

ELECTRONIC – WASTE

JYOTI GUPTA*

**Asst. Professor, Post Graduate, Deptt. of Geography, K.L.P College, Rewari.*

INTRODUCTION:-

We are rapidly progressing in information technology sector. The benefits of the information revolution are clear for all of us to see. Devices such as pcS, faxes, mobile phones, music players and a host of other equipments open up exiting possibilities for individuals and business alike. The electronic industry is the world’s largest and fastest growing manufacturing industry. “E- Waste is used as a generic term embracing all types of waste containing electrically powered components. E- waste contains both valuable materials as well as hazardous materials. There is no such perfect definition of e-waste in India. E- Waste is a collective name for discarded electronics devices that enter the waste stream from various sources. It includes electronics such as televisions, cell phones, computers etc. The list of e – waste is very large. The huge stock of e – waste requires appropriate disposal system. The pollutants and hazardous chemicals present in e – waste cause ill effects to the environment and public health. Countries like India are at more risk because public awareness about e – waste recycling/ disposal is very less.



Sources and pollutants of e-waste:- E-waste contains both valuable and harmful material. These materials require special handling and recycling technique. The average life span of a computer is 2 to 3 years since the hardware/software companies comes out with advanced model, thus generating huge quantity of e-waste. A computer weight about 25kg. Has following materials given in this table-1

Material	% of total weight
Plastics	23
Ferrous metals (eg.iron)	32
Non-ferrous metals (eg. Lead)	18
Electronics (eg. Silver)	12
Glass	15

OBJECTIVES:-

The purpose of this paper is to provide improved technologies and skills for e-waste recycling systems in india and improve working and living environment of urban dwellers working in the e-waste recycling sector through identifying and presenting sustainable alternatives to “backyard” e-waste recycling.

HAZARDOUS SUBSTANCES IN E-WASTE:-

Electrical and equipment contain different hazardous material which are harmful to human health and the environment if not disposed of carefully. The possible substances of concern, which may be found in selected e-waste items, are given in table-2

Hazardous substances in different components of e-waste

Substance halogenated compounds	Occurrence in e-waste
PCB (Polychlorinated biphenyls) PBB (Polybrominated bipheyls)	Condensers, Transformers.
Heavy metals and other metals	
Arsenic	Small quantities in the form of gallium Arsenide within light emitting diodes
Barium	Getters in CRT
Chromium vi	Data tapes, Floppy- disks
Lithium	Li- batteries
Lead	ORT Screens, Printing wiring boards
Selenium	Older photocopying-machines
Rare earth elements (Europium)	Fluorescent layer (CRT- Screen)
Zinc sulphide	Mixed with rare earth metals
Others	
Toner dust	Toner cartridges for laser printers
Radio- active substances	
Americium	Medical equipments, fire detectors

Source: www.ewasteguide.info

Discard rate of electronic items

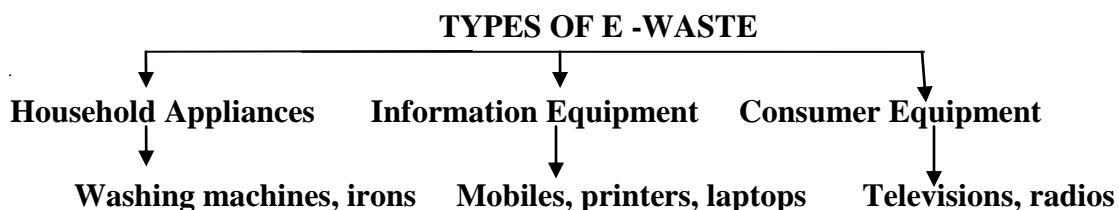
Item	Discard/ replace
Mobile phone	1-3 years
PC	Every 2 years
Camera	3-5 years
TV	10-15 years
Refrigerator	10-15 years
IT accessories	Very fast
Washing machine	10-15 years

GLOBAL TRADE ISSUES:-

Increased regulation of electronic waste and concern over the environmental harm which can result from toxic electronic waste has not raised disposal costs though. The regulation creates an economic disincentive to remove residues prior to export. Defenders of the trade in used electronics say that extraction of metals from virgin mining has also been shifted to developing countries. Hard-rock mining of copper, silver, gold and other materials extracted from electronics is considered far more environmentally damaging than the recycling of those materials. They also state that repair and reuse of computers and televisions has become a “lost art” in wealthier nations, and that refurbishing has traditionally been a path to development. In June 2008, a container of electronic waste, destined from the port of Oakland in the U.S to Sanshui District in mainland china, was intercepted in Hong Kong by Greenpeace. Concern over exports of electronic waste were raised in press reports in india, Ghana, Ivory Coast, and Nigeria.

