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A Review on Make Reusable Plastic through Hospital E-Waste Plastic

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ABSTRACT-This paper reviews the present methods and technologies for electronic waste (e-waste) management. Electronic devices which are unwanted, broken or discarded by hospitals. Electronic waste (e-waste) management is a major issue for environment in recent time as the gadgets used in hospitals infected from bio-chemicals, heavy metals and toxic elements. In recent years different techniques are developed for disinfection and recycling of e-waste plastic. Generally hospitals are using incineration and then land filling. Typical processes to recover valuable materials from e-waste PCB (printed circuit board) (e.g., ferrous metal, copper, and aluminium) include manual dismantling, mechanical process for size reduction, magnetic separation, eddy current separation and cyclone separation. Laser is used in this work for disinfection of hospital e-waste plastic that can be used for future applications. This process is not that much harmful for environment and workers.

KEYWORDS: Electronic waste, plastic management, Disinfection, Granule Technique, Recycling

I. INTRODUCTION

E-waste is the term used to explain outdated or end-of-life (EOL) electronic appliances. It is used as a general term comprising of various types of waste containing mainly electronic components including TVs, computers and their peripherals, entertainment electronics, mobile phones, and other electronic devices which have been disposed of by consumers [3]. Government of India CPCB (Central Pollution Control Board) suppression of E-waste rules which are applicable to all Electrical and Electronics equipment have valuable materials and hazardous/toxics substances in their components. Under the Act of Implementation Guidelines for E-waste (management) rules, 2016 Compact Fluorescent Lamp (CFL) and other mercury containing lamp included. No split agreement for collection centre which shall be part of EPR (Extended Producer Responsibility) now registered/authorization for dismantling and recycling through one system i.e. Authorization as a replacement for of both registration and authorization plan EPR (Extended Producer Responsibility) authorization by CPCB [1].

What is WEEE?

The full name of this organization is Waste Electrical and Electronic Equipment (WEEE). The hazards happen from the occurrence of heavy metals Hg, Cd, Pb, etc., brominated flame retardants (BFRs) and other potentially injurious content in e-waste. Due to the existence of these contents, e-waste is commonly considered as hazardous waste and, if inappropriately managed, may cause of significant human and environmental health risks. Because of the perspectives of economic and environmental view, E-waste recycling became a very important sector. Recycling technology aims to take today's waste and turn it into conflict-free, sustainable polymetallic secondary resources (i.e. Urban Mining) for tomorrow [10].

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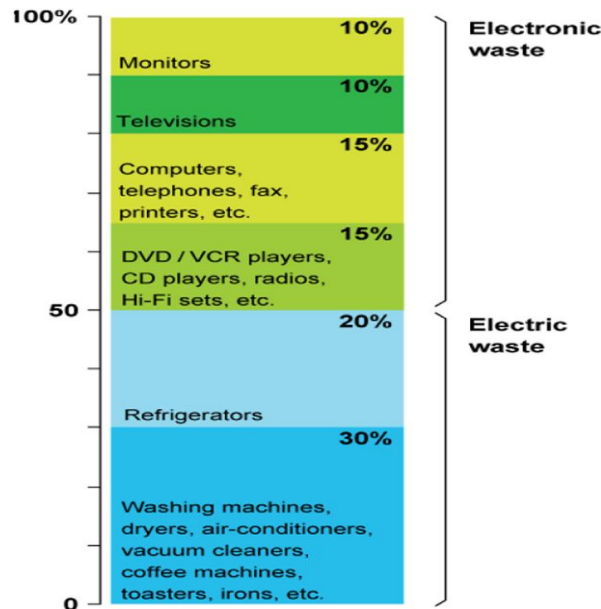


Figure 1. Composition distribution of e-waste [10]

II. LITERATURE REVIEW

C.Hicksa, R.Dietmar, M.Eugster (2005) [2], shows the progress of new legislation on collection, recycling and disposal of waste of electrical and electronic equipment (WEEE) in addition to the scaling-up and privatisation of the WEEE processing industry, are indications of major changes for WEEE management in China. Here the topic which is discussed the current status of WEEE management and dumping in China, and its impacts on the environment, human health, and the economy. It also examines the legislative and market responses to the WEEE issue, and how these will be affected by Chinese attitudes and practices towards WEEE recycling. In China, as in other developing and industrialising countries, waste is viewed as a resource and income-generating opportunity. The conclusion from this study is that an examination of China's fledgling WEEE management system shows that attempts to regulate and industrialise the processing industry are facing a major challenge in terms of financing and collection. The pilot programs in Qingdao and Zhejiang, as well as newly conventional amenities, are finding it complicated to compete with China's huge and unregulated informal sector. Informal collectors and second-hand appliance dealers remove WEEE from the waste stream before formal recycling companies can obtain it, and divert it to informal processing workshops and poorer regions of China. The execution of China's draft WEEE ordinance aims to appreciably change the framework of the WEEE recycling system.

