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Rules on Electronic Waste Management - An Analysis

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ABSTRACT *Many electronic devices include heavy metals such as lead, cadmium, mercury and arsenic. If not handled properly, these can poison our environment and threaten the health of individuals and communities. E-waste contains a combination of reusable raw materials as well as toxic materials. The raw materials have value and can be reused to manufacture new products. However, it can be extremely labor intensive and very expensive to extract the value of these materials from such devices. This is the reason millions of tons of e-waste have been exported to third world countries, where it is often handled by children in unsafe and toxic environments. This paper mainly focused on the various rules related to the electronic waste management in India and Tamil Nadu*

Introduction

Industrial revolution followed by the advances in information technology during the last century has radically changed people's lifestyle. Although this development has helped the human race, mismanagement has led to new problems of contamination and pollution. The technical prowess 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 an environmental and health threat. Thus proper management is necessary while disposing or recycling ewastes

Due to ongoing technological advancement, many of electronic products become obsolete within a very short period of time, creating a large surplus of unwanted electronic products, or "e-waste." Disposing of e-waste in landfills has the potential to cause severe human and environmental health impacts. India, at present, generates about 400,000 tonnes of e-wastes annually of which only 19,000 tonnes are getting recycled according to the recent data by hardware manufacturers association, Mait. E-wastes are considered dangerous, as certain electronic components contain substances such as lead, cadmium, lead oxide (in cathode ray tubes), toxic gases, toxic metals, biologically active materials, acids, plastics and plastic additives. These substances are considered hazardous depending on their condition and density. Over the few decades, various rules are framed in national and international level.

This paper mainly focused on the rules and regulations related to the electronic waste management. Mainly the rules and regulations in India and Tamil Nadu.

Rules Related To E-Waste Management in India

The Environment Protection Act (EPA), enacted in 1986 following the Bhopal gas tragedy, was the first comprehensive environmental law. The Act only defined hazardous waste in very broad terms and did not address e-waste at all (Abraham & Abraham, 1991). However, what it did do was confer the power to enact regulations concerning environmental issues on the executive. Since then, the precautionary and the "polluter pays" principle have both become part of Indian environmental policy.

The HWM Rules require any company or individual receiving, treating, transporting or storing hazardous waste to first obtain permission from the relevant State Pollution Control Board (SPCB). Furthermore, the HWM Rules also banned the import of hazardous waste for disposal or dumping. The central Government can, however, issue an import authorization for hazardous waste that is to be processed or reused. An amendment to the HWM Rules in 2000 expanded the scope of the Rules to include provisions on e-waste for the first time. (HWM Amendment Rules, 2000).

The new Hazardous Wastes Management, Handling and Tran's boundary Movement Rules of 2008 replaced the old HWM rules and now contain additional provisions on e-waste handling within India. These provisions require every person planning to recycle or reprocess e-waste to obtain prior authorization from the relevant SPCB. However, the SPCB registration process has been criticized for granting the same authorization to collectors, dismantlers and recyclers without assessing their capability to treat the e-waste in an environmentally sound manner (Gupta, 2009). Furthermore, responsibility is split between the states and the federal government.

E-Waste Management Rules 2010

E-waste management rules 2010 published by government of India in ministry of environment and forests. The central government considers it necessary in the public interest and to enable the recovery and reuse of useful material from e-waste, thereby reducing the hazardous waste destined for disposal and to ensure the environmentally sound management of all types of waste electrical and electronic equipment.

Procedure for grant authorization

In the electronic waste management rules 2010 states every producer, collection centre, dismantler and recycler of e-waste shall require obtaining an authorization from the concerned state pollution control board or pollution control authority. Make an application, with in a period of three months starting from the date of commencement of these rules to the state pollution control board or the pollution control committee for grant authorization.

Every person authorized under these rules shall maintain the record of e-waste handled by them and prepare and submit to the state pollution control board or pollution control committee, an annual return containing the of details specified on or before 30th day of June.

An application for the renewal of an authorization shall be made at least two months before its expiry and the state pollution board or pollution control committee may renew the

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authorization after examining each case on merit and subject to the condition that there is no violation of the provision of the Act or rules made there under or the condition specified in the authorization

Every producer, collection center, dismantler and recycler shall take all the steps required, to comply the condition specified in the authorization. The state pollution control board in case of a respective state or the pollution control committee of union territories shall maintain a register containing particles of the condition imposed under these rules for environmentally sound management of e-waste, and it shall be open for inspection during office hours to any person interested or affected or a person interested or affected or a person authorized by him on his behalf.

Procedure for Grant Registration
Every dismantler or recycler of the e-waste shall make an application, with in a period of three months starting from the date of commencement of these rules in triplicate to the member secretary of the pollution control board.

Procedure for Storage of E-Waste
Every producer, dealer, collection centre, dismantler or recyclers may store the e-waste for a period not exceeding one hundred and twenty days and shall maintain a record of collection, sale, transfer, storage and segregation of wastes and make these records available for inspection:

Every Producer(s), Dealer(s), Collection Centre(s), Refurbisher(s), Dismantler(s), Recycler(s), Auctioneer(s), Consumer(s) or Bulk Consumer(s) shall not import used electrical and electronic equipment in India for use.

