



E-Waste Management: A Challenges And Its Overview

Smt. PUSHPA K S

Asst. Prof. of Law

Vidyodaya Law College, Tumakuru

ABSTRACT

The hazardous nature of e-waste is one of the rapidly growing environmental problems of the world. The ever-increasing amount of e-waste associated with the lack of awareness and appropriate skill is deepening the problem. A large number of workers are involved in crude dismantling of these electronic items for their livelihood and their health is at risk; therefore, there is an urgent need to plan a preventive strategy in relation to health hazards of e-waste handling among these workers in India. Required information should be provided to these workers regarding safe handling of e-waste and personal protection. For e-waste management many technical solutions are available, but to be adopted in the management system, prerequisite conditions such as legislation, collection system, logistics, and manpower should be prepared. This may require operational research and evaluation studies.

This present article deals with present status of E waste and predominant challenges of E waste in India.

Key Words: Environment, E-Waste, Handling, challenges,

INTRODUCTION

“E-waste” “electronic waste”, “E-scrap” and “end-of-life electronics” are the terms often used to describe used electronics that are nearing the end of their useful life, and are discarded, donated or given to a recycler. Though “e-waste” is the commonly used term, EPA considers e-waste to be a subset of used electronics and recognizes the inherent value of these materials that can be reused, refurbished, or recycled to minimize the actual waste that might end up in a landfill or improperly disposed in an unprotected dump site either in the US or abroad.

E-waste is a **popular, informal name for electronic products nearing the end of their “useful life.”** Computers, televisions, VCRs, stereos, copiers, and fax machines are common electronic products. Many of these products can be reused, refurbished, or recycled.

Examples of electronic waste include, but not limited to TVs, computer monitors, printers, scanners, keyboards, mice, cables, circuit boards, lamps, clocks, flashlight, calculators, phones, answering machines, digital/video cameras, radios, VCRs, DVD players, MP3, and CD players.

We have serious concerns about unsafe handling of used electronics and e-waste, in developing countries, that results in harm to human health and the environment. For example, there are problems with open-air burning and acid baths being used to recover valuable materials from electronic components, which expose workers to harmful substances. There are also problems with toxic materials leaching into the environment. These practices can expose workers to high levels of contaminants such as lead, mercury, cadmium, and arsenic, which can lead to irreversible health effects, including cancers, miscarriages, neurological damage and diminished IQs.

In India most of the waste electronic items are stored at households as people do not know how to discard them. This ever-increasing waste is very complex in nature and is also a rich source of metals such as gold, silver, and copper, which can be recovered and brought back into the production cycle. So, e-waste trade and recycling alliances provide employment to many groups of people in India. Around 25,000 workers including children are involved in crude dismantling units in Delhi alone where 10,000–20,000 tonnes of e-waste are handled every year by bare hands. Improper dismantling and processing of e-waste render it perilous to human health and our ecosystem. Therefore, the need of proper e-waste management has been realized. It is necessary to review the public health risks and strategies to combat this growing menace¹.

EPA works bilaterally with governments and environmental officials around the world on e-waste management. EPA participated in the launch of the UNIDO-GEF project, “Strengthening of National Initiatives and Enhancement of Regional Cooperation or the Environmentally Sound Management of POPs in Waste of Electronic of Electrical Equipment (WEEE).” With EPA’s support, Step developed a tool which will enhance the ability of participating countries to assess how much e-waste is generated, imported, and exported. The meeting took place in San Jose, Costa Rica with participation from the thirteen countries involved in the project, along with experts from around the region and the world².

¹ INTRODUCTION TO E- WASTE MANAGEMENT BY LAKSHMI RAGHUPATHY

² E-Waste Management: As a Challenge to Public Health in India by Jugal Kishore – Indian Journal of community Medicine: official Publication of Indian Association of Preventive and Social Medicine

CURRENT STATUS OF E WASTE

For the recycling of e-waste, India heavily depends on the unorganized sector as only a handful of organized e-waste recycling facilities are available. Over 95% of the e-waste is treated and processed in most urban slums of the country, where untrained workers carry out the dangerous procedures without personal protective equipment, which are detrimental not only to their health but also to the environment³.

In Environmental (Protection) Act 1986, the “polluter pays principle” is enacted to make the party responsible for producing pollution responsible for paying for the damage done to the natural environment. In international environmental law, it is mentioned in principle 16 of the Rio Declaration on Environment and Development. Polluter pays is also known as extended producer responsibility (EPR). Under the Environment (Protection) Act 1986, central and state governments can enact legislations to safeguard the environment and people from exposure to toxic and hazardous nature of waste. Any violation of the provision of this act or notified rules is liable for punishment. Such penalty can be imposed on the violator if specific rules and regulations on e-waste are violated.

