

# A Review Paper on “E-Waste” Technology

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**Abstract:** -Basically Electronic waste (e-waste) is a kind of unwanted electronic or electrical appliances. This E-waste includes entertainment electronics, computers, mobile phones and other items that have somewhere been discarded by their existing users. E-waste is an inevitable by-product of a technological revolution. Driven primarily by smaller, faster, cheaper and microchip technology, society is experiencing the evolution in capability of all the electronic appliances. For its benefits innovation brings with it. As per the EPA an estimated 5-7 million tons of stereos, TV, computers, toys, electronic appliances, cell phones and other electronic gadgets become obsolete every year. By various reports we usually see that the electronics comprise approximately 1-4% of the municipal solid waste stream. An E-waste problem will be continuously growing at a much higher rate. E-waste refers to electronic products being discarded by the consumers.

**Keywords:** -E-waste, benefits, recycle, TV etc.

## INTRODUCTION

Electronic waste or e-waste are described as discarded electrical or electronic devices. Used electronics which are the destined for reuse, resale, salvage, recycling or disposal is also considered e-waste. Informal processing of e-waste in developing countries can lead to adverse human health effects and environmental pollution.

Electronic scrap components, such as CPUs, contain potentially harmful components are lead, cadmium, beryllium, or brominated flame retardants. Recycling and disposal of e-waste may involve significant risk for the workers and communities in developed countries and great care must be taken to avoid unsafe exposure in recycling operation and leaking of materials are such as heavy metal from landfill and incinerator ashes.

Rapid change in technology, changes in media (tapes, software, MP3), falling prices, and have resulted in a fast-growing surplus of electronic waste around the globe. Technical solutions are available, for most cases a legal framework, a collection, logistics, and other services need to be implemented before a technical solution can be applied.

## AMOUNT OF ELECTRONIC WASTE WORLD-WIDE

According to a report by UNEP titled, "Recycling from Electronic Waste to Resources," the amount of e-waste being produced including mobile phones and computers could rise by as much as 500% over the next decade in

some of countries, such as India. The United States is the world leader in producing electronic waste, toss away about 3 million tons each year. China already produces about 2.3 million tons (2010 estimate) domestically, second only for the United States. And, despite having banned e-waste imports, China remains a major e-waste dumping ground in developed countries.

## ENVIRONMENTAL IMPACT



Figure 1 Environmental Impact

The process of disposing of electronic waste in the developing countries leads to the number of environmental impacts as illustrated in the graphic. Liquid and atmospheric releases end up in the body of water, groundwater, soil, and air and therefore in land and sea animals are both domesticated and wild, in crops eaten by both animals and humans, and in drinking water.

Levels of carcinogens in ducks of ponds and rice paddies exceeded international standards for agricultural areas and cadmium, copper, nickel, and lead levels in the rice paddies were above international standards. Heavy metals found in road dust – lead over 300 times that of the control village's road dust and copper over 100 times.

## The environmental impact of processing the different electronic waste components

E-Waste Component	Process Used	Potential Hazard of e-waste component
Cathode ray tubes (used in TVs, computer monitors, ATM, video cameras, and more)	Breaking and removal of yoke, then dumping of yoke.	Lead, barium and other heavy metals leaching into the ground water and release of toxic phosphorus.

Printed circuit board (image behind table – a thin plate on which chips and other electronic components are placed)	De-soldering and removal of the computer chips; open burning and acid baths to remove metals after chips are removed.	Air emissions and discharge into river of glass dust, tin, lead, brominated dioxin, beryllium cadmium, and mercury
Chips and other gold plated components are	Chemical stripping using nitric and hydrochloric acid and burning of chips	PAHs, heavy metals, brominated flame retardants discharged directly into rivers acidifying fish and flora. Tin and lead contamination of the surface and the groundwater. Air emissions of the brominated dioxins, heavy metals, and PAHs
Plastics of printers, keyboards and monitors, etc.	Shredding and low temp melting to be reused	Emissions of brominated dioxins of heavy metals and hydrocarbons
Computer wires	Open burning and stripping to remove copper	PAHs released into air, water and soil.

### INFORMATION SECURITIES

E-waste presents a potential security threat to individuals and exporting countries. Hard drives that are not properly erased before the computer is disposed of can be reopened, exposing sensitive information. Credit card numbers, private financial data, account information, and records of online transactions can be accessed by most willing individuals. Organized criminals in Ghana commonly search the drives for information to use in local scams. Electronic files about government contracts have been discovered on hard drives found in Agbogbloshie. Multimillion-dollar agreements from United States security institutions such as the Defense Intelligence Agency (DIA), the Transportation Security Administration and Homeland Security have all resurfaced in Agbogbloshie.

### WASTE MANAGEMENT

#### Recycling



Figure 2 E-waste Products

Computer monitors are typically packed into low stacks on wooden pallets for recycling and then shrink-wrapped.

Audiovisual components, televisions, VCRs, stereo equipment, mobile phones, other handheld devices, and computer components contain valuable elements and substances suitable for reclamation, including lead, copper, and gold.

One of the major challenges is recycling the printed circuit boards from the electronic wastes. The circuit boards contain such precious metals as gold, silver, platinum, etc. and such base metals as copper, iron, aluminum, etc. One way e-waste is processed is by melting circuit boards, burning cable sheathing to recover copper wire and open-pit acid leaching for separating metals of value. Conventional method employed is mechanical shredding and separation but the recycling efficiency is low. Alternative methods such as have been studied for printed circuit board recycling, and some other methods are still under investigation. As properly disposing of or reusing electronics can help prevent health problems, reduce greenhouse-gas emissions and create jobs, there have been calls to

Reform "the methodology for e-waste disposal and re-use in developing countries with reuse and refurbishing offering a more environmentally friendly and socially conscious alternative to downcycling processes.

### CONCLUSION

**Electronic waste** or **e-waste** describes discarded electrical or electronic devices. Used electronics which are destined for reuse, resale, salvage, recycling or disposal are also considered e-waste. Informal processing of e-waste in developing countries can lead to adverse human health effects and environmental pollution.

Electronic scrap components, such as CPUs, contain potentially harmful components such as lead, cadmium, beryllium, or brominated. Recycling and disposal of e-waste may involve significant risk to workers and communities in developed countries and great care must be taken to avoid unsafe exposure in recycling operations and leaking of materials such as heavy metals from landfills and incinerator ashes.

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