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E-WASTE – PROBLEMS AND SOLUTIONS

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Abstract

The electronic waste (e-waste) is one of the rapidly growing waste in India. The increasing "market penetration" in developing countries, and "high obsolescence rate" make e-waste as one of the fastest growing wastes in the country. The e-waste is very harmful because of the toxic and hazardous contents in electronic goods. Electronic waste and its negative causes affects very much to the living organisms and environmental sustainability. As a result, this study was performed on E-waste generation and management approach in the aspects of local concept. Results showed that, total amount of E-waste generation have been increased along with technological changes, marketing system and policy improvement. Most of respondents were not aware about the waste management, environmental and health impacts. If it is continued for long term then it may go be worse for living standard compared to well plan and superior urban management approach. A number of people were identified who were suffering from different diseases emerged from E-waste handling and servicing work. In addition, E-waste considered being highly contagious for the environment and its components. It may pose environmental risk for sustainable development.

Introduction

Such kind of wastes encircles wide range of electrical and electronic devices like computers, mobile phones, stereos, it also includes large household appliances such as refrigerators, air conditioners etc. According to Sinha Khetriwal ,`` e-waste can be classified as any electrical powered appliance that has reached its end of life.""

In other words, e-waste refers to any goods which are electronic in nature and has reached its end of life.

Literature review

The current Indian e-waste related scenario is different from the worldwide. E- waste comes from retailers and manufacturers. E-waste is a serious issue as its recycling is not done in a proper and appropriate manner. Movement of e-waste in india is very tough and also there is no device and strategy to check the movement of e-waste in the economy. This is important to explain that despite of international agreements, e-waste from developed countries is sent to developing countries like India. 65 cities in India produces more than 60% of the total e-waste . 10 states generate 70% of the total e-waste out of which some are Maharashtra followed by Tamil Nadu, Andhra Pradesh, Uttar Pradesh, West Bengal, Delhi, Karnataka, Gujarat, Madhya Pradesh and Punjab. In case of Public corporations, 22% of the e-waste is produced by households and 78% by the business sector. It is because 83% of household consumers are first time buyers. So most of the waste is generated by business sector only. About 1050 tonnes per year of computer waste produced by retailers and manufacturers. There are 2 small e-waste pulling apart facilities functioning in Chennai and Bangalore. There is no large scale organized sector which recycles e-waste in India and the entire recycling management is in the hands of unorganized sector. In India, probably the e waste is given to the rag pickers who pay some amount to the customer from whom they are collecting the waste. The rag pickers (also known as kabadiwala) collect all kind of waste like papers, books, newspapers, plastic, cardboard, polythene, metals, etc. which also includes e-waste, and these wastes are a source of income for rag pickers and middlemen or scrap dealers too. E-waste is mostly handled by unskilled workers and so proper safety measures are not taken by them while handling the wastes. Disposal and recycling of e-waste is not properly done due to lack of appropriate technology. Also, very few companies are there which have implemented „take back" system willingly. There is no clear

data of the quantity of wastes which are generated and disposed of each year. According to the literature review it is revealed that only about 50% of the public are aware of environmental and health impacts of the electronic items. Hence, there is an urgent need of implementation of proper e-waste management system in India.

Objectives:

The main objective of the project is to know about the concept of e-waste, its Indian scenario, types of electronic items, uses of electronics items, types of hazardous substances present in e-waste, impact of e-waste on human health and environment.

Research methodology

This study is executed on the Basis of the present electronic waste context and its problems or demerits are outlined to make out possible outcome. The area of study was selected as an emerging city of Mumbai. Here, population density (total number of population is around 1 million) and sequential development is growing upward while a number of government and non-government institutions are established or transferred from the edge to the center point of the City Corporation. This qualitative research was carried out using data from various sources and from the internet too. Questionnaire was also prepared which consisted of four parts viz., part one was containing demographic information, part two was containing E-waste generation approach along with source and quantification, part three was containing E-waste management approach along with the cognizance attitude of shop owner and labor, part four was containing information on environmental and human health impacts in the aspects of exposure time, place and types of shop. It also included the types of electronic items used mostly in day to day life by the individuals.

Fig. 1: Shows the overall waste disposal site at the open place (figure "a" indicate to amalgamate waste disposal site which is located at the road side, figure "b" shows discarded E-waste part at the repairing shop site, figure "c" denoted discarded different types of E-waste and packaging materials, figure "d" keep left E-waste at the drainage site and it make some time blockage)

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Hazardous substances present in e-waste:

1. Mercury
2. Lead
3. Lithium
4. Cadmium
5. Arsenic
6. Plastics

Effects of e-waste on human health and environment:

E-waste is highly complicated to handle because of its contents. It is made up of multiple

components some of which are hazardous that have an severe impact on human health and environment if not handled properly. So there is a need for appropriate technique for handling and disposal of these chemical substances. Basel Convention Centre says that e-waste are hazardous when they are combined with mercury, lead, cadmium, polychlorinated biphenyl etc. Wastes containing insulated wires or metal cables coated with plastic which contains lead, coal tar, cadmium, Polychlorinated Biphenyl (PCB) etc., are also characterized as hazardous in nature.

