Emerging Challenges of E-Waste Management in India

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Abstract

In India, Waste management has been given much attention over the years, especially when it comes to plastic. Still the problem of e-waste is among the most dangerous kinds of waste as it contains heavy metals and other toxic chemicals and it can cause serious harm, if unnoticed. In India, the amount of e-waste has now become a serious issue. Disposal of e-waste is an emerging global challenge, for both environment and public health because this waste has become the most rapidly growing segment of the formal municipal waste stream in the world. E-waste consists of electrical and electronic equipments that are loosely discarded for being surplus, obsolete or broken. Mostly, the waste electronic items are stored at households in India, as people do not know how to get rid of them. This ever-increasing waste is excessively complicated in nature and is also a rich source of metals like gold, silver, and copper etc., which can be recovered and brought back into the production cycle. So e-waste trade and recycling alliances provide employment to many groups of individuals in India. Around 25,000 workers including children are involved in crude disassembling units in Delhi alone where 10,000–20,000tonnes of e-waste is handled every year by bare hands. Improper dismantling and processing of e-waste render it hazardous to human health and our ecosystem. Hence, the need of proper e-waste management should be realised. It is necessary to review the public health risks and formulate strategies to cope with this growing menace.

Keywords: E-Waste, Waste Management, E-Waste Management, Informal Sector, E-Waste Legislation.

Introduction

Electronic waste (e-waste) basically includes discarded computer monitors, motherboards, mobile phones and chargers, compact discs, headphones, television sets, air conditioners and refrigerators.

E-waste consists of many valuable but harmful substances which affect human health adversely. Recycling of e-waste is dangerous if it is not done using proper techniques and measures. Electronic industry is the world's largest and innovative industry of its kind. Every year tons of electronic items are shipped over oceans but after their lifetime they become a complex waste matter which comprises of various harmful heavy metals, acids, toxic chemicals and non degradable items. Many are dumped, burnt or exported to recyclers. Various recyclers import toxic materials like leaded glass, circuit boards, and mercury lamps from US to Africa, China and India. E-Wastes dumped in these countries are disassembled by the process of unscrewing, shredding, tearing and/or burning. The smoke and dust particle contain cancer causing substances and other hazardous chemicals which causes severe inflammations and wounds including many respiratory and skin diseases. Circuits are burnt to hunt for precious metals like gold, platinum, cadmium, however, the wire coat of these consists of PVC(Polyvinyl Chloride) which produces erotic smoke, and carbon particles from the toners which may cause lung and skin cancer. According to a report in 2007 about 70% of e-waste of the world reaches China and the rest to Africa and India. They have become the world's dumping ground for e-waste due to cheap labour. Poverty is the main reason for third world countries to consume e-wastes from Europe and USA.

Aim of the Study

The aim of the study is to assess the increasing e-waste burden in India and to bring into realization the public health risks and the need to formulate strategies to cope with this issue.

Health Impacts of E-Waste

A Report of Basel Action Network (BAN), which works for prevention of globalisation of toxic chemicals, states that 50-80% of e-waste collected by the USA is exported to India, China, Pakistan, Taiwan, and a number of African countries. This is done because in the US, export of e-waste is legal and cheaper labour is available for recycling in these countries. Recycling and disposal of this e-waste in China, India and Pakistan is highly polluting. Recently, China has banned import of e-waste. Export of e-waste by the US is actually the lack of responsibility on the part of Government, electronics industry, consumers and recyclers towards e-waste and viable and sustainable disposal of it. India relies entirely on the informal sector for recycling of e-waste, which does not have adequate means to handle either the increasing quantities or certain processes, leading to intolerable risk for human health and the environment.

A large number of workers including small children are indulged in different disassembling activities of e-waste. Although findings of the studies cannot be generalized to India but these are enough to alarm and strongly suggest to be replicating in occupational settings in India. There are no data available about the health implications of these workers. They might be ruining their lives in the lack of appropriate knowledge. In another study from China, human scalp hair samples were collected to find out heavy metal exposure to workers from intense e-waste recycling sites. Higher concentrations of lead, copper, maganese and barium metals were found in hair of exposed as compared to the hair in control group.

E-Waste Management Situation in India

India depends heavily on the unorganized sector for recycling e-waste due to lack of availability of organized e-waste recycling facilities. Over 95% of the e-waste is treated and processed in the majority of urban slums of the country, where undertrained workers carry out the hazardous procedures without proper protective equipment, which can prove damaging not only to their health but to the environment also.

