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Waste Management and Recycling to Recover Metals without Producing Harmful By-Products

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Abstract: ***Given the volume of e-waste generated and the content of both dangerous and valuable materials in it, electronic garbage, or e-waste, is both an expanding concern and a growing commercial opportunity.***
Lack of technical skills, insufficient infrastructure, insufficient financial assistance, and inactive community involvement are all factors that contribute to the difficulty of electronic waste management. This paper presents a comprehensive summary of the issues connected with incorrect E-waste recycling processes, as well as measures to mitigate their harmful impacts on human health and the environment. Inventory of used electronic items, which may be generated by building an environmentally friendly recycling regulation system, is essential for proper e-waste management. In both developed and developing countries, approaches have been created to aid in the implementation of good waste management. Systematic waste management techniques, together with best practices, are projected to help developing countries maintain a sustainable and resilient environment while reducing negative consequences.
The electronics industry is the largest and fastest-growing manufacturing sector on the planet. However, rising electronic device sales, quick technological obsolescence, fashion, style, and status changes have resulted in e-waste, also known as e-waste. If waste is not properly disposed of, it includes many toxic components that can harm the environment and human health. As garbage is generated and disposed of in a globalized world, waste concerns are of global importance. Trash management is becoming increasingly significant in India, not just for the country's own rubbish production, but also for the landfilling of waste from industrialized countries. This is due to India's lack of suitable disposal and recycling infrastructure and methods. The goal is to come up with creative and cost-effective ways to detoxify waste-contaminated habitats, make them safe for human habitation and consumption, and safeguard ecosystem services.
Distinct categories of E-waste, different classifications of E-hazardous waste components, E-waste treatment methods, and more ecologically friendly and profitable methods for decontaminating E-waste from soil water habitats are discussed in this study. Innovative bioremediation technology, the waste management problem that India poses, and the idea of a formal trash recycling system in India.

Keywords:
E-waste management.
Recycling.
Electronic waste.
Hazardous components.
Formal methods Heavy metals.
Cost-effective solution.
Developmental toxicology.

I. INTRODUCTION

Electrical and electronic equipment manufacturing is one of the world's fastest expanding industries in today's era. Rapid economic expansion, urbanization, and rising consumer demand all contribute to EEE consumption and production. E-waste is waste produced by used electronic gadgets and household appliances that are no longer fit for their intended purpose and are designated for recovery and disposal. According to the Environmental Protection Act, 3.20 million tonnes of e-waste were generated in the United States in 2008-2009, with just 13.6 percent of that quantity recycled. The remaining waste was disposed of in burners. E-waste is transferred to Asia in over 60% of cases. More than 40% of the total E-waste generated in India is generated in 65 Indian cities. In India, ten states account for 70% of all E-waste created. Maharashtra is one of the most E-waste producing states in India, followed by Tamil Nadu, Andhra Pradesh, West Bengal, Uttar Pradesh, Delhi, Karnataka, Gujarat, Madhya Pradesh, and Punjab.
This could be owing to the existence of a big number of Info-Tech Parks and electronic product manufacturing initiatives in these areas, which contribute significantly to the development of E-waste to save life on the earth.

II. RESEARCH FINDINGS

Environmental pollution can be reduced widely by e-waste recycling. After burning of e-waste causes air pollution due to the release of poisonous materials. It contains many harmful metals like Hg, Pb, Cd, Cr, and other flammable substances. Dumping e-waste results in soil and air pollution that affects the lives of people and animals. So management of e-waste is a big challenge to save the life on earth.

III. CONCLUSION

Not only in India, but all throughout the world, e-waste is becoming a major issue. Improper e-waste processing and management, such as recycling and other end-of-life treatment options, can pose major health and environmental risks. In India, consumers may expect to be rewarded for their electronic waste, which is considered a potentially valuable resource. There is an opportunity for "urban mining," as it is frequently referred to if E-waste is properly managed. Bioremediation techniques may be able to help enhance the current state of e-waste treatment choices. The current informal approach to E-waste management in India is creating risks that may be avoided to a large extent by using a formal E-waste recycling technique that would help us produce E-waste.

