

CHARACTERIZATION OF WASTE FROM GLASSWORKS TOWARDS RESOURCE RECOVERY – THE CASE OF MADESJÖ DUMPSITE

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Abstract

The ‘kingdom of crystal glass’ in Sweden’s Småland region enjoyed the fame of crystal glass production for centuries, leading to the current array of dumpsites of glass and other wastes (raw material remnants) from glassworks that currently characterize the region. Most of the dumpsites have heavy metal burdens with leaching capabilities to soil and ground water. As such, excavation of the masses with subsequent resource recovery, in this case metals like lead (Pb), would be beneficial both as a remediation measure as well as a way of reintroducing discarded materials into the resource loop. As a case, Madesjö dumpsite was sampled at 9 different points, two levels per point, resulting in a total of 18 samples. The samples were subjected to X-ray Fluorescence scanning (XRF) and leaching tests with further analyses for Total Organic Carbon (TOC), Chemical Oxygen Demand (COD), and metals using ICP. This was taken as a preliminary step in understanding the properties of the waste under consideration so as to achieve viable environmental and safety measures during possible excavation and handling of the waste from the site. Whereas the dumps pose an environmental hazard, they contain a rich store of valuable resources (metals), which may be costly to extract.

Keywords

Excavation, Crystal glass, Glass landfills, Heavy metals, Landfill mining, Metal speciation