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E WASTE- TOXIC TIME BOMB

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ABSTRACT

With the IT revolution as well as Industrial and technological advancements, e- waste being generated mostly in the last two three decades. India emerged as one of the major hub of e-waste, which during disposal generates no. Of toxic compounds such as dioxins and furans, cadmium, mercury etc which acts as time bomb for the environment.

Keywords:

e- waste, disposal, toxic, environment.

INTRODUCTION

The creation of innovative and new technologies and the globalization of the economy have made a whole range of products available and affordable to the people changing their life style significantly. The rapid growth of technology, up-gradation of technical Innovations and a high rate of obsolescence in the electronic industry have led to one of the fastest growing waste streams in the world which consist of end of life.

It comprises a whole range of electrical and electronic items such as refrigerator, washing-machine, computers with printers, television, mobiles I-pods etc. many of which contain toxic materials.

Quite a number of world health organization studies have proved that radiation is emitted from e-waste, especially discarded cell phones and computers chips even if they are no longer in use and the harmful waves are a perennial source of radiation in the environment. E- Toxic components in computers include circuit boards containing heavy metals like lead and cadmium, batteries containing cadmium, cathode Ray tubes with lead oxide and barium, brominated flame retardants used on printed circuit boards, cables and plastic casing , polyvinyl chloride Coates copper cables and plastic computer casing that release highly toxic dioxins and furans when burnt to recover valuable metals.

E-waste is usually mixed with household waste and finally disposed of at landfills. When dumped outside, the soil or the plants and vegetables grown in the soil are affected by radiation.

They mingle with the ground water and also cause pollution because most of the components of e-waste are non- biodegradable. Global NGO Basel Action Network (BAN) has estimated that around 500 million computers in the world contain 2.87 billion kg of plastics, 716.7 million kg lead and 2, 86,700 kg mercury. The average 14 inch monitor uses a tube that contains an estimated 2.5 to 4 kg lead. The lead can seep into the ground water from landfills, thereby contaminating it.

If the tube is crushed and burned, it emits toxic fumes into the air. E-waste when burnt to recover valuable metals releases Dioxin and Furans are highly toxic.

E-WASTE TOXICITY

Dioxins can cause reproductive and developmental problems, damage the immune system, interfere with hormones and cause cancer. Once dioxins enter the body, they last a long time because their chemical stability and their ability to be absorbed by fat tissues, where they are then stored in the body. Their half-life in the body is estimated to be 7-11 years. In the environment dioxins tend to accumulate in food chain. Dioxins are 2,3,7,8 tetrachloro dibenzo para dioxin (TCDD). Dioxins is used for the family of structurally and chemically related (PCDDS) polychlorinated dibenzo para dioxins and poly chlorinated dibenzo furans (PCDFs). Short term exposure of humans to high levels of dioxins may result in skin lesion, such as chloracne and patchy darkening of the skin, and altered liver function. Long term exposure is linked to impairment of the immune system, the developing nervous system, the endocrine system and reproductive system. Chronic exposure of animals to toxins has resulted in several types of cancer. TCDD was classified by IARC (International Agency for Research on Cancer) as a known human carcinogen.

Another toxic element which we get from e- waste is lead. Lead poisoning also known as plumbism, colica pictorum saturnism caused by increased levels of lead in body processes. Lead is toxic to many organs and tissues including heart, bones, intestines, kidneys and reproductive and nervous system. In children causing potentially permanent learning and behavior disorders, symptoms include abdominal pain, confusion, headache, anemia, irritability and in severe cases seizures, coma and death.

Another toxic element which we get from e-waste is cadmium. Cadmium acts as catalyst in forming reactive species. It increases lipid per oxidation, in addition it depletes antioxidants, glutathione and protein bound sulfhydryl groups. It also promotes the production of inflammatory. Acute exposure to cadmium fumes may cause flu like symptoms including chills, fever and muscle ache. More severe exposure can cause trachea- bronchitis, pneumonitis and pulmonary edema. Inhaling cadmium laden dust quickly leads to respiratory tract and kidney problems which can cause renal failure. Compounds containing cadmium are also carcinogenic. The kidneys lose their function to remove acids from the blood in proximal renal tubular dysfunction. The kidney damage inflicted by cadmium poisoning is irreversible. It also creates low phosphate level in blood causing muscle weakness and sometimes coma. Kidney dysfunction also causes gout arthritis due to accumulation of uric acid crystals in joints because of high acidity of blood (hyperuricemia). The kidneys can also shrink up to 30% .Cadmium exposure is also associated with the development of kidney stones. Some patients can also lose their sense of smell (anosmia).

CONCLUSION

The government plans to provide electronic governance and universal phone connectivity across the country, bringing in large investments in technology manufacturing .Though India is renowned as a global IT hub but the worst part is e- waste increases at an alarming rate in country and its management and handling become a major challenge. Certain guidelines for e- waste disposal have been laid down by union ministry of environment and forests but no standard protocol is being followed for scientific disposal by most of the states. So before proceeding ahead it is very essential to increase collection centers, recycling and dismantle centers in each and every state of India, so as to protect all flora, fauna, human being and of course environment.

In some European countries, medicinal plants and herbs are grown inside e- waste, such as in an old computer box or television set. The plant helps to neutralize radiation effect or rather absorb the ill effects.

So in India we should adapt such type of practices along with scientific way of disposal to protect ourselves from Toxic Time Bomb. Restrictions for use of toxic materials, use of environmental friendly materials, development of criteria for recovery and disposal design and engineering, Interventions, adoptability for up gradation.