

E-Waste & Its Impact on Environment

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Abstract— This paper deals with the study of e-waste and its impacts on the environment. The main aim of this paper is to create awareness about e-waste and its impact on environment. Nearly 70% of electronics are making a major impact on environment by way of polluting it. Electronic waste or e-waste is one of the rapidly growing problem of the world some containing toxic substances that can have an adverse impact on human health and environment if not handled properly the production of electrical and electronic equipment (EEE) will grown and cause major impact to our environment. This paper is purely based on research methodology. Hope the research paper will give an advanced knowledge in the matter regarding e-waste and its impacts on environment.

Key words: e-waste, impact, environment, toxic

I. OBJECTIVES

- 1) To give a brief outlook about the electronic waste
- 2) The study is emphasized about the impacts on environment

II. INTRODUCTION

E- waste broadly covers the electronic waste from all electronic and electrical appliances and comprises of items such as computer, mobile phones, digital music recorders/players, etc ., and many other household consumer items. There is an increasing problem relating to the e-waste and its impact on environment. Especially electronic industry where the short life cycle and the rapidly developing technology have led to increased e-waste volumes. The majority of e-waste elements are led to landfills. And it causes the major issues to environment e-waste has been categorized into three main categories, i.e., legal household appliances, IT and Telecom and consumer equipment. Refrigerator and washing machine represent large household appliances; each of these e-waste items has been classified with respect to 26 components found in them. By this way of e- waste it causes major impact to our earth and our environment.

III. ELECTRONIC WASTE WORLDWIDE:

Rapid changes in technology, changes in media, planned obsolescence have resulted in a fast growing surplus of electronic waste around the globe. Using and display those units are (CRT, LCD, and LED Monitors) processors (CPU, GPU, or APU chips), memory (DRAM or SRAM) and audio components have different useful lives. Processors are most frequently out dated and are more likely to become 'e-waste' an estimated so million tons of E-waste are produced each year. The USA discard 30 million computers each year and 100 million phones are disposed of in Europe each year. The environmental protection agency estimates that only 15-20% of e- waste is recycled, the rest of these electronics go

directly into landfills and incinerators. The increasing "market penetration" in the developing countries 'replacement market' in the developed countries and high obsolescence rate "make e-waste one of the fastest waste stream. While having some of the world's most advanced high tech software and hardware developing facilities Indians recycling sector can be called medieval. The dumping e-waste particularly computer waste, it causing more impact on environment.

IV. PROBLEM FACED

E-waste and its impacts on environment is a global problem. As per the view of United nation they suggest that global waste it set to exceed 40 million ton per year . End of product life recycling is highly polluting non-cost effective and unregulated in many countries. The burden of e-waste not only pollutes the land-fill it is having serious health implications due to chemical leaching into the water table, eventually making its way to agricultural produce and into people. According to a recent report by the BBC, e-waste pollution is causing severe health concerns for millions of people around the world, mostly in the developing nations of Africa, Europe and Asia. Approximately 23 percent of deaths in these nations are linked to pollution and other environmental impacts. The report also concluded that more than 200 million people worldwide are at risk of exposure to toxic waste.

With the usage of electrical and electronic equipment (EEE) on the rise, the amount of electrical and electronic waste (e-waste) produced each day is equally growing enormously around the globe. Recycling of valuable elements contained in e- waste such as copper and gold has become a source of income mostly in the informal sector of developing or emerging industrialized countries. However, primitive recycling techniques such as burning cables for retaining the inherent copper expose both adult and child workers as well as their families to a range of hazardous substances. E-waste-connected health risks may result from direct contact with harmful materials such as lead, cadmium, chromium, brominated flame retardants or polychlorinated biphenyls (PCBs), from inhalation of toxic fumes, as well as from accumulation of chemicals in soil, water and food. In addition to its hazardous components, being processed, e-waste can give rise to a number of toxic by-products likely to affects Human health.

