

Chapter 5

Previous, Contemporary, and Prospects of E-Waste and Its Management

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ABSTRACT

The contemporary world is driven by electronic gadgets without which the survival of mankind is perceived to be incomplete. The uncontrolled dependence of mankind on electronic gadgets has resulted in enhanced production of these gadgets leading to the accumulation of e-waste. Both technological innovation and market expansion have played an important role in electronic waste (e-waste). Owing to hazardous material composition, electronic waste causes environmental problems during the waste management phase if not properly pre-treated. Growing attention is being given to the impacts of these

DOI: 10.4018/978-1-7998-4921-6.ch005

hazardous components from e-waste on the environment. Many countries have drafted legislation to improve the reuse, recycling, and other forms of recovery of such wastes so as to reduce disposal problems. The purpose of this chapter is to present an overview of electronic waste, the current status of management of electronic waste, and recycling technologies for the recovery of metals from end-of-life electronic equipment.

INTRODUCTION

The electronic industry has been raised as one of the world's leading and inventive sector as one of its kind. This is attributed to the profound privilege of the contemporary generation, which enjoys their entire social and economic life surrounded by electronics. This has led to an exceptional expansion of electronics, making them cheaper and more available. Unfortunately, the waste management system has not improved at a similar pace (Masud et al., 2019). All these reasons and others have contributed to the unprecedented accumulation of electronic waste. Other reasons for e-waste present the anthropocentric view of humans since most of the reasons do not have a requirement to dispose of e-waste, and some are merely for personal satisfaction. These include very less lifespan of electronic items since the consumer would like to upgrade technologically (even when the old or previous item is in good condition) and technological advancements that are being released into the market every day. For instance, in 2008, the users of computers are increased and surpassed 1 billion, and these goods are obsoleted in the next five years. For these and many other petty known reasons, e-waste ends up in dump yards resulting in environmental pollution. Components of e-waste yet times enter the food chain and affect humans also.

Pollution from e-waste is a global problem. According to the UN, global e-waste is projected to exceed 40 million tons per year. Recycling end of product life results in enhanced pollution, economically unviable, and is unregulated in most countries. Severe health concerns are caused by e-waste in millions of people, precisely in developing countries like Europe, Africa, and Asia. It is reported that more than 200 million people around the world are at threat from exposure to toxic waste. Recycling of valuable elements in e-waste like copper and gold has been a source of income typically in the informal sector from emerging industrialized countries. However, some of the recycling techniques employed like cable burning for retention of inherent copper leads to hazardous substances exposure to both adult and child workers and their families (Lakshmi and Raj, 2017; Li et al., 2020).

The objective of this chapter is to present an overview of electronic waste, the current status of electronic waste management, and recycling technologies for the recovery of metals from end-of-life electronic equipment.

Definition of E-Waste

Some known definitions of E-waste are as follows:

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