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INDIA: THE E-WASTE DUMPING CAPITAL 2020

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Introduction

These days computer has become most common and widely used gadget in all kinds of activities ranging from schools, residences, offices to manufacturing industries. E-toxic components in computers could be summarized as circuit boards containing heavy metals like lead & cadmium; batteries containing cadmium; cathode ray tubes with lead oxide & barium; brominated flame-retardants used on printed circuit boards, cables and plastic casing; poly vinyl chloride (PVC) coated copper cables and plastic computer casings that release highly toxic dioxins & furans when burnt to recover valuable metals; mercury switches; mercury in flat screens; poly chlorinated biphenyl's (PCB's) present in older capacitors; transformers; etc. Basel Action Network (BAN) estimates that the 500 million computers in the world contain 2.87 billion kgs of plastics, 716.7 million kgs of lead and 286,700 kgs of mercury. The average 14-inch monitor uses a tube that contains an estimated 2.5 to 4 kgs of lead. The lead can seep into the ground water from landfills thereby contaminating it. If the tube is crushed and burned, it emits toxic fumes into the air.

Industrial revolution followed by the advances in information technology during the last century has radically changed people's lifestyle. Although this development has helped the human race, mismanagement has led to new problems of contamination and pollution. The technical prowess acquired during the last century has posed a new challenge in the management of wastes. For example, personal computers (PCs) contain certain components, which are highly toxic, such as chlorinated and brominates substances, toxic gases, toxic metals, biologically active materials, acids, plastics and plastic additives. The hazardous content of these materials pose an environmental and health threat. Thus proper management is necessary while disposing or recycling e-wastes.

E-WASTE-EXPORT

Table I : SOURCES AND TYPES OF E-WASTE

SOURCE OF ELECTRONIC -WASTES	CONTENTS
COMPUTER MONITOR : SOLDER IN PRINTED CIRCUIT BOARDS, GLASS PANELS AND GASKETS	LEAD (PB)
MOTHERBOARD	BERYLLIUM (BE)
CHIP RESISTORS AND SEMICONDUCTORS	CADMIUM (CD)
RELAYS AND SWITCHES, PRINTED CIRCUIT BOARDS	MERCURY (HG)
CORROSION PROTECTION OF UNTREATED AND GALVANIZED STEEL PLATES, DECORATOR OR HARDNER FOR STEEL HOUSINGS	HEXAVALENT CHROMIUM (CR) VI
CABLING AND COMPUTER HOUSING	PLASTICS INCLUDING PVC
PLASTIC HOUSING OF ELECTRONIC EQUIPMENTS AND CIRCUIT BOARDS.	BROMINATED FLAME RETARDANTS (BFR)
FRONT PANEL OF CRTS	BARIUM (BA)

Table I: Effects of E-Waste constituent on health & Environments.

Source of Electronic -Wastes	Contents	Impact on Human & Environment
Solder in printed circuit boards, glass panels and gaskets in computer monitors	Lead (PB)	Damage to central and peripheral nervous systems, blood systems and kidney damage. Affects brain development of children.
Chip resistors and semiconductors	Cadmium (CD)	Toxic irreversible effects on human health. Accumulates in kidney and liver. Causes neural damage. Teratogenic.
Relays and switches, printed circuit boards	Mercury (Hg)	Chronic damage to the brain. Respiratory and skin disorders due to bioaccumulation in fishes.
Corrosion protection of untreated and galvanized steel plates, decorator or hardner for steel housings	Hexavalent chromium (Cr) VI	Asthmatic bronchitis. DNA damage.
Cabling and computer housing	Plastics including PVC	Burning produces dioxin. It causes Reproductive and developmental problems; Immune system damage; Interfere with regulatory hormones
Plastic housing of electronic equipments and circuit	Brominated flame	Disrupts endocrine system functions

boards.	retardants (BFR)	
Front panel of CRTs	Barium (Ba)	Short term exposure causes: Muscle weakness; Damage to heart, liver and spleen.
Motherboard	Beryllium (Be)	Carcinogenic (lung cancer) Inhalation of fumes and dust. Causes chronic beryllium disease or beryllicosis. Skin diseases such as warts.