Uses of electronic items:

Using electronic items in today‟s world is a major part of our daily lives. We can hardly think of a day the world would be without electronics. Everything from cooking to music there is a use of electronics or electronic components in some or the other way. As in a family they have cars which have many electronic components, so as our cooking stove, laptop and cell phone. By this we are able to know that electronic items are so vital for everyone. Literally thousands of devices that we use every day are electronics only. These products range from automotive engines to automated equipment in production settings.

Electronics devices are not only every time hazardous but in some of the cases it are useful too as mentioned below:

Electronics devices are being used in the health field, not only to assist in diagnosis and determination of medical problems, but to assist in the research that is providing treatment and cures for illnesses and even genetic abnormalities. Equipment such as MRI, CAT and the older X-rays, tests for diabetes, cholesterol and other blood component tests all rely on electronics in order to do their work quickly and accurately. Pacemakers and similar equipment implanted in the body is now almost routine.

Top ten mostly used electronic items:

1. Television
2. Mobile phones
3. Laptops
4. Computers
5. Kindle fire
6. PSP

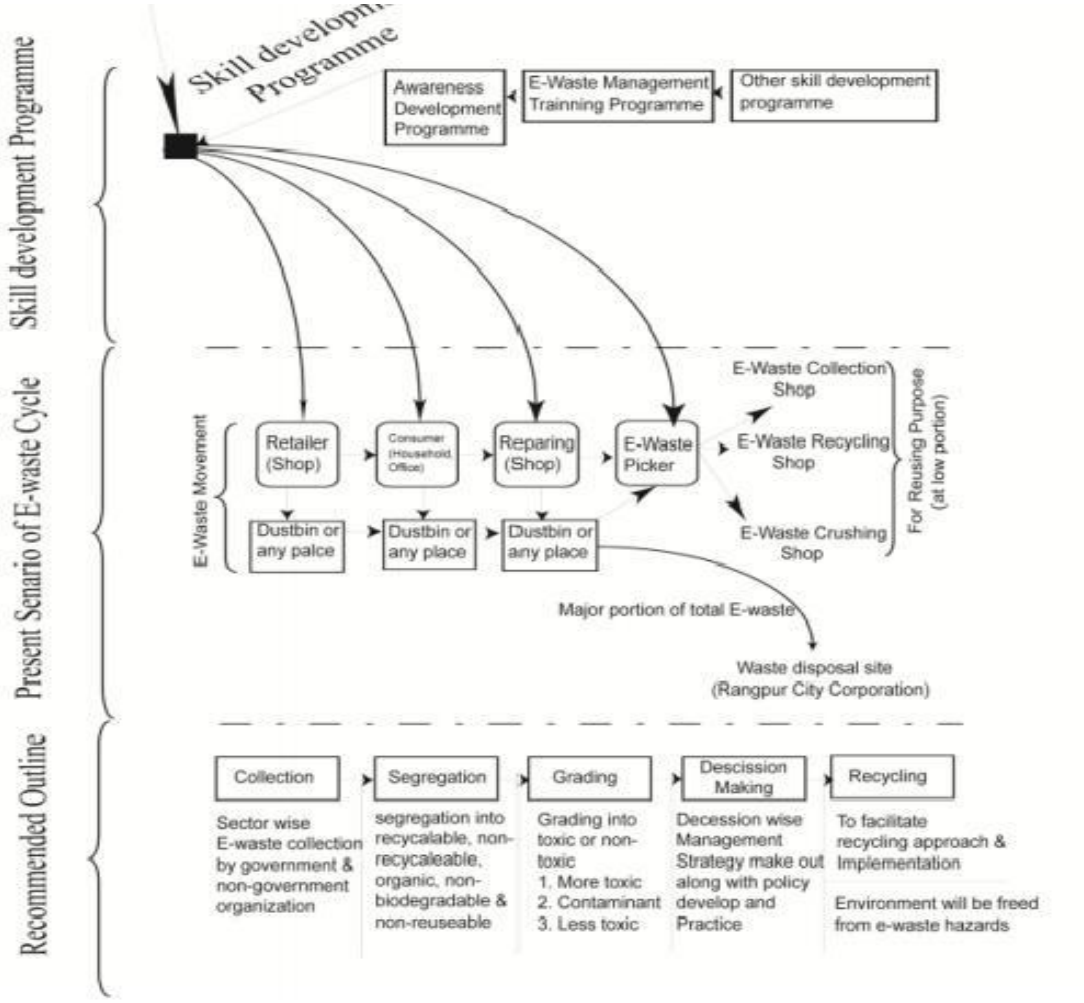
7. Oven

8. i- Pod

9. XBOX 360

10. Cameras

Waste management approach and its initiatives:



This fig. shows waste management approach and its initiatives (its denoted the real feature of the waste management approach and its present status, a number of question has been drawn which may act as a critical point to get better findings on waste management and its negative consequences. First part contained, the skill development programmed is a preliminary initiatives to concern mass people who are involved with waste generating and handling activities, second part contained, present scenario of E-waste cycle whereas one portion is used for recycling

approach and another portion were disposed at the common waste disposal site, third part consisted of some recommended outline step by step it may help to sustainable E-waste management and policy making).