The Ministry of Environment and Forests is now processing the rules framed by electronics equipment manufacturers with the help of NGOs. According to the new guidelines issued by CPCB in 2007, e-waste is included in schedules 1, 2, and 3 of the “Hazardous Waste (Management and Handling) Rules 2003” and Municipal Solid Waste Management Rule, 2000⁴.

International treaties such as Basel Convention aim at reducing and regulating the movement of hazardous waste between nations. Even with the Convention, illegal shipment and dumping of e-wastes continue to take place. It is estimated that 50 million tonnes of e-waste were generated globally in 2018. Half of this is personal devices such as computers, screens, smartphones, tablets, and TVs, with the remainder being larger household appliances and heating and cooling equipment. Despite 66 per cent of the world’s population being covered by e-waste legislation, only 20 per cent of global e-waste is recycled each year, which means that 40 million tonnes of e-waste are either burned for resource recovery or illegally traded and treated in a sub-standard way. In the US alone, more than 100 million computers are thrown away with less than 20 per cent being recycled properly. China discards 160 million electronic devices a year. In the past, China has been regarded as the largest e-waste dumping site in the world. Hundreds of thousands of people have expertise in dismantling electronic junk.

³ Hicks C, Dietmar R, Eugster M. The recycling and disposal of electronic waste in China – legislative and market response. *Environ Impact Assess Rev.* 2005; 25:459–71. [[Google Scholar](#)] [[Ref list](#)]

⁴ CPCB. Guidelines for environmentally sound management of e-waste (As approved vide MoEF letter No.23-23/2007-HSMD) Delhi: Ministry of Environment and Forests, Central pollution Board, March 2008. Available from: <http://www.cpcb.nic.in>

E WASTE PROBLEM IN INDIA

India ranks 177 amongst 180 countries and is amongst the bottom five countries on the Environmental Performance Index 2018, as per a report released at the World Economic Forum 2018. This was linked to poor performance in the environment health policy and deaths due to air pollution categories. Also, India is ranked fifth in the world amongst top e-waste producing countries after the USA, China, Japan, and Germany and recycles less than 2 per cent of the total e-waste it produces annually formally. Since 2018, India generates more than two million tonnes of e-waste annually, and imports huge amounts of e-waste from other countries around the world. Dumping in open dumpsites is a common sight which gives rise to issues such as groundwater contamination, poor health, and more. The Associated Chambers of Commerce and Industry of India (ASSOCHAM) and KPMG study, Electronic Waste Management in India identified that computer equipment account for almost 70 per cent of e-waste, followed by telecommunication equipment phones (12 per cent), electrical equipment (8 per cent), and medical equipment (7 per cent) with remaining from household e-waste⁵.

E-waste collection, transportation, processing, and recycling is dominated by the informal sector. The sector is well networked and unregulated. Often, all the materials and value that could be potentially recovered is not recovered. In addition, there are serious issues regarding leakages of toxins into the environment and workers' safety and health.

India is being used as dumping ground of e-waste by many developed nations. Figure shows percentage share of e-waste imports in India from different countries.

Table below shows top ten states producing e-waste in India.

Top ten e waste producing states in India

State	E waste MT
Maharashtra	20270.59
Tamil Nadu	13486.24
Andhra Pradesh	12780.33
Uttar Pradesh	10381.11
West Bengal	10059.36

⁵ E-WASTE MANAGEMENT CHALLENGES AND OPPURTUNITIES IN INDIA BY VARSHA BHAGAT-GANGULY ISBN 978036724994 published September 30,2021 by ROUTLEDGE India 238 pages 17B/W illustrations.

Delhi	9729.15
Karnataka	9118.74
Gujarat	8994.33
Madhya Pradesh	7800.62
Punjab	6958.46

Source (Rajya Sabha 2001)

Top ten e waste generating cities	
City	E waste in tonnes
Ahmadabad	3286.5
Bangalore	4648.4
Chennai	4132.2
Delhi	9730.3
Hyderabad	2833.5
Kolkata	4025.3
Mumbai	11017.1
Nagpur	1768.9
Pune	2584.2
Surat	1836.5

Source Rajya Sabha 2001

Predominant challenges of E- waste Problem in India⁶

1. Poor infrastructure to recycle e-waste

Sadly, India has very few recognised and government-approved recycling centres to dismantle and repurpose electronic waste. Did you know that the Indian government has introduced a grant scheme for proficient e-waste management facilities? As per the grant, the government would readily fund 25% to 50% of the expenses in setting up infrastructure to repurpose electronic waste efficiently and responsibly. Even then, recycling centres and organised supply chains are very few.

