

ENVIRONMENTAL ASPECTS OF WASTE GLASS STORAGE

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Abstract

There are only few researches about possible environmental impact of waste glass, mostly focusing on crystal glass industry waste and not on packaging glass waste. The aim of the current research was to examine properties of stored waste glass and to assess environmental impact of waste packaging glass storage.

Waste glass fractions and types were examined across the entire waste management chain. Samples of waste glass were taken from storage sites at landfill and glass sorting company in Estonia. In the lab the leachates of the collected waste glass samples were prepared and physical-chemical properties (pH, conductivity, water soluble carbon and nitrogen content, metal content) and phytotoxicity of leachate were examined.

The main problem with glass recycling as well as its storage is the quality of the glass collected. The results of the study showed that packaging glass waste was still mixed with other wastes after secondary sorting and residual glass from sorting of packaging glass waste was potentially hazardous to the environment. The leaching of metals from the residue of glass sorting was higher than that from the other samples of stored waste glass, reaching to 419 mg/kg for Pb, 11 mg/kg for Cd, 59 mg/kg for Cr, 866 mg/kg for Zn and 722 mg/kg for Cu. Although it was determined that metals were leaching from the glass waste, their content in the leachates did not affect negatively the germination of cress seeds.

The results pointed out the potential hazard to the environment from packaging glass waste at temporary storage places, where runoff from stored glass heaps are not collected. To avoid the potential pollution the waste glass must be stored in place where rainwater cannot reach or runoff must be collected and drained into sewage treatment plant.

Keywords: waste management, waste glass, packaging glass, metal leaching