Children are especially vulnerable to the health risks that may result from e-waste exposure and therefore, need more specific production. As they are still growing children's intake of air, water and food in proportion to their weight significantly increased compared to adults, it is still developing and exposure to toxic substance many children are exposed to e-waste derived chemicals in their daily life due to unsafe recycling activities that are often conducted at

their home- either by family members or by the children themselves.

V. EFFECTS ON HUMAN HEALTH & ENVIRONMENT:

The environment varies greatly depending on the individuals involved and the nature of operations. The e-waste processing brings about toxic or genotoxic effects on the human body. Threatening the health not only of workers but also of current residents and future generation living in the local environment. Health problem have been reported in the last few years, including diseases and problems related to the skin, stomach, respiratory tract and other organs. Workers suffer high incidences of birth defects, infant mortality, tuberculosis, and blood diseases anomalies in the immune system, underdevelopment of the brain in children and damage to the nervous and blood systems. Atmospheric pollution due to burning and dismantling activities seems to be the main cause of occupational and secondary exposure. E-waste related toxic effects can be exacerbated throughout a person's life time and cross generation.

The electronic and electrical goods are largely classified under three major heads, as: white goods, comprising of household appliances like air conditioners, dishwashers, refrigerators and washing machines , brown goods: comprising of TVs, camcorders, cameras, etc., 'grey goods, like computers, printers, fax machines, scanners, etc. EEE's are made of a multitude of components some containing toxic substances that have an adverse impact on human and the environment if not handled properly. Often, these hazards arise due to the improper recycling and disposal processes used. It can have serious repercussions for those in proximity to places where e-waste is recycled or burnt. Waste from the white and brown goods is less toxic as compared with grey goods; a computer contains highly toxic chemicals like lead, cadmium, mercury, beryllium, BFR, polyvinyl chloride and phosphor compounds.

VI. SOLUTIONS TO THE E-WASTE ISSUE

A. Technical interventions:

The solution for the e-waste crisis lies in 'prevention at the manufacturing source' or the 'precautionary principle.' This can be done by employing waste minimization techniques and by a sustainable product design.

1) Waste minimization in industries involves adopting: Inventory management

- 1) Production process modification
- 2) Volume reduction Recovery and reuse
- 3) Sustainable product design involves:
- 4) Rethinking on procedures of designing the product (flat computers)
- 5) Use of renewable material and energy
- 6) Creating electronic components and peripherals of biodegradable material
- 7) Looking at a green packaging option
- 8) Utilizing a minimum packaging material

B. Take back policies:

Producers must be responsible for the entire lifecycle of their products. In developed countries, several efforts have been made on this front. Several dozen cities in the states of

California and including San Francisco also have passed resolutions supporting 'producer take back' rules. Wipro Info tech has launched an e-waste disposal service for end customers. Others offering recycling options include Dell, HP and Apple.

VII. AWARENESS

The current awareness regarding the existence and dangers of e-waste are extremely low, partly because the e-waste being generated is not as large as in developed countries. Urgent measures are required to address this issue. The role of citizens in e-waste management includes:

- 1) Donating electronics for reuse which extends the lives of valuable products and keeps them out of the waste management system for a long time.
- 2) While buying electronic products, opting for those that are made with fewer toxic constituents, use recycled content, are energy efficient, are designed for easy upgrading or disassembly, use minimal packaging and offer leasing or take back options.

Building of consumer awareness through public awareness campaigns is a crucial point that can attribute to a new responsible kind of consumerism.

VIII. CONCLUSION

Hence I concluded by saying that based on my research article the e-waste and its impact on environment. India is place in a very interesting position. The need of the hour is an urgent approach to the e-waste hazard by technical and policy -level interventions, implantation and capacity building and increase in public awareness such that it can convert this challenge into an opportunity to show the world that India is ready to deal with future problems and can set global credible standards concerning environmental and occupational India. I discussed elaborately all about the e-waste and its impact on environment based on my knowledge. Hope that my research as given an advance knowledge about the electronic waste and its impact on environment.