

Informal recycling of electronic wastes in developing countries: challenges and solutions

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The waste stream of obsolete electronic equipment grows exponentially, creating a worldwide pollution problem. E-wastes contain potential contaminants that are distinct from other types of waste. The e-waste stream is composed of a heterogeneous mix of different metals, metalloids, glass, plastics, flame retardants and valuable materials such as gold, silver, copper and aluminium. They impact both the environment and health and pose substantial challenges in waste management. The International Union of Pure and Applied Chemistry (IUPAC) e-waste project brings together global expertise to: a) examine current research on the chemical nature of e-waste and its global distribution; b) evaluate its environmental and health impact and related risk management tools and models; c) identify short-comings in present regulations and management strategies as well as future challenges; and d) develop a set of specific recommendations for management approaches that are scientifically sound and globally informed.

The IUPAC project identified informal recycling in developing countries as a primary concern. Over the last couple of years, a sizeable amount of e-waste has been discarded in developing countries due to the high cost of safe recycling processes and stringent regulations in developed countries. In developing countries, the management of e-waste is aggravated by: illegal shipment, weak environmental regulations, lack of technology and inadequate waste treatment structure. Using case studies from the developing world, this presentation highlights: the challenges in the regulation of international e-waste trade; the analysis of potential contaminants in environmental samples; the perception of environmental and health risks; and the management of informal e-waste recycling. A number of potential solutions will be outlined, including: initiatives and management tools/methods to assist the improvement and strengthening of e-waste policy; more sustainable methods to manufacture and recycle the materials; enabling technologies to analyse and assess the environmental risk; and integrated socio-economic strategies to tackle this global environmental concern.