Categories of E-Waste Covered under the Rule
1. Large household appliances
2. Small household appliances
3. Toys leisure and sport equipment
4. Electrical and electronic tools
5. Monitoring and control instruments
6. IT and Tele communication equipment
7. Consumer electronics

The E-Waste Management Rules 2010 states the Threshold Limits for use of certain Hazardous Substances shown in the Table.1

Table .1
Threshold Limits for use of certain Hazardous Substances

Sl. No.	Name	Threshold Limits
1.	Short Chain Chloro Paraffins, Alkanes, C10-13	>25%
2.	Antimony trioxide	>1%
3.	Beryllium metal	>0.1%
4.	Beryllium oxide (Beryllia)	>0.1%
5.	Cadmium	>0.1% to 25% Depending on risk phrase or perception
6.	Cadmium oxide	>0.1% to 25% Depending on risk phrase or perception
7.	Cadmium Sulphide	>1% to 25% Depending on risk phrase or perception
8.	Chromium VI	>0.1% to 0.25% Depending on risk phrase or perception
9.	Copper beryllium alloys	>0.1% to 3% Depending on risk phrase or perception
10.	Decabromodiphenylether (DBDE)	Threshold is not mentioned as risk assessment studies are ongoing
11.	Lead	None specific
12.	Lead oxide	>0.5% to >25%
13.	Mercury	>3% to >0.25%
14.	Liquid Crystals	None specific
15.	Mineral Wool: [Man-made vitreous (silicate) fibers with random orientation with alkaline oxide and alkali earth oxide (Na2O+K2O+CaO+MgO+BaO) content greater than 18 % by weight]	>1% to >20%
16.	Octabromodiphenylether (OBDE)	>5%
17.	Polychlorobiphenyls: The level of 50 mg/kg (0.005%) should be the defining threshold concentration for wastes containing PCBs and PCTs: above that concentration such waste should be considered as hazardous.	>0.25%
18.	Polyvinyl Chloride (PVC)	None specific
19.	Refractory Ceramic Fibers	>0.1% to >20%
20.	Tetrabromobisphenol-A (TBBPA)	None specific

E-Waste Law 2011
India has introduced a new e-waste rule that makes environmentally sound management and disposal of electronic waste mandatory. The E-waste (Management and Handling) Rule, 2011 places responsibility on the producers for the entire lifecycle of a product, from design to disposal. Apart from Extended Producer Responsibility principle, the rule is a significant step towards international standards of Restriction of Hazardous substances in electronics. The rules were notified by the Ministry of Environment and Forests on May 30. The rule will be implemented throughout the country from May 1, 2012.

E- waste Policy of Tamil Nadu
The alarming increase in e-waste generation and the consequent threat of environmental degradation arising from unauthorized recycling establishes the urgent need for an effective regulatory framework. In the absence of effective legislation or regulations to deal with this emergent situation and also to protect public interest, the Government of Tamil Nadu is now introducing a Policy on e-waste.

The e-waste Policy is formulated with the following objectives:

- Minimize e-waste generation.
- Utilize e-waste for beneficial purposes through environmentally sound recycling.
- Ensure environmentally sound disposal of residual waste.

This Policy sets forth the position of the Government of Tamil Nadu on e-waste management by identifying the roles and responsibilities of all stakeholders including the public to manage the e-waste in an environmentally sound manner in Tamil Nadu, through reduction in the generation of e-waste and providing a system for collection, segregation and recy-

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cling of e-waste. The Government of Tamil Nadu envisions to effectively address the growing e-waste problem with contribution from and co-operation of all stakeholders.

Elements of the Policy:
The policy elements are identified as follows:

The policy shall facilitate in the management of e-waste through the 3R principle of Reduce, Reuse and Recycle e-waste ensuring that such wastes do not cause any adverse effects to the environment or human health. E-waste management activities shall be strengthened through capacity building and continued efforts on Research and Development. And involves many stakeholders in its value chain and the policy envisages the need for partnership programmes involving these stakeholders.

The Policy shall provide for creating awareness and dissemination of information. E-waste by nature being a post-consumer waste, there is need for community participation in e-waste management activities. The elements identified in the Policy are realized through strategic interventions based on the legislative framework and concrete actions involving the State and local level authorities and other stakeholders.

Extended Producer Responsibility (EPR):
The policy recognizes the Extended Producer Responsibility (EPR) as an essential element in e-waste management system. EPR is the environmental protection strategy that makes the producer of electrical or electronic equipment responsible for the entire life-cycle of his product including the 'end-of-life management' of the product through its take-back, recycling and final disposal. The producer needs to ensure that e-waste from the products developed by the producer is handled without adverse effects to human health and the environment.

Conclusion
The implementation of the regulations and compliance with the conditions laid down are essential for managing e-waste. The lack of regulations may cause impediments in effective implementation. The policy shall facilitate proposal and framing of regulations for e-waste management. In view of the high recyclable potential of e-waste, the regulations should focus on e-waste recycling in an environmentally sound manner.

REFERENCE 1. E-waste management rules in India 2010 | 2. E-waste policy of Tamil Nadu 2010 | 3. "Guidelines For Environmentally Sound Management Of E-Waste",(2008) Ministry Of Environment & Forests Central Pollution Control Board Delhi