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STUDY OF BOTTOM ASH RECOVERY BY MEANS OF AGING AND MECHANICAL SORTING PROCESSES

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Abstract

The amount of bottom ash produced in Italy from municipal solid waste incinerators is estimated at over a million tons per year. Up to now, it has almost all been disposed of in landfills. Therefore, large profit margins, from both the economic and environmental standpoint, can be expected from the recovery of this material, or at least from a fraction of it. In this study, a rapid procedure for the recovery of different bottom ash fractions based on mechanical sorting and aging was evaluated. The aging process, by reducing the availability of many pollutants studied, resulted in a general increase in the bottom ash quality, meeting the compliance leaching test values for non-hazardous wastes. However, the content of some heavy metals (particularly Pb, Cu, Cd, Cr and Zn) often exceeded the reference values defined by law for contaminated sites, thus representing a limit for this application. The described procedure can be useful for obtaining material recovery and a limitation in the mobility of pollutants, which are present in incineration bottom ash. In particular, a preliminary sieving process can result in a good recovery of inert materials (especially ferrous) while a subsequent fine fraction aging makes possible a significant decrease in the leachability of heavy metals (as Pb and Cu) and anions (sulfates). These outcomes can be usefully employed to limit hazardous waste disposal, even though the recovery of materials for building purposes might be hindered by very high initial pollutant concentrations in the treated ash.

Key words: landfill, leaching, metal recovery, waste incinerator ash, waste treatment

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