



## International Legal Perspective of E-waste Management in the context of Human Health and Environment

Dr. Mukesh Kumar Malviya<sup>1\*</sup>, Shweta Tiwari<sup>2</sup>

<sup>1</sup>\*B.A., LL.B., LL.M., M.Phil. (Law) Ph.D., Asst. Professor, Law School, Banaras Hindu University, Varanasi (U.P.) India -221005 and Editor in Chief-Adhikar, 15Days and Jurist (Law Journal)-An International Research Refereed Journals,

<sup>2</sup>Research Scholar, Hindi Department, BHU, Varanasi

### ABSTRACT

E-waste is a waste which generates from various sources. E-waste had affected flora and fauna adversely. The researcher will discuss about various causes of E-waste generation and how it had adversely impacted Human Health, Environment and ecological Resources. Additionally, dumping of E-waste also had deleterious impact on Human Health. Children's and women's are at the major risk of intaking e-waste as they are prone to many psychological vulnerabilities. The presence of toxic components in the area leads to skin ulcers, gastrointestinal tracts and kidney failures. The researcher has concluded suggestions for minimization of e-waste and also the best possible solutions which can curb down the e-waste.

However, there are various International Legal conventions related to E-waste which has worked for the protection and conservation of natural resources. These conventions also aim for the proper management of the dumping of E-waste. E-waste legislation is different in various countries including its penalties and compensation.

**Keywords:** E-waste, Penalty, Electronic

### E-waste under Basel convention

The Basel convention on transboundary movement of hazardous waste was signed by 173 countries on 22 March 1989 and entered into force on 5 May 1992. Annexure VIII is an annexure which covers another category of hazardous waste which is known as E-waste. Two step requirement process controls the hazardous process of E-waste under Basel convention. In the year february, 1998, fourth meeting of Conference of parties was held where the parties has emphasized upon the emerging problems related to E-waste. In the same conference List A and B were included. List A and List B were signified as Annexure VIII and Annexure IX and it was rigorously prepared by the technical working group. The convention was majorly aimed at preventing dumping of hazardous waste from developed to developing countries, which was the biggest challenge to overcome.

#### 1.1 Scope of Basel convention

Basel convention mainly aims to control the movement of hazardous waste in an effective manner by ensuring that there has to be collective effort and collaboration at the international front. Article 1 of the convention defines about the scope of waste. Many countries like India and Africa lacks technology to curb down E-waste.

#### 1.2 Illegal shipping and Basel convention

Developed countries generate abundant amount of E-waste due to technological upgradation and advancement in the area of EEE

#### 2.1 London Guidelines for the Exchange of Information on Chemicals in International Trade, 1989

These guidelines were amended in 1989 it was formulated to increase chemical safety through bilateral talks between the nations. It has majorly focused in expanding the information in all areas i.e scientific, technical economical and legal area. It has also laid emphasis on alternative methods and ban the usage of harsh chemicals. Hence, It has laid importance to methods of training which will eliminate the risk of accidents and there will be safe use of chemicals. Developed nations are prone to severe threats though these guidelines were still not formulated to address the issues of effluent nations but instead of that it provides effective framework that will provide exchange of information between the nations

#### 2.2 Stockholm Declaration, 1972

Stockholm conference is known as United Nations conference of Human environment which was held in June 1972. It was occurred to develop a concrete action plan of environment. The meeting agreed upon 26 principles in relation to environment and development. The Former Late Prime Minister Mrs Indira Gandhi actively participated in the declaration.<sup>1</sup> It has given a very intriguing slogan "Only one Earth". This conference had made collaborated efforts

with the help of policy makers for preservation and conservation of natural resources i.e. flora and fauna. Stockholm declaration had many principles<sup>2</sup>-

**Principle 1** It states of preservation and conservation of natural resources for future generations so that Individuals of planet can enjoy a wholesome environment and live and lead a prosperous and healthy life.

**Principle 2** It focusses on the importance of preservation and conservation of natural resources like flora and Fauna by having sound managerial system and effective mechanism.

**Principle 6** It states when hazardous wastes gets discharged into water then it creates ecological disbalance in the environment the activity of discharging hazardous wastes into water need to be curbed down

**Principle 7** It emphasizes states to take adequate steps to curb down pollution in seas which is impurifying aquatic life of the Planet<sup>3</sup>

**Principle 11** states that the development which developing countries has sought to undertake should not be hampered in any way by creating a proper mechanism.

