

# Leaching of Pb from waste incineration ashes as function of waste fuel and incineration technologies

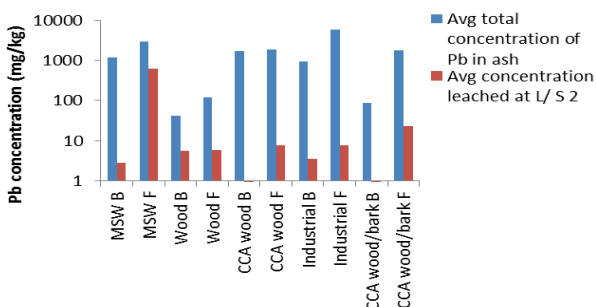
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Migration of trace elements from waste incineration fly/bottom ash is problematic during utilization/landfilling [1]. This study investigated the total and water leachable concentration of Pb in ashes as a function of input waste fuel and incineration technology. Fly and bottom ash were sampled at 13 Swedish waste incineration facilities including 4 grate fired, 6 circulating fluidized (CFB) and 3 bubbling fluidized bed (BFB) boilers, using different types of waste fuels. Sampling included 5 municipal solid waste, 3 virgin wood, 2 industrial waste, 2 waste wood/bark and 1 pure waste wood fed facilities. Ashes were characterized for total Pb content according to ASTM D3683 (HF/HNO<sub>3</sub>/HCl digestion) [1]. Further ashes were subjected to leaching with water at L/S 2 with intermittent shaking for 6 hr. according to standard leaching procedure (EN 12457-3) [1]. All leachates were analyzed by ICP-MS for Pb concentration



Results indicate that average total concentration of Pb was around 3-5 times higher in fly ash compared to bottom ash for all boilers. Higher total concentrations were found at facilities using waste fuels. Incineration technology used had little impact on the distribution between bottom and fly ash. Correlation between total and leached concentrations of Pb in fluidized bed fly ash was 0.8. Especially MSW fly ash (0.6) and wood bottom ash (0.9) showed high correlations. Generally, leached Pb increased with pH ( $r^2$  0.27 for log Pb vs pH).

[1]. Karlfeldt et al (2007), *Fuel* **86**, 1983-1993.