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Material and substance flow analysis of mobile phones in Nigeria: a step for progressing e-waste management strategy

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Abstract

Recent years have witnessed a strong global increase in mobile phone (MP) production and use. This category of electronic devices generates one of the fastest growing waste streams and therefore requires assessment of the volumes entering the end of life and the valuables for resource recovery. This study aims at determining the material flow of MPs in Nigeria and the substance flow analysis of selected precious and heavy metals and bromine as a basis for developing waste and resource management strategies. The results showed that between 2001 and 2013, approximately 54,050 t of MPs were imported to Nigeria containing approx. 8920 t of copper, 120 t of lead, 270 t of Nickel, 40 t of chromium and 1310 t of bromine from brominated flame retardants. From these, 46,740 t are still in stock including 11,000 t currently in use and 35,740 t stored. Approx. 7310 t have reached EoL with 2190 t having been recycled and 5120 t disposed in dumps. Currently approximately 7000 t of mobile phones (approximately 87,500,000 million MPs) are imported per year. Nigeria and other developing countries need to develop appropriate policies and systems for collection, re-use, recovery and disposal of wastes arising from these devices.

Keywords

Mobile phones Material and substance flow analysis Heavy metals Bromine E-waste Modeling

E-waste Management

Substance Flow Analysis

EoL Phase | Inventory Year

EoL Treatment

Waste Management

E-waste Recycling Site

Phone Type

Precious Metal Content

Phone Assessment

Total Waste Generation

Casing | General Waste

Recycling Sector

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» View more suggestions in Relationship Map

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