VALUABLE SUBSTANCE IN E-WASTE:-

Electronic equipment contain various fractions of valuable materials. Most of the valuable substances are found in printed circuit boards, which occur in relevant quantities mainly in the categories office, information and communication equipment as well as entertainment and consumer electronics. Beside metals such as gold, silver and platinum also scarce materials like Indian start to play an important role, due to their application in new technologies.





IMPACT OF E-WASTE ON PUBLIC HEALTH:-

Computers and mobile phones contain a lot of different hazardous chemicals. Cathode ray tubes of computer monitors contain heavy metals such as lead and cadmium, which are dangerous to public health on entering the water system. These chemical have a direct effect on nervous and respiratory systems. Dangerous particles released by flame-retardant plastics can have adverse impact on endocrine functions. Lead is mostly used metal in electronic devices, resulting in a variety of health hazardous. As such e-waste is not hazardous. These hazardous constituents present in the e-waste make it harmful when these wastes are recycled and processed, as only at this stage, they pose serious threat to public health and environment. Electronics and electrical equipment are environmentally friendly, but they become dangerous on becoming e-waste. Lead is the most widely used metal

in electronic devices, resulting in a variety of health hazardous. Children are more vulnerable to lead poisoning than adults. It is found that the e-waste recycling activities are responsible for the increased blood lead levels in children of china, which is a popular destination of e-waste. It was found that e-waste recycling operations were causing higher levels of polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans in the environment as well as in humans.

Effects on E-Waste on Public Health

Sources	Constituents	Adverse Effect
Motherboard	Be	Cause lung cancer
Computer housing	Plastics and pvc	Cause reproductive problem
Printed circuit board	Hg	<u>Skin disorders</u>
Batteries skin	Ni	Allergy to lungs
Front panels of CRT	Ba, P and heavy metals	Muscle weakness and damage to spleen and liver.
Semi –conductors and resistors	Cd	Neural damage, high concentration in kidney and liver.
Glass panels, gasket and Solders	Pb	Kidney & nervous damage, Damage circulatory system

E- WASTE MANAGEMENT:-

In developed countries, electronic waste processing usually first involves dismantling the equipment in various parts. Circuit boards plastics, metal frames often by hand. The advantages of this process are the human's ability to recognize and save working and repairable parts, including chips, transistors etc. The advantage is that the labour is cheapest in countries with the lowest health and safety standards. Leaded glass from CRTs is reused in car batteries, ammunition or sold to foundries as a flurrying argentine processing raw lead ore. Copper, gold, silver, are valuable metals to sold to smelters for recycling. Hazardous smoke and gases are captured and treated to mitigate environment threat. These methods allow for safe reclamation of all valuable computer construction materials.

E-WASTE RECYCLING:-

Recycling of e-waste is the only way to get rid of all problems. Today the recycling of rechargeable household batteries are possible. Major computer makers, such as dell and gate way have programs to help you dispose of this e-waste. Some computer makers, such as apple will accept your old monitor back for recycling if you buy a new one. Our goal is to recycle the previously used handsets in the most eco- friendly manner available today. The simplest way to properly dispose of single cellular handsets is to send them individually to the wireless source for recycling. We can locate the local cell phone drop center. Where we can drop our unused or discarded cell phone.

RESPONSIBILITIES OF THE GOVERNMENT:-

- 1 Government should enforce strict regulations against dumping e-waste in the country by outsiders
- 2 A comprehensive law that provides e-waste regulation and management and proper disposal of hazardous waste is required.
- 3 Government must encourage environment monitoring and the regulations of hazardous waste disposal.

STEP TO BE TAKEN:-

Recycling of e-waste following steps to be taken-

- 1 Recycling the components which are permitted by the law.
- 2 Segregation of hazardous and non-hazardous material for further processing.
- 3 Re-selling of the reusable material from e-waste through a complete well established channel.

POTENTIAL SOLUTIONS:-

The best way to e-waste is reduce, reuse, recycle:

- 1 Some major comprise have developed and started using material that are eco-friendly or reusable material for their new products. Eg. Plasma screens etc.
- 2 There are recycling units in and around Bangalore, and also in other major cities who dismantle, separate and process scientifically.
- 3 NGO's have also gave a long way in collecting and disposing e-waste.

CONCLUSION:-

India has a few small scale recycling programs but there are insufficient resources and no quality standards to handle them and further they will create a future problem of health hazardous and environment issues. We must create some rules to overcome all these problems and they must be implemented strictly. New technologies and method for recycling and recovery are to be established. Criteria are to be developed for recovery and disposal of e-waste. An effective policy should be introduced that include development of e-waste regulation and control the import and export of e-waste strictly.

REFERENCES:-

1. www.wikipedia.com
2. www.google.com
3. www.e-waste.in
4. C11(2006) “Environment management” Green business opportunities vol.12, issue-1