IT and telecom are two fastest growing industries in India. By 2011, the country has achieved a PC penetration of 95 per 1000 from the 14 per 1000 in 2008. The fact is recycling of e-waste does happen, but in the informal sector and under abjectly poor conditions of labour and environmental safeguards. This is how the costs are kept low. This is also why countries like India are the preferred destination for large quantities of such waste – our poor provide the labour needed to dismantle and then to reuse the materials. These 'recyclers' work in hazardous conditions with dangerous exposure to toxins. Indians do not dump their mobiles, rather pass them on to another low-end user who, in turn, will dump them in the flea market from where the gadgets are passed to the Kabadiwallas. In 2014, India became the fifth largest producer of e-waste in the world by discarding 1.7 million tonnes of electronic and electrical equipments. In India, E-waste collection, transportation, segregation, dismantling, recycling and disposal is done by untrained labours manually in informal sector. Due to lack of awareness and sensitization e-waste is dumped along with garbage which is collected and segregated by rag pickers. E-waste may contain reusable and precious material. Rag pickers run their livelihood by selling this E-waste to scrap dealers. The scrap dealers then, supply this E-waste to recycling industries. The recyclers use primitive and hazardous technologies and instrument, to treat the e-waste. India ranks 155 among 178 nations in Environmental Performance Index. It also ranks poorly in various indicators like 127 in Health Hazards, 174 in Air Quality, 124 in Water and Sanitization. Environmentally Sound Management (ESM) of e-waste will also improve ranking of India in these areas. 95% of e-waste is recycled in the informal sector and in rather crude manner which is not only very harmful for the environment but potentially dangerous for the people employed in the sector. It includes manual dismantling, segregation and shredding, unsafe removal and collection of solder by methods of heating, acidic extraction of metals, burning of waste to remove combustible plastics and isolate metals. Such activities cause severe pollution in air, water and soil and affect worker's health. A few studies conducted in these recycling hubs like Moradabad in UP or Mandoli industrial area of Delhi-NCR show concentration of toxic heavy metals in the soil and water. The government admits that there is huge pollution because of toxic constituents but in its reply to Parliament on December 29, 2017, MoEF&CC has said that it has not conducted any formal study regarding the health hazards due to E-waste. The E-Waste Rules provide that the department of labour in the State or any other government agency authorized in this regard by the State needs to ensure recognition and registration of workers involved in dismantling and recycling. It also needs to undertake annual monitoring to ensure safety and health of workers. But this is clearly not happening. In fact, there is a big possibility that the more waste we import or collect will end up outsourced to the poorest and the most unorganized for reprocessing. The costs of pollution have to be discounted if we want to keep our competitive advantage in this 'recycling' business. The poor in India will continue to bear the brunt of our excessive use of electronic materials and our waste.

E-Waste Legislation in India

The introduction of a Private Member Bill on The Electronic Waste (Handling and Disposal) Bill 2005 by Vijay J Darda, Member of Parliament (MP) from Maharashtra first brought the issue of E-Waste into legislative sphere. It was the first formal acceptance of not having legislation on E Waste in India despite the fact that the country is a hub of import of second hand computers and electronics since last decade from developed countries. Electronic Waste management is the primary responsibility of Municipalities under Twelfth Schedule of the Constitution and states have been empowered under Municipal Solid Wastes (Management and Handling) Rules (MSW) enacted since September 2000 by Central Government which meant that

Central government could provide states with a model legislation. But as Environment is a concurrent subject, Central Government also has competence to legislate on E-Waste. To further ease the burden on consumers, the establishment of E-Waste Hazardous Waste (Management, and Handling) Rules 2003 which was formulated after amendments in 1989 Rules on Hazardous Waste categorised e waste and its constituents under 'hazardous' and 'non-hazardous' waste. The focus of the law was waste rather than e-waste, so the process of disposal was kept very common and almost no recycling of E-Waste was done.

During the Cobalt 60 tragedy in Delhi, popularly known as Mayapuri Radiological incident - eight people were injured and one was dead due to emission of radiological metal from the electronics scrap in the Mayapuri locality after which a comprehensive legislation was formulated. In 2008, Hazardous Waste Management, Handling and Transboundary Movement Rules and Guidelines for Environmentally Sound Management of E Waste 2008 provided the process of recycle, re-use and recovery options under Central Pollution Control Board (CPCB) which was the nodal agency of providing licenses to the agency for disposal and recycling of hazardous waste. The Guidelines emphasised the role of 'Extended Producer Responsibility' (EPR) and is in tune with International Code on E Waste under Basel Convention. EPR means that the producer is responsible for the entire life cycle of product especially post-consumer stage of take back, recycle and final disposal of product. It allows producers to establish centres for conduction of e-waste either jointly with state organisations or independently. EPR also assigns the responsibility on producer to create a financing model to organise a system to meet the cost of this recycling. This concept was the basis of E-Waste Management and Handling Rules, 2011 which applies to every producer, consumer or bulk consumer, collection centre and dismantler became operational in May 2012.