⁶ E-Waste Management in India: Challenges and opportunities By Dr. Paromita Chakraborty. The Energy and Resource Institute.

2. A serious lack of awareness

Most consumers have little or no knowledge of the consequences of reckless e-waste disposal. The idea of sustainable waste management is equally vague. Furthermore, very few cities or locations have dedicated collection points where consumers can drop off their so-called electronic scraps voluntarily.

3. Mismanagement of products

In the present times, sourcing e-waste is challenging. Circular economy, although a term in use for years, is a new entry in the business channels. Companies ranging from start-ups to the top e-waste management companies in India invest heavily in order to establish collection hubs or adhere to circular economy standards.

The information barriers are real. For example, there is a lack of knowledge about cost-effective and efficient e-waste management techniques, as well as how to maximise the utility of end-of-life products.

4. Unsustainable and ecologically degrading practises

Despite the urgency of formal and responsible dismantling of electronic waste, the actual waste processed is significantly lower. Most of the formal recycling centres currently available operate at dwindled capacities, owing to the inability to source waste. What is worse? The ignorant mass continues to dispose of electronic waste in the most unfavourable conditions.

Karo Sambhav, a certified PRO in India, endeavours to improvise and maximise the efficiency and scope of formal waste management. The organisation uses cutting-edge technology and an upgraded EPR framework to educate and incentivize electronic waste recycling

5. Involvement of Child Labour

In India, about 4.5 lakh child laborers in the age group of 10-14 are observed to be engaged in various E-waste activities and that too without adequate protection and safeguards in various yards and recycling workshops. So, there is a urgent need to bring out effective legislation to prevent entry of child labour into E-waste market- its collection, segregation and distribution⁷.

6. Ineffective Legislation-

There is absence of any public information on most SPCBs/PCC websites. 15 of the 35 PCBs/PCC do not have any information related to E-waste on their websites, their key public interface point. Even the basic E-waste Rules and guidelines have not been uploaded. In absence of any information on their website, especially on details of recyclers and collectors of E-waste, citizens and institutional generators of E-waste are totally at a loss to deal with their waste and do not know how to fulfil their responsibility. So, there is failure in successful implementation of E-waste Management and Handling Rules, 2012.

⁷ Environmental exposure to lead and children's intelligence at the age of seven years: By Bathurst PA, McMichael AJ, Wigg NR, Vimpani GV, Robertson EF, Roberts RJ, et al.

Conclusion

E-waste management in India is a great challenge for governments of many developing countries. It is becoming a huge public health issue and is exponentially increasing by the day. It has to be collected separately, treated effectively, and disposed of e-waste. It is also a diversion from conventional landfills and open burning. It is essential to integrate an informal sector with the formal sector. The competent authorities in developing countries like India need to establish mechanisms for handling and treating e-waste safely and sustainable manner.

Addressing India's e-waste crisis requires a multi-pronged approach. Strengthening infrastructure, promoting formal and sustainable recycling practices, raising public awareness, and enhancing enforcement of regulations are crucial steps. Incentivizing the formal sector and discouraging reliance on the informal sector are also essential for creating a sustainable e-waste management system.

References

1. .Jatindra P., Sudhir K. E-waste management: a case study of Bangalore, India
2. Research Journal Environmental and Earth Sciences, 1 (2009), pp. 111-115
3. Google Scholar
4. Agarwal R. (1998) India: The World's Final Dumpyard!, January, Basel Action News, Vol.1 at www.ban.org accessed on 14th September 2006.
5. CII (2006). "E-waste management", Green Business Opportunities, Vol.12, Issue 1,
6. Confederation of Indian Industry, Delhi.
7. Devi B.S, Shobha S. V, Kamble R. K. (2004). E-Waste: The Hidden harm of Technological
8. Revolution, Journal IAEM, Vol.31, pp.196-205.
9. DIT (2003). Environmental management for Information Technology industry in India,
10. Department of Information Technology, Government of India, pp.122-124.
11. Kurian Joseph (2007) "Electronic Waste Management In India-Issues And Strategies Eleventh International Waste Management and Landfill Symposium.