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Status of e-waste management facilities in India

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Abstract

E-waste is a term used for the electronic products that no more productive by nature. The growing factor related to e-waste is one of the biggest tribulations that are on constant ravage. It has become an alarming threat for both developed as well as developing countries across the globe. Negative impacts are on the rise specifically upon the physical and mental condition of human beings along with unfavorable effects on the environment. From concrete surveys, it has been found that in the year 2010, e-waste products found in India was about 0.4 million tons which has increased to 0.6 million by the year 2014 [1]. It has created a dangerous scenario due to the hazardous nature of these waste materials such as- useless TVs, mobile phones, batteries, computers, audio devices, fax machines and other electric equipments. This occurs due to the shortage of e-waste disposal as well as their recycling facilities. Multitude of e-waste is the reason behind the high density of toxic substance in the ecosystem, which can eradicated only by the proper management and handling of these electronic waste materials [2].

Introduction

EEE, otherwise known as Electrical & Electronics Equipment is the industry that is on the rise among all the international manufacturing industries due to the high demand of electrical appliances, gadgets and devices. Faster development in the economy sector along with modernization and urbanization boost the manufacturing rate of electronic products. Therefore, the rate of e-waste dumping also keeps its pace along with the growing rate of production. It has created an acute question about the disposal of these wastes as well as the three way process (reused, refurbished, recycled) related with it [8]. The ultramodern technology has zero effect at this question because of the medieval recycling and disposal facilities of e-waste. Predominantly, computer wastes are the major problems in the sector of mounting of e-waste, it is because developed countries unload their burden of e-waste by exporting those into developing as well as underdeveloped countries, as a result waste management become challenging and complicated [5].

Literature Review

E-waste management in India

From analysis it has been known that India depend on informal and uncoordinated sector for e-waste management as organized ones don't contemplate about the issue of electronic wastes as an hazardous threat. The major part of e-waste which is about 95% is processed in the slum areas by inexperienced workers devoid of any kind of protective

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measures. There is no facilities like- treatment for electronic waste water deposits or waste gases for the recyclers, which is why there are sever health issues as well as environmental issues can be noticed [10].

Programs for E-waste management

In 1986, a remarkable step by the Government has taken called the POLLUTER PAYS CODE for the protection of environment which states individual or the group of individuals will be accountable for the pollution initiated by them in the form of e-waste and any violation to this code by dumping electronic wastes and intoxicating the nature can result into severe punishment [12].

The Central Pollution Control Board of India has set different regulations related to the disposal as well as recycle of e-wastes. Ministry Departments are providing heath equipment to the workers to recycle the hazardous waste materials without any health risk; countless NGOs are helping them out in the distribution process [15].

Methodology

The research illustrates the existing condition of India in the zone of e-waste management. The analysis about statistical data about the quantity of e-wastes in the past and at present shows the improvement by waste management and handling authorities. Keeping connection with the unorganized recycling facilities in the slum areas can be happened by the critical thinking towards proper implementation of the rules and regulations set by the government [5].

Electronic waste management in India is administered by four major processes.

- Good control of waste product with the help of proper supervision of inventory. It helps to reduce the amount of toxic wastes basically generated from electronic appliances like- computers. Reviews about a material and use according to the need with an ideal tracking system for the inventory are some major steps to control the growing nature of e-wastes [10].
- Superior quality maintenance process with modification of equipment with high-tech approach is a praiseworthy solution implemented in India. People are getting encouraged by government officials and prominent manufacturing companies for using Eco-friendly materials [5].
- Redesigning of products with zero percent hazardous substance and introducing renewable materials or non-renewable materials that are safe for the environment is a tremendous step by manufacturing companies that are dealing with electronic appliances [15].

Analysis and Findings

It has been found that high amount of toxic substances like- Lead, mercury, Cadmium, PAH (Polycyclic aromatic hydrocarbons) are there in these waste products that have detrimental effects for the health of mankind as well as these substances are also destroying the balance of ecosystem [4]. Strategic plan along with strict policies are

being implemented but there are rag pickers who come in contact with the direct exposure of these dangerous substances. It has been found that the percentages of hazardous substances in the computers is more than that of any other electronic accessories, which is-

- 26% of silica
- 23% of plastics
- 23% of ferrous metals
- 14% of Aluminum
- And 17% of highly dangerous metals such as-, Zinc, Mercury, Cadmium, Copper, Lead etc.

Condition of major cities in India

Major amount of e-wastes come from house appliances like- batteries, CRT, cables, materials for corrosion protection, switches and many more that lead to very fatal diseases related to bones, nervous systems, Lungs, DNA, kidney and brain. In Greater Mumbai the amount of e-waste is maximum and then in Navi Mumbai and Pune respectively [14].

Conclusion and Recommendations

Different types of new product designing with advanced engineering are one of the key solutions for volume reduction of these e-wastes [6]. Restructuring the framework of policies and organization of recycling is another effective recommendation by the professionals of waste management and handling. However, the most important part is creating awareness in the minds of public which is the most efficient safety measure that is being thoroughly conducted by government representatives.

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