Despite this, there has not been any systematic inventorisation of e-waste generation carried out in the country and as of date, only 178 producers have been authorised in 12 states of the country with a capacity of 0.44 million metric tonnes – Maharashtra has the largest number of such authorized centres. According to the last available data from CPCB, 17 states recycled 0.099 million metric tonnes of e-waste in 2015-16 and 2016-17 through 214 authorized recyclers. However, Delhi has not reported any authorized recycling in this list supplied by CPCB. Therefore, 'authorized' recycling is miniscule. If the total quantum of e-waste is taken to be 2 million metric tonnes per year then we are recycling as little as 4 per cent. 9 If we add the legal or illegally 'imported' e-waste to the 2 million metric tonnes of domestic e-waste that is possibly generated, then the amount formally recycled will go down even further.

The primary reason for the failure of these rules is the exclusion of present informal sector which constitutes a majority of dismantling and processing the e-waste. The new E-Waste Management and Handling Rules 2016 have addressed the anomaly by expanding its scope to refurbishers, dealers and Producers Responsibility Organizations (PRO). Refurbishers repair used electrical and electronics equipments in the country as a majority of the electronics are reused by repairing them. Refurbishing generates a huge quantity of e waste as a result of assemblage of parts and till now it has been escaping the mainstreaming. The contention of consumer not having any incentive to return the used product has been resolved by the provision of Deposit exchanges, which can serve as independent market instrument for the sale and purchase of end of life EEE between agencies and organisation will further channelize the function of e-waste collection and recycling by providing professional assistance.

Conclusion

Solid waste management, already a mammoth task in India, is becoming more complex by the invasion of e-waste. There is a serious requirement of a detailed assessment of the characteristics, existing disposal practices, environmental impacts etc. in current and future scenario. Institutional infrastructures for e-waste collection, transportation, treatment, storage, recovery and disposal need to be established at both national and regional levels to ensure environmentally sound management of e-wastes. Model centers employing such methods for recycling and recovery should be established. Establishment of e-waste collection, exchange and recycling facilities should be encouraged in partnership with private entrepreneurs and manufacturers. Recovery and disposal criteria for e-waste should be developed. Policies should be framed for control of import, export and regulation of e-wastes and development of infrastructure. An effective take-back program providing incentives for producers to design products that are less wasteful, contain fewer toxic components, and are easier to dismantle, reuse, and recycle can help in reducing the wastes. Therefore, the consolidated program of e-waste management should be evolved to set targets for collection, dissassembly and recycling and impose enforcement mechanisms. It should also introduce deposit and refund schemes to encourage consumers to return their electronic devices for collection and recycling.

References

ELECTRONIC WASTE MANAGEMENT IN INDIA ISSUES AND STRATEGIES.pdf retrieved from http://www.nswai.com/nswaiadmin/Pdfs/insertPdf/i_2015/i_Nov15/

Environmental Management for Information Technology industry in India. New Delhi: Department of Information Technology, Government of India; 2003. DIT; pp. 122–4.

Mahesh C. Vats and Santosh K. Singh, Status of E-Waste in India - A Review www.ijirset.com Volume 3, Issue 10, October 2014 retrieved on December 10, 2017

Pandve HT. E-waste management in India: An emerging environmental and health

issue. Indian J Occup Environ Med. 2007;11:116.

Recycling of e-waste in India and its potential. Retrieved from https://www.downtoearth.org.in/blog/waste/recycling-of-e-waste-in-india-and-its-potential-64034

Report E-waste management: generation; collection and recycling. Submitted to the Hon'ble High Court in W.P. (C) 8917/2015. Retrieved from https://cdn.downtoearth.org.in/library/0.00599000_1527080032_e-waste-report-for-hc-final.pdf

Shagun, Ashwani Kush, and Anupam Arora, "Proposed Solution of e-Waste Management" International Journal of Future Computer and Communication, Vol. 2, No. 5, October 2013

http://rajyasabha.nic.in/rsnew/publication_electronic/E-Waste_in_india.pdf retrieved on December 10 2017