



# **E-waste and Environmental Degradation**

By

Suraj S.

*The Frank Anthony Public  
School  
Cambridge Layout  
Bangalore – 560 008*

## Introduction

- ◆ The industrial advancement made by man has generated huge quantity of solid and liquid wastes.
- ◆ The high tech boom has given rise to a new type of waste called “Electronic waste or E-waste”. The E-waste or electronic-waste in the terms used to discarded electronic gadgets like computers, TV, mobile phones, fax machines, audio equipments, refrigerators etc.
- ◆ The amount of e-waste generated annually is not known precisely because of adverse publicity with respect to environmental problems.
- ◆ Today a huge quantity of e-waste is generated because of the purchasing power of the consumers, resulting in buying advanced models, which the manufacturers market discarding the old technology and also when products life is over.



- ◆ Electronic waste or E-waste contains both valuable and harmful material.
- ◆ These materials require special handling and recycling techniques.
- ◆ The average life span of a computer is 2-3 years, since the hardware / software companies come out with a advanced model, thus generating huge quantity of e-waste.
- ◆ Actually 90-92% of the computer components can be recycled/reused but it is rarely done.



## Pollutants and Source

- ◆ A computer weighing about 25 Kgs has these materials :

### Material weight)

### Contents (% of total

Plastic	23%
Ferrous Metals (eg. Iron)	32%
Non ferrous metals (eg. Lead, Zinc, Cadmium)	18%
Electronics (eg. Silver, Platinum)	12%
Glass	15%

- ◆ The heavy metals such as lead, zinc, chromium, cadmium, mercury and barium are some of the main components of e-waste.
- ◆ These are harmful, both for living organisms as well as their environment.

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[GBC 932 plus 7 part of galaxy]

- ◆ According to an estimate India generates nearly 2 lakh tons of e-waste annually.
- ◆ And added to this another 0.5-1 lakh ton/annually dumped into the country as scrap.
- ◆ The cities in India generating and receiving e-waste are Ahmedabad, Bangalore, Bombay, Delhi, Chennai, Kolkata etc.



- ◆ The main pollutants from the e-waste are heavy metals such as lead, zinc, cadmium, copper, silver, glass, plastic, etc.
- ◆ These are used in circuit boards, computer cabinets, cathode ray tube (CRT), screen, batteries, sensors etc.
- ◆ The heavy metals such as lead when accumulated in living organisms damages nervous system and kidney functioning.



- ◆ The recent investigations of workers involved in manufacturing the chips, drives and circuit boards are reporting health problems.
- ◆ Even the workers who handle e-waste as a scrap have health problems.



- ◆ The e-waste generated in the society became a major problem, people started thinking means of disposing these contaminants.
- ◆ According to the available records recycling of e-waste was first attempted in 1991.
- ◆ And was implemented in Switzerland by collecting old refrigerators.
- ◆ Later over a period of time all other electrical/ electronic devices were added to the list.
- ◆ This lead other countries to follow the suite and brought in the legislation to manage and dispose e-waste.
- ◆ The e-waste which is being dumped by developed countries into developing and under developed countries, where the environmental rules/legislation are not strict.

- ◆ Also the labour is cheap for this hazardous waste to be scraped and recycled.
- ◆ The poor people in developing and underdeveloped countries were forced to choose between poverty and poison.
- ◆ And they choose the first for survival without thinking of their future.
- ◆ In 1989 – Basel (Switzerland) convention which was established by the world community in context to e-waste.
- ◆ This is particularly with regard to the restricting of e-waste movement or hazardous waste being dumped into developing and under developed countries.
- ◆ Though this law exists, developed countries which are not signatories to this and even if they are, they ship the e-waste to under developed countries.
- ◆ The poor countries are unable to stop this, are forced to receive the scrap and thus pollution and health hazards are seen.
- ◆ The e-waste was dumped to some East European, African and Asian countries. To quote an example the cost of recycling glass of a computer monitor that is 1 kg of glass-to-glass.

**USA**  
**1 \$**  
**Rs. 42**

**CHINA**  
**0.1 \$**  
**Rs. 4**

**INDIA**  
**0.15 \$**  
**Rs. 6**

- ◆ The e-waste in a developed country where nearly 90% is burnt to prevent unsafe handling. Earlier it was landfills, subsequently due to contamination of soil and groundwater they restricted to burning.
- ◆ Where as in a developing / underdeveloped countries like, India, incineration is done openly polluting the atmosphere and the residue used in landfill, contaminates soil causing health hazards.

## How to manage

- ◆ The best way to manage e-waste is Reduce-Reuse-Recycle
  - Reduce – less generation of e-waste by maintaining, lifespan increased.
  - Reuse – if functional, donate or sell it to the user
  - Recycle – Components that can't be repaired
- ◆ In case of recycling it involves both elders and child labour alike.
- ◆ They do the recycling/scraping for their livelihood though it is harmful. Most of the time it is done by bare hands and also by burning in open to reclaim the precious metal etc. thus polluting the area.
- ◆ During recycling only 50% is recycled and the rest is just dumped. Thus polluting the environment.
- ◆ In some developed countries the cost of recycling is added to the new product to be purchased, thus it goes a long way in minimizing e-waste generated where the fancy for exchanging or changing electronic devices can be stopped.

- ◆ Some major companies have developed and started using material that are eco-friendly or reusable material for their new products. Eg.: Lead free solder alloy, Plasma screens etc.
- ◆ Already there is a general awareness of this major problem as it is seen at Schools, Offices and Malls counters have been opened for the people to dump e-waste like used batteries, CD/Floppies etc. Thus helping safe disposal.
- ◆ Even NGO's have also gone a long way in educating, collecting and disposing e-waste.
- ◆ All these are done to see that our environment is not polluted but at the same time the utility of advance technology can be used.
- ◆ There are recycling units in and around Bangalore, and also in other major cities who dismantle, separate and process scientifically.
- ◆ But the quantity of e-waste generated and processed is not balanced.
- ◆ Hence, still unscientifically the scrap dealers handle huge quantity of e-waste and continue to pollute the environment.

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