

## ALARMINGLY INCREASING E-WASTE IN INDIA AND ITS MANAGEMENT

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**Abstract:** *The electrical and electronic waste (e-waste) is one of the fastest growing wastes in the world. E-waste refers to any discarded waste electrical or electronic equipment. It includes TVs, PCs, laptops, mobile phones and other electronic devices that have reached the end of their useful lives. These discarded devices contain several toxins that can severely cause environmental pollution and complicated health hazards, if not disposed properly. India is believed to generate about 1.2 lakh tons of e-waste. Barely 3.9 percent of the e-waste produced in India is recycled. Due to the relative novelty of e-waste in the urban solid waste stream, there is little awareness on its safe management. There is an urgent need to bridge the existing gap between e-waste and recycling. This can be achieved by improving the channelization mechanisms for proper recycling and establishing a system of accountability in e-waste management. The need of the hour is to work out specific methods for the disposal of e-waste. A comprehensive policy would help in the objective. The paper highlights the hazards of e-wastes, the need for its proper management and options that can be implemented with special reference to India.*

**Keywords:** Hazard, Toxic Legacy, Leach, Recycling, Disposal, E-waste management.

### Introduction

E-waste is the Toxic Legacy of our digital age. Our waste electronics are polluting drinking water and harming ecosystems around the world. It's time to fix the problem. Electronics are packed with toxic chemicals- arsenic, lead, and poly-brominated flame retardants. Most of our e-waste ends up in landfills- both in developed nations and in the developing world- where toxic metals leach into the environment. When electronic devices end up in landfills, toxics like lead, mercury, and cadmium reach into soil and water. The electronic problem is huge: More than 20 million tons of e-waste are produced every year. America alone generates about 3.4 million tons of e-waste per year. In Indian context, the electronics industry has emerged as the fastest growing segment of Indian industry both in terms of production and exports. The Information Technology Revolution has intensified the problem of e-waste in India. The volume of e-waste in the country is increasing at an alarming rate. According to a Bengaluru based NGO *Clean City*, India annually generates \$ 1.6 billion worth of e-waste domestically, with the booming IT sector being the largest contributor, as 30 percent of its machines reach obsolescence annually.

### Statement of Purpose

The purpose of the paper is to improve understanding of e-waste and its effect on health and environment on an Indian scale.

### Hypothesis

The basic question and purpose of this research paper was to analyze levels and characteristics of e-waste and its effect on the environment and human health. The intended result and outcome of this study was to determine if there was a need to control, reduce, and properly dispose of obsolete or unwanted electronic devices. The null hypothesis was that

there was not a problem with electronic waste and additional waste reduction was not necessary. The alternate hypothesis stated that e-waste reduction was needed.

### **General Discussion**

Performing study on e-waste has provided the means to reflect on consequences of the lack of proper recycling efforts. The recycling of e-waste is a major concern in India. The workers in the recycling sector are dominated by the urban poor with very low literacy levels and hence they have very little awareness regarding the potential hazards of e-waste. Among the urban poor, there are a substantial number of women and children engaged in various recycling activities which further exaggerate the problem of e-waste as they are more vulnerable to the hazards from this kind of waste. Considering the hazardous effects of e-waste if a change is not made on a multi-state scale, pollution rates will increase. The environment will suffer from additional amounts of chemical and hazardous material disposal. What happens to the environment will also affect the health of numerous individuals who use primitive methods to reclaim components from electronic devices and also those that reside near the abundant discard piles. Developed countries have continued seek the easiest and most cost effective way of dealing with e-waste. Unfortunately, that method all too often means passing the problem off to someone else. Shipping e-waste to third world countries including India is seen a less trouble than creating an environmentally conscious solution. However, encouraging a global market for used electronics does more good than harm:

1. Repaired electronics give people access to low-cost electronics and help them access the awesome benefits of technology.
2. Used electronics create repair jobs in developing countries that often have few opportunities for skilled labour.
3. Reuse in developing countries is usually more effective than domestic recycling- there is not much of a market for old cathode ray tube monitors in the US, for example, but they are used in other countries.

In a developing country like India, most e-wastes land up in the informal sector, where it is recycled without any consideration to health and environment. Open burning; acid baths, unventilated work spaces and crude handling of chemicals are typical of these operations, where susceptible groups like children and women are regularly employed. Without safety equipments at hand, the workers in some of the recycling hotspots spread all over the country, are exposed to the toxic cocktail daily. The unregulated practices also release hazardous materials in air, water and soil, thereby endangering our environment. Most of the studies suggest that currently 90 per cent of e-waste is being handled in the informal sector and most of the processes are rudimentary where crude waste processing techniques are adopted, leading to various health and environmental hazards. Delhi based Toxic Link (an environmental NGO) conducted a study on the impact of e-waste recycling on water and soil. The study reveals toxic elements such as mercury, lead, zinc, etc. along with acids and chemicals released during e-waste recycling are contaminating soil and water in the surrounding areas. The report based upon lab testing of soil and water samples from Loni and Mandoli areas of Delhi's National Capital Territory found both water and soil to be contaminated with heavy metals and contaminants.

