



“Gheorghe Asachi” Technical University of Iasi, Romania



ANALYZING THE PROPERTIES AS FERTILIZER OF ASH FROM OAK WOOD COMBUSTION

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Abstract

Ash resulting from wood combustion constitutes a waste disposal problem to facility owners. The use of ash fertilizer or soil amendment could provide nutrients for agriculture if its nutrient content is adequate and it does not contain harmful amounts of heavy metals. The recycling of nutrients bound in ash would provide an inexpensive solution to waste problem. In our study, we aimed to characterize ash and clinker resulted from incineration of oak waste resulted from wood industry, in order to identify the possibility of their using as soil fertilizer, or amendment. XRF spectrometry was used for sample qualitative and quantitative analyze. It emphasizes the presence of the calcium silicate and sodium aluminum silicate as mineral phases in the economizer component of the furnace facility. Nutrients (Ca, Mg, K, P, Mn) occur in higher concentration in electrofilter ash compared to economizer ash and clinker. Six macroelements (Si, Na, Ba, Cl, Br, S), and 13 trace heavy metals were identified in ash and clinker (Al, Cu, Fe, Ni, Pb, Rb, Sr, Ti, Zr, Zn, Cr, Co, W). Al, Cr, Fe, Ni, Zn concentrations frame within limits mentioned in literature, while Cu, Co and Pb concentration in economizer ash is higher, compared to available literature. Hg, As and Cd are not identified in ash and clinker. In economizer ash, Cu, Ni, Pb, and Zn occur within limits specified by at least one available normative.

Key words: heavy metal, nutrient, pH, X-ray spectrometry

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