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International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

E- Waste Management

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ABSTRACT-

Electronic waste or e-waste is any broken or unwanted electrical or electronic appliance. E-waste includes computers, entertainment electronics, mobile phones and other items that have been discarded by their original users. E-waste is the inevitable by-product of a technological revolution.Driven primarily by faster, smaller and cheaper microchip technology, society is experiencing an evolution in the capability of electronic appliances and personal electronics.For all its benefits, innovation brings with it the byproduct of rapid obsolescence. According to the EPA, nationally, an estimated 5 to 7 million tons of computers, televisions, stereos, cell phones, electronic appliances and toys, and other electronic gadgets become obsolete every year. According to various reports, electronics comprise approximately 1 - 4 percent of the municipal solid waste stream. The electronic waste problem will continue to grow at an accelerated rate. Electronic, or e-waste, refers to electronic products being discarded by consumers.

INTRODUCTION

Electronic waste, commonly known as e-waste, is a term used to describe discarded electronic devices and equipment. These devices include computers, mobile phones, televisions, and other electronic devices that are no longer needed or functional. E- waste contains hazardous materials such as lead, mercury, and cadmium that can harm the environment and human health if not properly disposed of. Electronic waste management refers to the process of handling, collecting, transporting, and disposing of e- waste in a safe and environmentally sound manner. Effective e- waste management involves reducing the amount of e-waste generated, reusing and recycling electronic devices, and properly disposing of hazardous waste.E-waste management starts with the design of electronic products that are durable, easy to repair, and recyclable. Producers of electronic devices are responsible for ensuring that their products are properly disposed of when they reach the end of their useful life. Governments, NGOs, and other stakeholders play a critical role in promoting e-waste management and enforcing regulations that ensure safe disposal of e-waste.The proper management of e-waste is essential to protecting the environment and public health. It reduces the risk of environmental contamination and minimizes the exposure of hazardous materials to people. Effective e-waste management also helps conserve natural resources and reduces the carbon footprint associated with the production and disposal of electronicdevices.

METHODOLOGY

We-waste management is the process of collecting, transporting, processing, and disposing of electronic waste in an environmentally sound manner. The following are some common methodologies used for e-waste management

Source Reduction: This methodology focuses on reducing the amount of e-waste generated by designing products that last longer, are easier to repair, and can be recycled or reused more easily.

Reuse and Refurbishment: This methodology involves repairing and refurbishing electronic equipment to extend its useful life, and then making it available for sale or donation to people who need it.

Landfill: This methodology is the least desirable option for e-waste management as it involves burying the waste in a landfill. This method is not environmentally friendly and can cause long-term harm to the environment

Incineration: This methodology involves burning electronic waste at high temperatures to convert it into ash. Incineration can release toxic substances into the air and is not considered an environmentally friendly option.

Overall, the most effective and environmentally friendly methodologies for e-waste management are source reduction, reuse and refurbishment, and recycling. These methodologies reduce the amount of waste generated, extend the useful life of electronic equipment, and recover valuable materials that can be used to produce new products.

Fig. 1 Electronic waste products

WORKING PRINCIPLE

The The working principle of e-waste management involvesa systematic approach to managing electronic waste from the point of generation to its final disposal. The process includes the following steps:

Collection: The first step is to collect e-waste from the source, which can be house businesses, or industries. E- waste can be collected through various methods such as dropoff points, pick-up services, or mail-back programs.

Sorting: Once the e-waste is collected, it is sorted intodifferent categories based on the type of material and the level of contamination. This sorting process ensures that the waste can be effectively recycled or disposed of.

Dismantling: After sorting, the e-waste is dismantled to recover valuable materials such as metals, plastics, and glass. This process involves breaking down the electronic equipment into smaller components and separating the materials for recycling.

Recycling: The recovered materials are then sent for recycling, where they are processed and turned into new products. For example, metals can be used to produce new electronic components, plastics can be used to make new products such as toys or furniture, and glass can be recycled into new glassproducts.

Disposal: If the e-waste cannot be recycled, it must be disposed of properly. This can be done through methods such as incineration or landfill, but these methods are not environmentally friendly and should only be used as a last resort. The working principle of e-waste management involves the implementation of the 3Rs (Reduce, Reuse, and Recycle) to minimize the amount of waste generated and maximize the recovery of valuable materials. It also involves the use of environmentally sound methods to dispose of e-waste that cannot be

BLOCK DIAGRAM

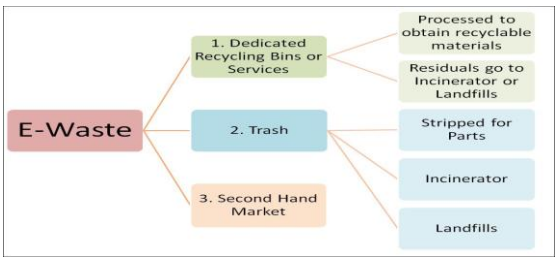

Fig 1: Block diagram of the System Functionality

FUTURE SCOPE

The future scope of e-waste management is vast and promising, as electronic waste continues to be a significant global challenge. Here are some of the potential future developments in e-waste management:As people become more aware of the negative impact of electronic waste on the environment and public health, there is a growing demand for proper e-waste management practices. This increased awareness will drive the development of new technologies and methods for e-waste management. Technology advancements will continue to drive the development of new e-waste management strategies. For example, the use of artificial intelligence and machine learning can help to improve the efficiency of e-waste sorting and processing.

CONCLUSION

In conclusion, e-waste management is a critical issue that requires attention and action from individuals, businesses, and governments. The improper disposal of electronic waste can lead to environmental contamination, public health risks, and the loss of valuable resources. However, with proper e-waste managementpractices, we can reduce these risks and create a more sustainable future.

Effective e-waste management strategies include proper collection, sorting, dismantling, and recycling of electronic waste. These strategies can help to recover valuable materials, conserve natural resources, create jobs, conserve energy, and protect public health. As technology continues to advance and public awareness increases, the future of e-waste management is promising, with potential developments in circular economy, extended producer responsibility, and international cooperation. It is important for individuals, businesses, and governments to work together to develop and implement effective e-waste management practices. By doing so, we can protect the environment, conserve natural resources, and create a more sustainable future for generations to come.

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