected heavy metals were lower in the samples collected at the solid-liquid ratio of 1:40 than those collected at 1:10. In addition, Zn and Pb were the two major heavy metals in MSWI-BA, but the leaching concentrations were lower than other metals. In order to reduce the environmental contamination risk, the MSWI-BA should be pre-treated before it is used as civil engineering materials.

**Biography**

Yao Zhao has her expertise in porous asphalt pavement design for stormwater reduction and pollutant removal and utilization of municipal solid waste in porous asphalt pavement construction. She has devoted to the research on porous asphalt pavement design for stormwater reduction and pollutant removal for years. This study is a start of exploring new approaches to municipal solid waste in porous asphalt pavement construction.

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