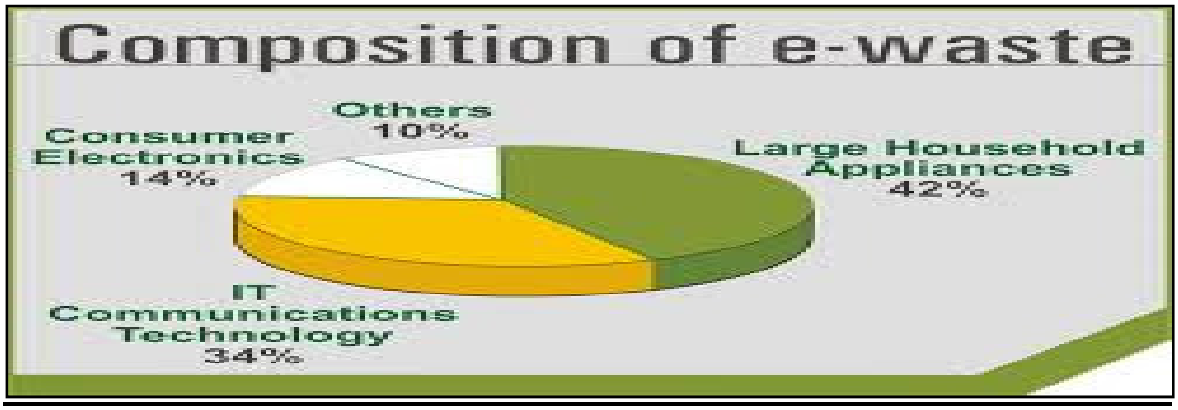
E-WASTE-INDIAN CONTEXT :-

We, the people of India has tremendous willingness to became the world's powerful economy and want to achieve the place in the groups of developed country. Everyone is so lost in the urban rat race that we all have forgotten the world around us. We never stop and think about what we are giving back to the earth other than the increased carbon footprints and electronic-wastes. We have all the bad things to highlight if we start analyzing from carbon emissions to e-wastes.

According to a UN report, India is the second largest e-waste generator in Asia. Unless action is taken immediately to properly collect and recycle materials, many developing countries will face the specter of hazardous e-waste mountains with serious consequences regarding the environment and public health, the report warns. In the year 2009, India generated 5.9 Mn Tonnes of hazardous waste, posing serious health issues.

While the world is marveling at the technological revolution, countries like India are facing an imminent danger. E-waste of developed countries, such as the US, dispose their wastes to India and other Asian countries. A recent investigation revealed that much of the electronics turned over for recycling in the United States ends up in Asia, where they are either disposed of or recycled with little or no regard for environmental or worker health and safety. Major reasons for exports are cheap labour and lack of environmental and occupational standards in Asia and in this way the toxic effluent of the developed nations 'would flood towards the world's poorest nations. The magnitude of these problems is yet to be documented. However, groups like Toxic Links India are already working on collating data that could be a step towards controlling this hazardous trade.

It is imperative that developing countries and India in particular wake up to the monopoly of the developed countries and set up appropriate management measures to prevent the hazards and mishaps due to mismanagement of e-wastes.



E-WASTE INTERNATIONAL SCENERIO:-

The UN study says that by 2020, e-wastes from old computers would jump by 500% from the 2007 levels in India, and by 200% to 400% in South Africa and China. The e-wastes from old mobile phones will be seven times higher in China and eighteen times higher in India. A recent report by the Delhi based Center for Science and Environment (CSE) says that apart from generating about 3,50,000 tonnes of electronic waste every year, India imports another 50,000 tonnes. The study alleges that the unorganized sector recycles more than 90% of these waste. The organization also says that Attero Recycling which has the only license in India to import e-wastes reselling e-waste instead of recycling it. It is illegally trading e-waste, and such illegal trade results in huge pollution in the industry. As per the data, India generated 3,30,000 tonnes of e-waste in 2007 which is equal to 110 mn laptops. About 10% of the e-waste generated is recycled every year; the remaining is refurbished, and the unorganized sector is right behind almost all of it. Informal dealers refurbish and make money from e-waste.

According to CSE, the governments new draft rules with regard to waste management ignore the reality and are likely to be toothless. It is estimated that illegal import of e-waste in the country stands at about 50,000 tones annually and loopholes in the laws facilitate this. "We need to think how we can build a new model for waste managers. Instead of thinking about replacing small, cost effective garbage collectors with big business, we have to think how policy can legalize, regulate and even pay for this e-waster dumping trade. It is the fact that free trade agreements has been negotiated with the European Countries and Japan, that include provisions for these

countries to dump their e-waste in India. If this trend continues, India will soon become dumping ground for the global e-waste.

