



Comparison of the Fertilizer Properties of Bottom Ash and Fly Ash from the 120 MW Power Plant of a Fluting Board Mill Incinerating Different Fuel Mixtures

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Abstract: In this study, we compared the most important physical, chemical and fertilizer properties of two types of bottom ash and fly ash produced by a large (120 MW) fluidized bed boiler at the power plant of a fluting board mill in Finland. Bottom ash and fly ash A originated from the incineration of peat, coal and wood residues (*i.e.* bark, wood chips and sawdust), while bottom ash and fly ash B originated from the incineration of only peat and wood residues. The total concentrations of Cl, As, Cd, Cr, Cu, Ni, Pb, Zn and Hg were only lower than the maximum allowable concentrations for these elements in forest fertilizers in bottom ashes A and B. However, the total Ca concentrations of 2.4 mg/kg (d.w.) in bottom ash A and 3.4 mg/kg (d.w.) in bottom B were lower than the requirement of 6.0 mg/kg (d.w.) for ash used as a forest fertilizer. Therefore, if these residues are to be used for such a purpose, additional Ca is needed. Due to the elevated As concentrations in fly ashes A (46.9 mg/kg; d.w.) and B (41.3 mg/kg; d.w.), exceeding the As limit value of 30 mg/kg (d.w.), these residues could not be used as a forest fertilizer. However, they may be used for the landscaping of landfills or in industrial and other areas that are closed to the public.

Key Words: *Ash, Fertilizer, Finnish legislation, Fluidized bed boiler, Fluting board mill, Forest industry, Heavy metals.*

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