A critical review of innovative strategies for the sustainable management of solid waste generated in the health institutions of Zimbabwe

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Abstract

Innovative frameworks and strategies for solid waste management have been brought forward by researchers to solve the phenomenon of accumulating waste in the environment globally. The sustainability of medical waste management then pivots on the ability of waste management in a way that proves harmless to humans, animals, plants and the environment at large. This review looks into the strategies for the sustainable management of solid waste generated in the health institutions of Zimbabwe. Waste management includes waste generation, waste segregation, waste storage, waste collection and transportation, waste treatment and disposal and waste reuse and recycling. Exhaustive literature review was conducted as the methodology for this review soliciting information on the solid medical waste management status worldwide. In Zimbabwe, hazardous medical solid waste segregation, storage, transportation and disposal is a responsibility of the medical institutions generating the waste. These include trip and fall hazards, infectious hazards, cuts and lacerations, drugs addictions and radioactive hazards. The environment also faces contamination to the land, underground water bodies through leaching, surface water bodies, damage to flora, poisoning of fauna and contamination of the atmosphere by methane and carbon monoxide. Findings of the study show that innovations for medical solid waste management include frameworks such as the Ladder of Lansink and the three 'R's. Innovative technologies include rotary kiln incinerators, automated segregation and engineered landfills. Therefore, the framework addresses issues impeding the adoption of these innovative strategies in Zimbabwe.