The banking and financial services sector is among the largest buyers of IT products, both software and hardware. Almost all national and multinational banks and other financial, insurance companies, investment banks, stock exchanges etc. have their branches in almost all major cities. Studies have confirmed that there are substantial quantities of e-waste being generated in banking sector. Interestingly, none of the banks have either any disposal policy or green purchasing policy, which obliges vendors to take back and endure responsible

disposal of end-of-life equipments. A relatively recent development in the banking industry in India is the growth of BPOs that are essentially providing various back-office services for banks in India and across the world. While some of these are captive BPOs owned and managed by the particular bank, others are companies from the IT enabled services domain to whom banks can outsource their back office functions. These BPOs are very technology intensive, with a high obsolescence rate, and will become a large contributor to the e-waste stream in the near future.

In addition to the locally generated e-waste, import is a major factor for e-waste hazards. Strict disposal laws in the developed countries ensure that e-waste does not flow into general waste stream. Private companies and authorised agencies carry out e-waste collection, handling and recycling. Given the high wages, the cost of collection, handling and disposal makes it expensive operation. Unscrupulous agents take the easy way out by exporting e-waste to developing countries in the name of trade, charity etc. The dumping of e-waste, especially computer waste by the USA and UK, on India and other south Asian countries has reached an alarming proportion. According to the UK-based European Toxics Mess` study it is eight times cheaper to export computer scrap than to recycle it within the developed nations. E-waste affects nearly every system in the human body because it contains a plethora of toxic components including Mercury, Lead, and Cadmium, poly brominated Flame Retardants, Barium and Lithium. Even the plastic casings of electronic products contain Polyvinyl Chloride. The health effects of these toxins on humans include birth defects, brain, heart, liver, kidney and skeletal system damage. It also significantly affects the nervous and reproductive system of the human body. While the health implications of e-waste are difficult to isolate due to the informal working conditions, poverty and poor sanitation, several studies in Mumbai offer insight. Mumbai is known as one of the largest e-waste recycling cities in India, and the city's residents exhibit substantial digestive, neurological, respiratory and bone problems. It proves that e-waste is an important global and Indian environmental and health issues. Promising policies responses must arise from India, which must define the source as responsible for e-waste. With this approach, manufacturers are required to eliminate dangerous toxins from production.

### **Suggestions**

E-waste is one of the fastest growing waste streams globally, growing more than three times faster than municipal waste. As it contains both toxins and precious metals, effectively managing e-waste is a major global challenge. Economic incentives for cheap and effective recycling are large while potential hazards are high. Although the newest technology is able to recycle e-waste while keeping environmental impacts to a minimum, improper treatment releases a large number of toxins into the environment and poisons workers. Despite the hazards of improper disposal, economic incentives have resulted in international shipments of e-waste to developing countries, in which the e-waste can be recycled using cheap labour without adhering to strict environmental standards. As stated earlier there is an urgent need to bridge the existing gap between e-waste and recycling. Creation of a legislative and enforcement mechanism to prevent India from becoming a dumping ground of e-waste for developed nation is essential. The need to review existing legal framework is self evident. A necessary policy framework and legal architecture together with effective implementation machinery need to be put in place to meet the challenges of e-waste management

- We should buy second hand electronic devices, try to fix it before throwing it away, and try to sell so that someone does not buy a new one.
- Stricter laws and regulations should be implemented to help facilitate a movement towards recycling and reusing
- People should be educated better so that they fully understand the potential consequences to improper disposal

- Some large corporations take back old and unwanted electronic devices. We should contact the large retailers before throwing away our electronic devices.
- Investment should be attracted in this sector.
- Link up activities of informal sector with formal sector should be emphasized.
- Consultative process should be adopted
- To make recycling business viable one Government should encroach legal import of e-waste, should subsidize recycling and disposal industry.

### **Conclusion**

Managing the growing stream of e-waste in India presents several challenges. Informal e-waste recycling dominates the industry, accounting for 85 to 90 percent of all recycling. However, informal recycling creates a number of problems that will increase as the domestic production continues to grow. Although a potential source of income for people in poverty, informal e-waste recycling exposes workers and the environment to a number of toxins. Compared to formal recycling techniques more chemicals are used and inappropriately disposed of per gram of gold recovered. However, the toxic recycling processes used are effective at recovering gold. Additionally, future increases in metal prices are unlikely to erode the advantages that have ensured the informal sectors' dominance. Existing legislation in India is insufficient for tackling these problems. Difficulties caused by a lack of dedicated regulation are compounded by existing rules that are neither adhered to nor monitored; the enforcement of existing regulation remains a problem in India. Furthermore, as outlined in the study, a large number of stakeholders are either unaware of the hazards associated with inappropriate e-waste treatment or are resistant to solving it. Despite some progress, the need to raise awareness remains a key issue. There are currently very few regulations on the disposal of E-Waste and they are being allowed to enter our landfills or be burned. We are willingly allowing hazardous substances to leach into our water and air so that we may enjoy a new form of technology. This problem is not going to go away because the global population is growing and the demand for newer and better technology is creating enormous amounts of old and outdated electronics.

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