

Impact of E-waste on Environment

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ABSTRACT

Electronic waste, also known as e-waste, is any electronic product, or product containing electronic components, that has reached the end of its usable life cycle. A product is totally unusable or broken, instead of just being thrown in the garbage, it must be thrown away by a certified e-waste hauler or recycler, or taken to a designated drop-off at a government building, school or organization as e-waste can potentially cause harm to humans, animals and the global environment. It's an urge to find a solution on pollution. To minimize pollution in various forms the education on pollution starts from the beginning of education itself. Technology should be developed based on eco-friendly technology so it is necessary to make changes in the curriculum of the syllabus of Education.

Keywords: Electronic waste, pollution, pollution, health hazards, eco friendly technology.

I. INTRODUCTION

Electronic waste, also known as e-waste, is any electronic product, or product containing electronic components, that has reached the end of its usable life cycle. If a product is outdated, consumers can donate it to someone who might still find it valuable. Many retailers also offer trade-in programs or incentives for people looking to upgrade electronics that require the surrender of an older model; the retailers are able to reuse or repurpose the older models. However, if a product is totally unusable or broken, instead of just being thrown in the garbage, it must be thrown away by a certified e-waste hauler or recycler, or taken to a designated drop-off at a government building, school or organization as e-waste can potentially cause harm to humans, animals and the global environment if disposed of improperly.

Before discussion it is necessary to know about E-waste, E-waste is defined 'Electronic waste or e-waste describes discarded electrical or electronic devices' whereas the UN defines e-waste 'Any discarded products with a battery or plug, and features toxic and hazardous substances such as mercury, that can pose severe risk to human and environmental health.' E-waste, electronic waste, e-scrap and end-of-life electronics are terms often used to describe used electronics that are nearing the end of their useful life, and are discarded, donated or given to a recycler. Used electronics which are destined for refurbishment, reuse, resale, salvage recycling through material recovery, or disposal are also considered e-waste.

The consequences of improper e-waste disposal in landfills or other non-dumping sites pose serious threats to current public health and can pollute ecosystems for generations to come. When electronics are improperly

disposed and end up in landfills. According to UN definition E-waste can be toxic, is not biodegradable but accumulates in environment and toxic chemicals are released which impacts on the earth's air, soil, water and ultimately, human health.

Impact of E-waste on environment:

The generation of electronic waste has been increasing faster than plastic waste, with e-junk witnessing 31% annual growth in India, the government said. In 2018-19, the plastic waste was 33 lakh tonnes. The ministry said according to Central Pollution Control Board (CPCB), the growth rate of this e-waste is even higher. This waste was 7.71 lakh tonnes in 2018-19 and 10.14 lakh tonnes in 2019-20. This is an increase of about 31%. 14-Feb-2022. On this background it is more important to know the consequence of e-waste impact on environment i.e. air, soil, water and its effect on human health.

Impact of E-waste on air :

Contamination in the air occurs when e-waste is informally disposed by dismantling, shredding or melting the materials, releasing dust particles or toxins, such as dioxins, into the environment that cause air pollution and damage respiratory health. E-waste of little value is often burned, but burning also serves a way to get valuable metal from electronics, like copper. Chronic diseases and cancers are at a higher risk to occur when burning e-waste because it also releases fine particles, which can travel thousands of miles, creating numerous negative health risks to humans and animals. Higher value materials, such as gold and silver, are often removed from highly integrated electronics by using acids, desoldering, and other chemicals, which also release fumes in areas where recycling is not regulated properly. The negative effects on air from informal e-waste recycling are most dangerous for those who handle this waste, but the pollution can extend thousands of miles away from recycling sites.

The air pollution caused by e-waste impacts some animal species more than others, which may be endangering these species and the biodiversity of certain regions that are chronically polluted. Over time, air pollution can hurt water quality, soil and plant species, creating irreversible damage in ecosystems. For instance, an informal recycling hub in Guiyu, China that was formed by parties interested in extracting valuable metals from e-waste, and subsequently has caused the region to have extremely high lead levels in the air, which are inhaled and then ingested when returned to water and soil. This can cause disproportionate neurological damage to larger animals, wildlife and humans in the area.

Impact of E-waste on Soil

Improper disposal of e-waste in regular landfills or in places where it is dumped illegally, both heavy metals and flame retardants can seep directly from the e-waste into the soil, causing contamination of underlying groundwater or contamination of crops that may be planted near by or in the area in the future.

