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IMPACT OF ELECTRONIC WASTE IN ENVIRONMENT

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INTRODUCTION:

The electronic industry is the world's largest and fastest growing manufacturing industry. Electronic waste is informally known as e-waste for the electronic products nearing the end of their useful life. This is largely due to increasing market penetration of products in developing countries, development of a replacement market in developed countries and a generally high product obsolescence rate, together with a decrease in prices and the growth in internet use. Electrical and Electronic waste (e-waste) is defined as any discarded, obsolete, or broken electrical or electronic devices.

As per current estimates, e-waste is growing almost three times the rate of municipal Solid Waste globally. E-waste, being one of the largest sources of heavy metals and organic pollutants in municipal waste and the fastest growing waste stream, has become a serious problem in China and other Asian developing nations. These countries not only generate tremendous amounts of domestic e-waste due to their fast consumption rates of electrical and electronic (EE) products, but also receive enormous quantities of used information technology (IT) devices from overseas.

India is a developing county, from the last decades increase in population & change of lifestyle, the demand of using electronic products is increased. In India e-waste generation is growing at 15% & is expected to cross 8000000 tones per year in 2012.A Central pollution control board (CPCB) report said 65 cities in India generate more than 60-70% of the total e-waste, which comes from 10 states, that's are followed by Maharashtra, Tamilnadu, Andhra Pradesh, Uttar Pradesh, West Bengal, Delhi, Karnataka, Gujarat, Madhya Pradesh and Punjab in the list of e-waste generating states in India. Most erecyclers were exporting the toxic materials such as leaded glass, circuit boards, and mercury lamps.

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E-Waste, also called electronic waste, is the name for electronic products that have come towards the end of their "useful life." This can include computers, monitors, televisions, stereos, copiers, printers, fax machines, cellphones, dvd player, cameras, batteries, and many more electronic devices. Used electronic devices can be reused, resold, salvaged, recycled or disposed. E-waste has a horrible effect on the environment and it is important to give your e-waste to an R2 certified recycling facility. Here some important facts you need to know about the environmental effects of e-waste.

Computers and most electronics contain toxic materials such as lead, zinc, nickel, flame retardants, barium, and chromium. Specifically with lead, if released into the environment can cause damage to human blood, kidneys, as well as central and peripheral nervous systems.

When e-waste is warmed up, toxic chemicals are released into the air damaging the atmosphere. The damage to the atmosphere is one of the biggest environmental impacts from e-waste.

When electronic waste is thrown away in landfills their toxic materials seep into groundwater, affecting both land and sea animals. This can also affect the health of the people in the developing countries where most of the electronic waste in dumped.

EFFECTS ON AIR

One of the most common effect of E-waste on air is through air pollution. For example, a British documentary about Lagos and its inhabitants, called Welcome to Lagos, shows a number of landfill scavengers who go through numerous landfills in Lagos looking for improperly disposed electronics which includes wires, blenders, etc., to make some income from the recycling of these wastes. These men were shown to burn wires to get the copper (a very valuable commodity) in them by open air burning which can release hydrocarbons into the air.

EFFECTS ON WATER

When electronics containing heavy metals such as lead, barium, mercury, lithium (found in mobile phone and computer batteries), etc., are improperly disposed, these heavy metals leach through the soil to reach groundwater channels which eventually run to the

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surface as streams or small ponds of water. Local communities often depend on these bodies of water and the groundwater. Apart from these chemicals resulting in the death of some of the plants and animals that exist in the water, intake of the contaminated water by humans and land animals results in lead poisoning. Some of these heavy metals are also carcinogenic.

EFFECTS ON SOIL

In this way, toxic heavy metals and chemicals from e-waste enter the "soil-crop-food pathway," one of the most significant routes for heavy metals' exposure to humans. These chemicals are not biodegradable—they persist in the environment for long periods of time, increasing the risk of exposure.

These dangers posed by improper disposal on the environment ultimately have impacts on human beings -human cost; the health effects of these toxins on humans include birth defects (irreversible), brain, heart, liver, kidney and skeletal system damage. They also significantly affect the nervous and reproductive systems of the human body. When computer monitors and other electronics are burned, they create cancer-producing dioxins which are released into the air we breathe. If electronics are thrown in landfills, these toxins may leach into groundwater and affect local resources. Thus improper disposal of e-waste not only has effects on the environment, it indirectly and ultimately poses grave dangers to humans and livestock.

E-WASTE IN INDIA

The electronics age made unprecedented impact on human society and spectacularly enhanced our connectivity across the globe. The widespread use of electronic items has made communication easier, boosted business activities and created employment opportunities. However, along with the benefits, it has brought into focus many challenges, like the rising problem of e waste that have to be boldly dealt with by society. In the current scenario, it is always possible that human health and environment would be drastically endangered if concerted legislations and actions were not taken efficient management and disposal of e-waste.

The main sources of electronic waste in India are: A. Solder in printed circuit, glass panels & gaskets in computer monitor B. Chip resistors & Semiconductors C. Refrigerators &

Batteries D. Mobiles E. Microwave & Air Conditioners etc. The story of current Indian e-waste management is different from the worldwide. Practices E-waste is a serious issue because of the informal recycling activities. Therefore, quantification of e-waste in India is very difficult and, there is no mechanism and policy to check the flow of e-waste in the system.

EFFECT ON HUMAN HEALTH

Since e-waste is a diverse combination of various type of toxic elements, which are capable of creating an irreversible impact to the environment and human health if not handled properly. The health hazards of few toxic elements are given below. E-waste is highly complex to handle because of its composition. It is made up of multiple components some of which contain toxic substances that have an adverse impact on human health and environment if not handled properly that is if improper recycling and disposal methods are deployed.

So there is a need for appropriate technology for handling and disposal of these chemicals. Thus, residents living nearby can intake these hazardous chemicals through different exposure pathways. Since the recycling process is done near residential area, population group which is vulnerable to hazardous chemicals, such as infants and children are alike to be affected a lot regarding their health. In this part, PCDD/Fa, a by-product of e-waste recycling is being reviewed. Lead is a highly toxic metal with no known useful function in the human body of particular concern is the effect of relatively low-level exposure on cognitive and behavioral development in children, including the lowering of IQ.

Formal electronic waste recycling facilities use specifically designed equipment to safely remove salvageable materials from obsolete electronics while protecting workers from adverse health effects. However, these centers are very expensive to build and run and are rare in less developed countries.

CONCLUSION

India is placed 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, implementation 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 health.

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- Vinod Kumar Research Scholar, Department of Management Studies, Indian Institute of Technology, Roorkee, Uttarakhand (India)-247667 [E-mail: vinodmehta8383@gmail.com, +91-9639300292 Sustainability and E-waste Management Scenario in India by