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E- WASTE: A GROWING CONCERN IN TODAY'S ENVIRONMENT

* Kavita Singh & **Dr. Divya Rani Singh

* Research Scholar & ** Professor

Department of Home Science

Deen Dayal Upadhyay Gorakhpur University, Gorakhpur India

Abstract: Central issue of the present study is electronic-waste (e-waste) that is rising as a brand new environmental challenge for twenty first century. Electronic waste or e-waste describes discarded electrical or electronic devices which is used for communication and households. Informal processing of e-waste in developing countries can lead to adverse human health effects and environmental pollution. Its effect human health, damage central and peripheral nervous systems, blood systems and kidney, Affects brain development of children, Chronic damage to the brain, Respiratory, Asthmatic bronchitis, Reproductive and developmental problems, Lung Cancer, Damage to heart, liver and spleen and it also effect environment Pollution of Ground-Water, Acidification of soil, Air Pollution. The purpose of the article is to provide knowledge and information of e-waste on human health hazard.

Keywords- Electronic, pollution, environmental, equipments etc.

I. INTRODUCTION

"Electronic waste" or e-waste could also be outlined as discarded electrical or electronic device. It's generated from the products used for data processing such as computers, computer devices like monitor, speakers, keyboards, printers etc & electronic devices used for entertainment like TV, DVDs, and CD players. Used electronics which are destined for reuse, resale, salvage, recycling, or disposal are also considered e-waste. Equipment or devices used for communication like phones, landline phones, fax etc and household equipment's like vacuum cleaner, microwave ovens, washing machines, air conditioners etc. India is the 5th position in the generation of e-waste. The situation is alarming as India generates about 1.5 lakh tones of e-waste annually and almost all of it finds its way into the informal sector as there is no organized alternative available at present. E-Waste accounts for 40 percent of the lead and 75 percent of the heavy metals found in landfills. E-waste not only affects the environment but also human health adversely. Approximately 23% of deaths in nation are linked to pollution and other environmental impacts.



Figure-1

II. Sources of E-Waste:

Table-1 Effects of e-waste constituent on health

Source of e-wastes	Constituent	Health effects
Solder in printed circuit boards, glass panels and gaskets in computer monitors	Lead (Pb)	<ul style="list-style-type: none"> • Damage to central and peripheral nervous systems, blood systems and kidney damage. • Affects brain development of children.
Chip resistors and semiconductors	Cadmium(Cd)	<ul style="list-style-type: none"> • Toxic irreversible effects on human health. • Accumulates in kidney and liver. • Causes neural damage. • Teratogenic.
Relays and switches, printed circuit boards	Mercury (Hg)	<ul style="list-style-type: none"> • Chronic damage to the brain. • Respiratory and skin disorders due to bioaccumulation in fishes.
Corrosion protection of untreated and galvanized steel plates, decorator or hardener for steel housings	Hexavalent chromium (Cr) VI	<ul style="list-style-type: none"> • Asthmatic bronchitis. • DNA damage.
Cabling and computer housing	Plastics including PVC	<p>Burning produces dioxin. It causes</p> <ul style="list-style-type: none"> • Reproductive and developmental problems; • Immune system damage; • Interfere with regulatory hormones
Plastic housing of electronic equipments and circuit boards	Brominated flame retardants (BFR)	<ul style="list-style-type: none"> • Disrupts endocrine system functions
Front panel of CRTs	Barium (Ba)	<p>Short term exposure causes:</p> <ul style="list-style-type: none"> • Muscle weakness; • Damage to heart, liver and spleen.
Motherboard	Beryllium(Be)	<ul style="list-style-type: none"> • Carcinogenic (lung cancer) • Inhalation of fumes and dust. Causes chronic beryllium disease or berylliosis. • Skin diseases such as warts.

Table-2 Effects of e-waste components on environment

Source of e-wastes components	Constituent	Environmental effects
Electronics which includes wires, blenders etc	Copper	<ul style="list-style-type: none"> • open air burning which can release hydrocarbons into the air. • hydrocarbons can contribute to the greenhouse gas effect
Mobile phone and computer batteries	lead, barium, mercury, lithium	these heavy metals leach through the soil to reach groundwater channels which eventually run to the surface as streams or small ponds of water
Computer monitors	lead, arsenic, and cadmium	electronics are thrown in landfills, these toxins may leach into groundwater and affect local resources.
Cathode ray tube used in TVs, ATM and video camera	Lead, barium and other heavy metals	these heavy metals leaching into the ground water and release of toxic phosphor
Chips and other gold plated components	Brominated substance, tin, hydrocarbons, heavy metals	Rivers acidifying fish and flora, contamination of surface and groundwater

III. Suggestion-

1. Countries need to standardized method to estimate e-waste generation.
2. Need to implement and frame policies for management e-waste.
3. Solve environment issue related to recycling.
4. Awareness program should be generated and training should be provided in handling e-waste.
5. Product design with fewer amount of hazardous materials.
6. Renewable materials and bio-based toners, glues and inks are used more often.
7. Designers could ensure the product is built for re-use, repair or upgradeability.

IV. Conclusion- E-waste are everywhere in our society at local and international level. It's caused by their irregular management. It needs reduced and reuse of the environmental impacts of technological artifacts by increasing their life spans and thereby reducing the demands for new equipments.

Reference-

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