IV. LESSON

The workings of India's e-waste problem, given the country's enormous geographical and cultural variety, as well as its economic diversity. E-waste management is a big challenge due to these variations. Listed below are a few examples: Both domestically and internationally, the volume of e-waste is gradually increasing. Data is generated both through imports and through exports. Imports are frequently masked as charitable donations disguised as used computer donations. As a method of bridging the digital divide or as scrap metal. There are no specific figures for the amount of E-waste generated and recycled. Manufacturers, like consumers, are largely unaware of the consequences of incorrect E-waste disposal. In the informal sector, e-waste recycling is common.

https://www.lg.com/in/recycling/images/ewaste-management.png

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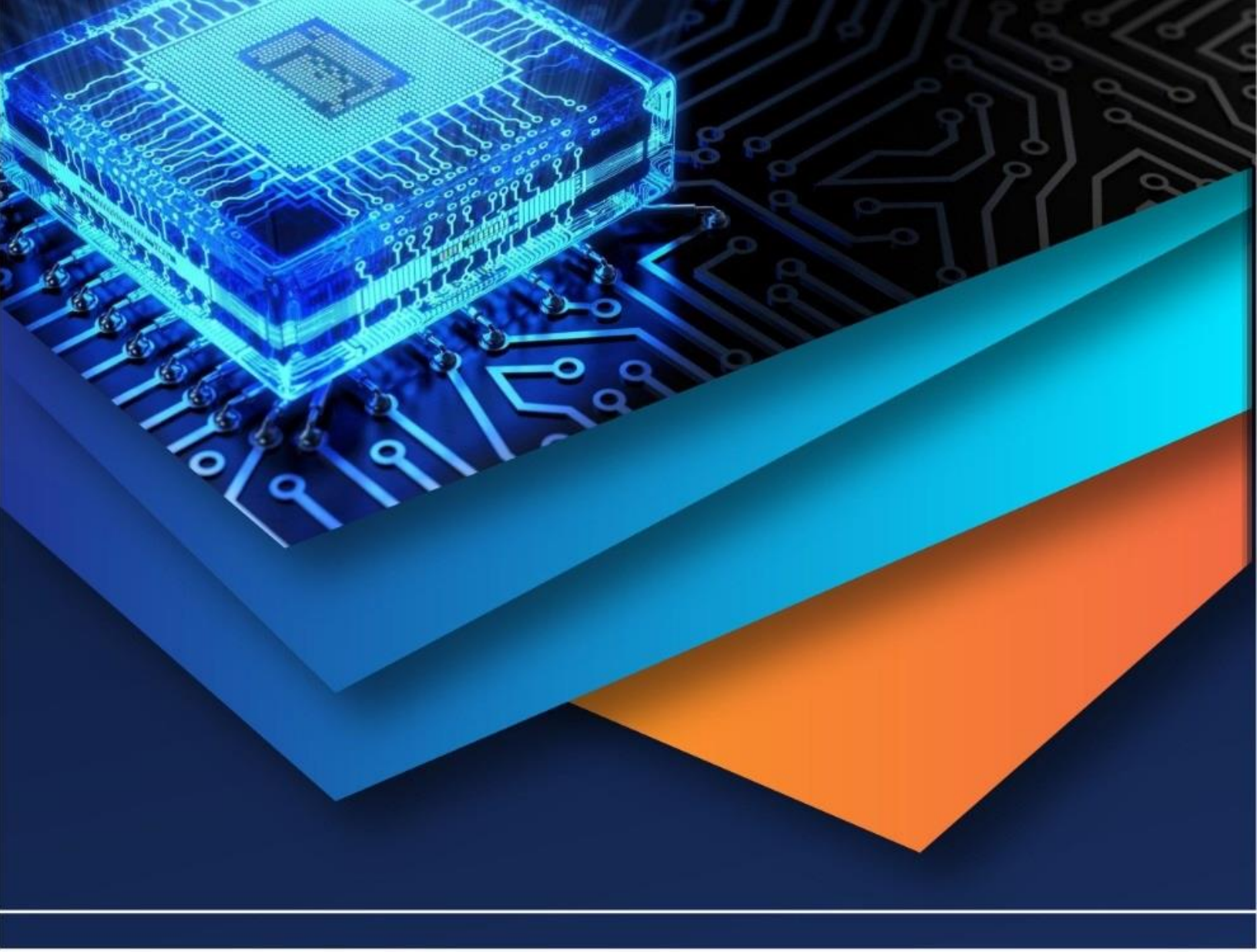

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