Quality and generation rate of solid residues in the boiler of a waste-to-energy plant

The Danish waste management system relies significantly on waste-to-energy (WtE) plants. The ash produced at the energy recovery section (boiler ash) is classified as hazardous waste, and is commonly mixed with fly ash and air pollution control residues before disposal. In this study, a detailed characterization of boiler ash from a Danish grate-based mass burn type WtE was performed, to evaluate the potential for improving ash management. Samples were collected at 10 different points along the boiler’s convective part, and analysed for grain size distribution, content of inorganic elements, polychlorinated dibenzo-p-dioxins and dibenzofurans (PCDD and PCDF), and leaching of metals. For all samples, PCDD and PCDF levels were below regulatory limits, while high pH values and leaching of e.g. Cl were critical. No significant differences were found between boiler ash from individual sections of the boiler, in terms of total content and leaching, indicating that separate management of individual ash fractions may not provide significant benefits. © 2014 Elsevier B.V.

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