We, the people must know about all the facts negligence will definitely cause the serious problems to the our health of the nation and world.

We must plead our case with the Government to legalize , organize the dumping system and e-waste must be handled carefully by the organized and legal players in the field. We must play the role to prevent the global disaster causing the e-waster dumping in our soil.

Responsibilities & Suggestions:-

Considering the severity of the problem, it is imperative that certain management options be adopted to handle the bulk e-wastes. Following are some of the management options suggested for the government, industries and the public.

Responsibilities of the Government

1. Governments should set up regulatory agencies in each district, which are vested with the responsibility of co-ordinating and consolidating the regulatory functions of the various government authorities regarding hazardous substances.
2. Governments should be responsible for providing an adequate system of laws, controls and administrative procedures for hazardous waste management (Third World Network. 1991). Existing laws concerning e-waste disposal be reviewed and revamped. A comprehensive law that provides e-waste regulation and management and proper disposal of hazardous wastes is required. Such a law should empower the agency to control, supervise and regulate the relevant activities of government departments.
3. Governments must encourage research into the development and standard of hazardous waste management, environmental monitoring and the regulation of hazardous waste-disposal.
4. Governments should enforce strict regulations against dumping e-waste in the country by outsiders. Where the laws are flouted, stringent penalties must be imposed. In particular, custodial sentences should be preferred to paltry fines, which these outsiders / foreign nationals can pay.
5. Governments should enforce strict regulations and heavy fines levied on industries, which do not practice waste prevention and recovery in the production facilities.
6. Polluter pays principle and extended producer responsibility should be adopted.
7. Governments should encourage and support NGOs and other organizations to involve actively in solving the nation's e-waste problems.
8. Uncontrolled dumping is an unsatisfactory method for disposal of hazardous waste and should be phased out.
9. Governments should explore opportunities to partner with manufacturers and retailers to provide recycling services.

Responsibility and Role of industries

1. Generators of wastes should take responsibility to determine the output characteristics of wastes and if hazardous, should provide management options.

2. All personnel involved in handling e-waste in industries including those at the policy, management, control and operational levels, should be properly qualified and trained. Companies can adopt their own policies while handlinge-wastes. Some are given below:

3. Companies can and should adopt waste minimization techniques, which will make a significant reduction in the quantity of e-waste generated and thereby lessening the impact on the environment. It is a "reverse production" system that designs infrastructure to recover and reuse every material contained within e-wastes metals such as lead, copper, aluminum and gold, and various plastics, glass and wire. Such a "closed loop" manufacturing and recovery system offers a win-win situation for everyone, less of the Earth will be mined for raw materials, and groundwater will be protected, researchers explain.

4. Manufacturers, distributors, and retailers should undertake the responsibility of recycling/disposal of their own products.

5. Manufacturers of computer monitors, television sets and other electronic devices containing hazardous materials must be responsible for educating consumers and the general public regarding the potential threat to public health and the environment posed by their products. At minimum, all computer monitors, television sets and other electronic devices containing hazardous materials must be clearly labeled to identify environmental hazards and proper materials management.

Responsibilities of the Citizen

Waste prevention is perhaps more preferred to any other waste management option including recycling. Donating electronics for reuse extends the lives of valuable products and keeps them out of the waste management system for a longer time. But care should be taken while donating such items i.e. the items should be in working condition. Reuse, in addition to being an environmentally preferable alternative, also benefits society. By donating used electronics, schools, non-profit organizations, and lower-income families can afford to use equipment that they otherwise could not afford.

E-wastes should never be disposed with garbage and other household wastes. This should be segregated at the site and sold or donated to various organizations.

While buying electronic products opt for those that:

- Are made with fewer toxic constituents
- Use recycled content
- Are energy efficient
- Are designed for easy upgrading or disassembly
- Utilize minimal packaging
- Offer leasing or take back options
- Have been certified by regulatory authorities. Customers should opt for upgrading their computers or other electronic items to the latest versions rather than buying new equipments.

NGOs should adopt a participatory approach in management of e-wastes.

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