When large particles are released from burning, shredding or dismantling e-waste, they quickly re-deposit to the ground and contaminate the soil as well, due to their size and weight. The amount of soil contaminated depends on a range of factors including temperature, soil type, pH levels and soil composition. These pollutants can remain in the soil for a long period of time and can be harmful to microorganisms in the soil and plants. Ultimately, animals and wildlife relying on nature for survival will end up consuming affected plants, causing internal health problems. When the soil is contaminated by heavy metals, the crops become vulnerable to

absorbing these toxins, which can cause many illnesses and doesn't allow the farmland to be as productive as possible.

Impact of E-waste on Water

After soil contamination, heavy metals from e-waste, such as mercury, lithium, lead and barium, then leak through the earth even further to reach groundwater. When these heavy metals reach groundwater, they eventually make their way into ponds, streams, rivers and lakes. Through these pathways, acidification and toxification are created in the water, which is unsafe for animals, plants and communities even if they are miles away from a recycling site. Clean drinking water becomes problematic to find. Acidification can kill marine and freshwater organisms, disturb biodiversity and harm ecosystems. If acidification is present in water supplies, it can damage ecosystems to the point where recovery is questionable, if not impossible.

Impact of E-waste on Humans

As mentioned, electronic waste contains toxic components that are dangerous to human health, such as mercury, lead, cadmium, polybrominated flame retardants, barium and lithium. The negative health effects of these toxins on humans include brain, heart, liver, kidney and skeletal system damage. It can also considerably affect the nervous and reproductive systems of the human body, leading to disease and birth defects. Improper disposal of e-waste is unbelievably dangerous to the global environment, which is why it is so important to spread awareness on this growing problem and the threatening aftermath. To avoid these toxic effects of e-waste, it is crucial to properly e-cycle, so that items can be recycled, refurbished, resold, or reused. The growing stream of e-waste will only worsen if not educated on the correct measures of disposal.

A WHO report on e-waste and child health Children and Digital Dumpsites, released in June 2021, calls for urgent effective and binding action to protect the millions of children, adolescents and expectant mothers worldwide whose health is jeopardized by the informal processing of discarded electrical or electronic devices.

As many as 12.9 million women are working in the informal waste sector, which potentially exposes them to toxic e-waste and puts them and their unborn children at risk. Meanwhile more than 18 million children and adolescents, some as young as 5 years of age, are actively engaged in the informal industrial sector, of which waste processing is a sub-sector. Children are often engaged by parents or caregivers in e-waste recycling because their small hands are more dexterous than those of adults. Other children live, go to school and play near e-waste recycling centers where high levels of toxic chemicals, mostly lead and mercury, can damage their intellectual abilities.

Children exposed to e-waste are particularly vulnerable to the toxic chemicals they contain due to their smaller size, less developed organs and rapid rate of growth and development. They absorb more pollutants relative to their size and are less able to metabolize or eradicate toxic substance.

II. ENVIRONMENTAL RISKS

E-waste can be toxic, is not biodegradable and accumulates in the environment, in the soil, air, water and living things. For example, open-air burning and acid baths being used to recover valuable materials from electronic components release toxic materials leaching into the environment. These practices can also expose workers to high levels of contaminants such as lead, mercury, beryllium, thallium, cadmium and arsenic, and also

brominated flame retardants (BFRs) and polychlorinated biphenyls, which can lead to irreversible health effects, including cancers, miscarriages, neurological damage and diminished IQs.

It's an urge to find a solution on pollution. Education is best way to minimizes the pollution but only community education is not sufficient. To minimizes Pollution in various form the education on pollution starts from beginning of education itself. Technology should be developed based on eco-friendly technology so it is necessary to make changes in curriculum of syllabus of Education.

III. CONCLUSION

Technology was developed by human. The aim behind technology was time saving. Manpower saving, increases production and economy of Nation which should be ultimately beneficial for human being but the over use of technology which turns into one use rather than life long use creates various kind of pollution problems which were harmful for living organism, soil, water, air, environment means that pollution occupied whole globe. Thus pollution free environment is a needed for future generation so our policies should base on eco-friendly technology which begins through proper curriculum syllabus at school and University education. Encourage customers to adopt developed e-technology.

IV. REFERENCES

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