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E - Waste Management, disposal challenges and Its Impacts on the Environment

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Abstract:

E waste is known as electronic waste. Due to the waste of electronic or electrical equipment old one replaced with new models when it crossed the expiry date. People tend to new models and trending technology that reduce the time. Consumer initiatives such as extended the producer three R linking the platform they are Reduce, Reuse and Recycle technology platform that helps to facilitate the economy of the market aim to encourage correctly and also sustainable consumer habits. The aim of this paper to create awareness among people and Increasing information campaigns, capacity building, and awareness are critical to promoting environment-friendly e-waste management programs.. It is becoming a huge public health issue and is exponentially increasing by the day. It has to be collected separately, treated effectively, and disposed of e-waste. It is also a diversion from conventional landfills and opens burning.

Key words: E- waste, electronic waste, recycling, waste management, E – Waste Rules

Introduction:

Most of the e-waste is recycled in India in unorganized units, which engage a significant number of manpower. Recovery of metals from PCBs by primitive means is the most hazardous act. Proper education, awareness, and, most importantly, alternative cost-effective technology need to be provided to provide better means to those who earn the livelihood from this. A holistic approach is needed to address the challenges faced by India in e-waste management. The suitable mechanism needs to be evolved to include small units in the unorganized sector and large units in the organized sector into a single value chain. Our approach can be for units in the unorganized sector to concentrate on collecting, dismantling, and segregation, whereas the organized sector could do metal extraction, recycling, and disposal.

Electronic Waste:

The volume of electronic waste around the globe is projected to grow by 33% in the near future. In recent years, nearly 50 million tons of e-waste was produced worldwide – or nearly 15 pounds per person on earth. This e-waste contains hundreds of different materials and toxic substances like lead, arsenic, cadmium, mercury, and flame retardants.

E waste rules:

- **The first set of e-waste Rules**: notified in **2011** and came into effect in **2012**.
- **Introduction of Extended Producer Responsibility (EPR):**'producers' are responsible for the safe disposal of electronic and electric products once the consumer discards them.
- **E-waste rules 2016(amended in 2018)**: It included provisions to promote 'authorisation' and 'product stewardship'.
- **'Producer Responsibility Organizations (PRO)** were also introduced in these E-waste has been defined as "waste electrical and electronic equipment (WEEE), whole or in part or rejects from their manufacturing and repair process, which are intended to be discarded". E-waste consists of all waste from electronic and electrical appliances which have reached their end-of-life period or are no longer fit for their original intended use and are destined for recovery, recycling or disposal.

E-waste rules 2022: (come into force from April 1, 2023):

- **Restricted the use of hazardous substances** (such as lead, mercury, and cadmium) in manufacturing electrical and electronic equipment that have an adverse impact on human health and the environment.
- **Increased the range of electronic goods covered**, laptops, mobile, cameras etc.
- **Targets fixed:** Producers of electronic goods have to ensure at **least 60%** of their electronic waste is collected and recycled by **2023** with targets to increase them to **70% and 80% in 2024** and **2025**, respectively.

Important stages of 'efficient' e-waste recycling are:

- **Component recovery**:(adequate and efficient recoveries of rare earth metals in order to reduce dependence on virgin resources)
- **Residual disposal :**(safe disposal of the leftover 'residual' during e-waste recycling).

E-Waste Recycling:

Consumers can do something to lower their e-waste footprint. Some of the materials used in creating these products can be recovered and reused, including glass, plastics, and metal. But, these devices also contain lethal substances like mercury, cadmium, and lead, which must be properly disposed of. When recycling, check your state's requirements and laws before you prepare to recycle your electronics.

Waste Management:

Waste management refers to the various schemes to manage and dispose of wastes. It can be by discarding, destroying, processing, recycling, reusing, or controlling wastes. The prime objective of waste management is to reduce the amount of unusable materials and to avert potential health and environmental hazards Different activities include collection, monitoring, regulation, and disposal. Waste collection services are often provided for free by the local government. The collected wastes are disposed of by various methods, e.g. by landfill compaction and incineration. Solid wastes, most especially, are incinerated to reduce their volume by 80 to 95%, and to convert them into gas, steam, ash, and heat. However, air pollution is a concern when disposing of wastes by means of incineration.

Thus, other means are encouraged, such as recycling, reprocessing, and re-use. Organic wastes, especially those that are biodegradable, are allowed to be decomposed so that they can be used as mulch or compost in agriculture and the methane gas from the biological degradation be collected and used for generating electricity and heat. Liquid wastes, such as wastewater, undergo treatment producing sewage sludge that can be disposed of by incineration, composting, and landfill. Synonym: waste disposal.

Research methodology:

This work is based on collected and gathered information from Greenpeace technical note 10, 2010 and different research papers including video documentaries to figure out the following issues regarding e-wastes, sources, dismantlers, current methods of e-waste disposal, and the hazardous chemicals, heavy metals, their effects on human health and the environment, possible solutions and organizations involved.

Conclusion:

E-waste recycling is necessary but it should be conducted in a safe and standardized manor. The acceptable risk thresholds for hazardous, secondary e-waste substances should not be different for developing and developed countries. Research suggests an estimated 1.5 billion cell phones were purchased in 2017, which is around one for every five people on the planet. Each will ultimately reach the end of its lifespan and become electronic waste. The United Nations found that 44.7 million tons of e-waste was created in 2016, and only 20% of it properly eliminated. The toxic materials in electronics, like mercury and lead, can harm people and the environment. Americans recycle about 50,000 dump trucks full of electronics every year.

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