Hyunmyung Yoon, Yong-Chul Jang (2006) [3], presents an outline of the current recycling and management practices of e waste in Korea. The generation rates, regulations, collection systems, and recycling practices of e-waste have been discussed with emphasis on extended producer responsibility (EPR), which was introduced in 2003. Suggestions and future challenges are made in order to deal with potential problems associated with e-waste recycling and management in Korea. E-waste recycling can be one of the most economic profits for the recycling industry.

Sunil Herat (2007) [4], inspect the environmental issues and current developments related to the use of BFRs in EEE manufacture. It describes the sources, toxicity and human exposure of brominated flame retardants (BFRs), End of life (EOL) management such as recycling and thermal treatments, exposure of BFRs from e-waste processing facilities and the environment around them and examines the developments and feasibility of the alternatives to BFR in Electrical and Electronic Equipments (EEE) manufacture.

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Oyuna Tsydenova, Magnus Bengtsson (2009) [5], “overview of the components and substances that are frequently found in e waste and that may be of concern from an environmental and health perspective. It then moves onto reviewing first the current situation on e-waste treatment in developed countries and the knowledge on associated risks, and second the conditions in developing countries.”

Ying Qu, Qinghua Zhu, Joseph Sarkis, Yong Geng , Yongguang Zhong (2012) [6], reviews collection of e-waste in Dalian, China. It shows that the municipality has made advance in improving the collection rate of e-wastes but several challenges still exist, they are unclear responsibilities of stakeholders for e waste collection in laws and regulations; high collection costs for formal treatment plants; and the lack of appropriate infrastructure, especially collection centres. The case of Dalian shows that there is a great potential to effectively and efficiently collect e-wastes from both public institutions and residents. One effective program is to have developed a network between public institutions and registered treatment plants under the support of the local environmental protection bureau.

Mehreen Iqbal , Knut Breivik , Jabir Hussain Syed , Riffat Naseem Malik , Jun Li , Gan Zhang , Kevin C. Jones (2015) [7], “focuses on the existing situation of e-waste in Pakistan with the prominence on the major e-waste recycling sites, existing and future domestic production of e waste, unseen flows or import of e-waste and discusses different challenges for e-waste management.” Recycling techniques like physical dismantling open burning, acid bath, and use of blow torches is practiced in open air as well as in small workshops which is not suitable for workers and environment.

Noel Deepak Shiri, P. Varun Kajava, Ranjan H. V., Nikhil Lloyd Pais and Vikhyat M. Naik (2015) [8], uses waste plastic and converts them into building materials like bricks, interlocks, roof tiles, railway sleepers, paving slabs, retaining blocks etc, which can effectively reduce the environmental pollution and further decreases the problem of waste plastics in the society. This is the main aim of this work and it also reduces the construction cost when effectively mixed with Rubber powder and Calcium Carbonate gives the highest compressive strength and sustains high compressive load.

Li Liang, Alice Sharp (2016) [9], exposed that respondents’ educational level was positively related to improve environmental conditions (P105) ($r = 0.072$, $n = 2045$, $p < 0.01$). Respondents’ income level was negatively related with the status of environmental conditions (P104) ($r = -0.151$, $n = 1836$, $p < 0.01$). Gaps were detected between educational and income levels of Thai and Chinese respondents in their knowledge about existing e-waste-related laws and how to improve environmental conditions.

Muammer Kaya (2016) [10], reviewed the present state of electronic waste (e-waste) recycling. Electrical and/or electronic devices which are not needed, broken or unused by their original users are known as e-waste. He focused on an inclusive review of e-waste problem, strategies of e-waste management and various physical, chemical and metallurgical e waste management, their advantages and disadvantages towards achieving cleaner techniques of waste utilization, with special concentration towards drawing out of both metallic values and non-metallic substances. Current position and future perspectives of e-waste/PCB (printed circuit board) recycling are described. E waste classification, dismantling methods, release and categorization processes are also covered. Manual selective dismantling after desoldering and metal non-metal liberation at ~ 150 μm with two step crushing is seen to be the best techniques. After size reduction, generally physical parting processes employing gravity, electrostatic, magnetic separators, froth floatation, etc. have been crucially reviewed here for partition of metals and non-metals, along with useful utilizations of the non-metallic materials.

III. CONCLUSION

From the study, management of e-waste is a serious issue at present day. Because of its miss-management the effect can be seen in environment. Here we are trying to use laser technique for disinfect the hospital electronics waste plastic after then granules will be make and then trying to use this plastic material for construction purpose.

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