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Inventorisation of E-Waste and Developing a Policy - Bulk Consumer Perspective

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Abstract

Electronic waste (e-waste) or e-scrap or Waste Electrical and Electronic Equipment (WEEE) is the waste generated from the electrical and electronic equipment(s) (EEE) which is no longer fit for its originally intended use. Its growth is increasing as there is an increase in the development of Information and Telecommunication sectors, increased market penetration and planned obsolescence. This e-waste becomes hazardous since the electrical and electronic equipments require toxic heavy metals such as chromium, cadmium, nickel, lead, mercury, lithium and harmful plastics for their assembly and efficient functions. This e-waste imparts serious environmental and health hazards when it is broken, dismantled and treated in improper ways.

The main purpose of this research is to find out how e-waste (Management & Handling) Rules, 2011 can be implemented for environmentally sound management of e-waste among bulk consumers sector where 70% of e-waste is stagnated in our country as revealed in various researches. Collection of data, through selective questionnaire and semi structured interviews with officers or experts from key relevant areas in IT and telecommunication sectors, hospitals, private institutions, recyclers and our educational institution were generated to develop a policy for complying subsidiary regulations and standards which will pave the way for effective resource recovery and protect our environment.

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1. Introduction

India being a developing country faces so many competitions in industrial revolution followed by the advances

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in information technology of developed countries. Although this development has helped the human race to improve their life style and has also given rise to many new problems of contamination and pollution. The technical skill acquired during the last century has posed a new challenge in the management of wastes. For example, personal computers (PCs) contain certain components, which are highly toxic, such as chlorinated and brominated substances, toxic gases, toxic metals, biologically active materials, acids, plastics, and plastic additives. The hazardous content of these materials pose a threat to environment and health of many living species. Thus proper management is necessary while disposing or recycling e-wastes. e-Toxic components in computers could be summarized as circuit boards containing heavy metals like lead and cadmium, batteries containing cadmium, cathode ray tubes with lead oxide and barium, brominated flame retardants used on printed circuit boards, cables and plastic casing, poly vinyl chloride (PVC) coated copper cables and plastic computer casings that release highly toxic dioxins & furans when burnt to recover valuable metals, mercury switches, mercury in flat screens, poly chlorinated biphenyls (PCBs) present in older capacitors, transformers etc. These are called Substances of Concern (SOC). Basel Action Network (BAN) estimates that the 500 million computers in the world contain 2.87 billion kg. of plastics, 716.7 million kg of lead and 286,700 kg of mercury. The average 14-inch monitor uses a tube that contains an estimated 2.5 to 4 kg of lead. The lead can seep into the ground water from landfills thereby contaminating it. If the tube is crushed and burned; it emits toxic fumes into the air.

Electronic waste or waste electrical and electronic equipment (WEEE) is the electrical and electronic equipment which is not fit for its originally intended use and are destined for recovery, recycling, or disposal. Most consumers are unaware of the toxic materials present in the electronic goods they use in their day-to-day life. Groups like Toxic Links, India, Green peace, India are already working on collating data that could be a step towards controlling this hazardous trade. It is imperative that developing countries, India in particular wake up to the monopoly of the developed countries and set up appropriate management measures to prevent the hazards and mishaps due to mismanagement of e-wastes.

According to the study conducted by UNEP about 62 million tonnes of e-waste has been generated globally in 2014. Out of which India generates 8 lakhs tonnes of e-waste annually. This report takes into account only three equipments namely Television, Cellular phone and Personal computer (Dr. Lakshmi Raghupathy, e-waste Management challenges prospects and strategies, 2014). In India the Ministry of Environment and Forest (MoEF) has come out with e-waste Management and Handling (M&H) Rules, 2011 to address issues of health and environmental damage caused by improper recycling and disposal of rapidly mushrooming e-waste.

A study by GTZ- MAIT (Manufacturers Association of Information Technology) revealed that out of the total generation of e-waste only 5% falls in the hand of formal sector and the rest 95% falls in the hands of informal sector. Presently, both the formal and informal e-waste recyclers are essentially dismantling the e-waste to export the printed circuit boards and only a few formal e-waste recycling facilities are engaged in recycling and extracting metals chemically. The Trans-boundary movement of e-waste from developed countries to developing countries has also added to this. Studies revealed that 70% of e-waste is being stagnated in the hands of bulk consumers; sector such as IT companies, government organisations, educational institutions and private companies. Also these bulk consumers are not required to obtain any authorisation from the Pollution control Board for storing e-waste. In such case, the bulk quantity of e-waste is being disposed through the scarp dealers which pave the way for backyard recycling through informal sectors. Creating awareness on safe disposal of e-waste and developing an appropriate e-waste policy is being felt at this juncture. Study has been made among some of the bulk consumer sector by conducting field surveys through interviews, group discussions, and questionnaire distribution and surveyed so as to develop an e-waste policy for effective and safe disposal of e-waste for compliance of e-waste rules among bulk consumers.

2. Literature Review

The literature on e-waste in developing countries has to date been relatively limited. It has been focused on the extent and effects of e-waste and the legislations of e-waste. The electronics industry is the world's largest and fastest growing manufacturing industry (Radha, 2002; DIT, 2003). The Information Technology Revolution of the early 1990s intensified the problem of e-waste in India. The largest and the fastest growing manufacturing industry