Approach and Methodology:

The approach and methodology to determine the hazardousness has been described in following steps as shown in figure below.

Step 1: Identify the E-waste category item

Step 2: Identify the E-waste composition or determine it

Step 3: Identify possible hazardous content in E-waste

Step 4: Identify, whether the E-waste component is hazardous

Source: downloaded from http://www.revive-ewaste.com/eWaste-scenario.html

How e- waste leads to environmental crisis:

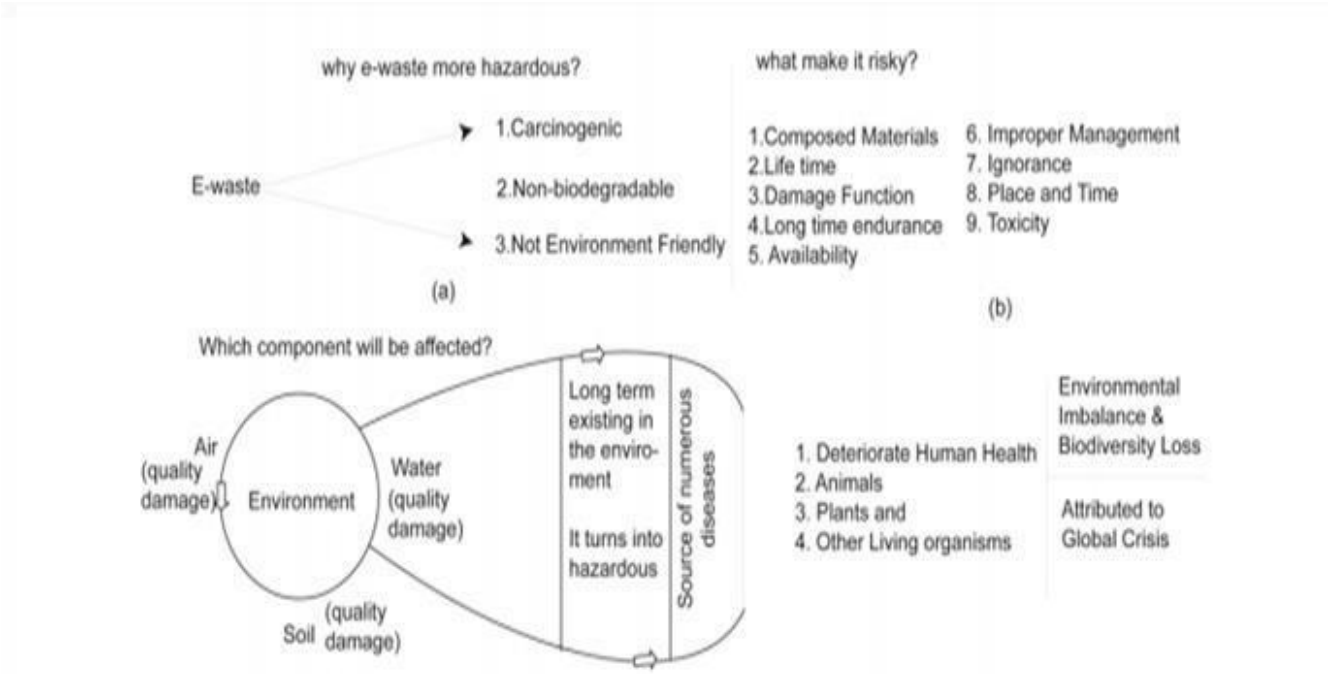


Fig.: Shows "how E-waste leads to environmental crisis?" (part "a" denoted why E-waste more hazardous than others?, part "b" indicated "which components of E-waste are responsible to make it risky for living organism, part "c" indicated to environmental component which is directly influenced by E-waste, part "d" denoted the ultimate effect of E-waste on environmental and human health).

Conclusion:

E-waste generation and its administration is a crucial factor along with the technological changes. Reviewed results flaunted the situation of the E-waste generation and its present management approach. The result showed that the total amount of E-waste generation was increased but administrative strategy was not so good enough for the ecosystem. It was also disclosed that, basic level of E-waste management relies on local people and their understanding ability. However, in presence of toxic materials and its components, it may be threat full to human body mechanism or system disablement. In addition, E-waste is considered being highly harmful for the environment and living organisms. It may lead to environmental degradation and shortfall for sustainable development.

References:

Web Sites:

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2. http://www.revive-ewaste.com/eWaste-scenario.html
3. http://envfor.nic.in
4. http://ijrsk.com