**Principle 18** It states that usage of science and technology should be made in such a way that it should not be prone to any environmental hazards

**Principle 24** Incorporates the spirit of Fraternity among all nations be it a developed or a developing Nation and there has to adequate amount of cooperation made between the nations

These Principles of Stockholm declaration have been prepared keeping in mind the growing concerns and problems faced due to increase in E-waste. However, E-waste lacks proper management and discharge of e-waste contaminates ground water and also it effects aquatic flora and Fauna.<sup>4</sup>

### **2.3 International Convention for the prevention of pollution from ships, 1973 (MARPOL)**

This convention was adopted in 1973 in response to environmental accidents and hazards caused by ships which is disturbing aquatic flora and Fauna. The dumping of oil in seas and oceans is one of the biggest concerns for International Maritime Organization. MARPOL did not come into existence on the date it was signed, i.e 17<sup>th</sup> February 1973. In October 1983 another convention came into existence which is an amalgamation of 1973 convention and 1978 protocol.<sup>5</sup> India is also a party to MARPOL including 156 other nations. Currently, MARPOL has incorporated 6 Annexes. Marinal Environment Protection committee is given the responsibility to make amendments on the periodical basis. Further, Annexure IV clearly advocates to prevent and protect any form of discharge by sewage .Annexure V came into existence on march 1, 2018 which clearly restricts the discharge of e waste in oceans. Countries Like Australia has enforced MARPOL by enforcing Protection of Sea (Prevention of pollution from Ships Act,1983.<sup>6</sup>

### **2.4 Brundtland commission,1980**

A commission was established on Environment and Development by United Nations came to be known as Brundtland commission. A report was published and titled as “Our common future”. Brundtland report/ Our common future was named on Go Harlem Brundtland the then commissions chairwoman. This report has emphasized environmental issues and this problem can be eliminated by building a coordinated approach between developing and developed nations. It has elucidately defined the term Sustainable development as ‘Focusing the needs of future generations without compromising the needs of the present’.<sup>7</sup>

The commission has not prohibited or created any bar for technological advancements and productivity. Instead than it has emphasized on finding a right balance between environment and development.<sup>8</sup> Harmony between environment and development Technological advancement leads to better growth and enhancement of proficiency and productivity in the country .but at the same point of time it will open the way for toxic waste generation. Developing nations have often been victims of dumping of illegal waste. Illegal dumping of waste has been severely criticized by commission and It had also focused on enforcement of stringent acts. The commission aims at setting parameters and regulations for water pollution, Air pollution, management of waste management.<sup>9</sup>

### **2.2 The Earth summit,1992**

The United Nations conference on environment and development also known as Earth summit was a global international environmental conference between 179 nations which was witnessed by Leaders, Politicians, Diplomats and scientists. The summit had focused on achieving sustainable development by the people living at all levels. The summit is known for various achievements and documents which are produced

1. Rio Declaration
2. United Nations framework convention on climate change
3. Convention on biological diversity
4. The declaration on the principles of forest management
5. Agenda 21

#### **a) Rio Declaration**

The World commission on environment and development which is known as Brundtland commission was set up in 1983 by United Nations General Assembly. It was named on the name of its chairperson Go Harlem Brundtland who was the former Prime minister of Norway. The report was published in 1987 known worldwide as “Our common future” This report had emphasized to strike a perfect balance between economy and environment so in any case economic development would not pose a serious threat or risk to future generations. Hence, future generations would be able to

reap the fruits of earth.<sup>10</sup>

Stockholm conference on environment and development had witnessed its twentieth anniversary which was celebrated by 178 nations including non-governmental organizations and other state parties met at Rio de Janeiro to discuss environmental problems which was creating lot of issues at international level. The conference again majorly emphasized striking a balance between economic development and environmental concerns.

The United Nations conference on the environment and development was brief enough to gather worldwide attention after three years which had inundated humans to live responsibly and cautiously by having best intentions towards environment.

Principle 2 of Rio declaration states that the activities which are undertaken within the jurisdiction of state does not hamper the environmental concerns of other states

Principle 15 is about Precautionary principle which will be hugely accepted by states to prevent environment

Principle 16 states that polluters should bear the cost of pollution without disturbing the process of international trade and investment

Principle 17 mandates Environment Impact Assessment (EIA) which had worked at the National level and had engaged in activities that will significantly reduce the impact of environmental hazards

It was October 17-21, 2011 when the nations gathered to witness the tenth Conference of Parties (COP) to the Basel convention which was aimed at reducing the movement of hazardous substances between the nations which had created adverse impact on the environment. COP ,2011 was based on the very interesting Theme of "Prevention, Minimization and Recovery of waste" This conference was taken very substantially as it was believed that it will significant contribution to United Nations conference on sustainable development<sup>11</sup>

Rio 20 is also known by the other name i.e United Nations conference sustainable development which was held in 2012.<sup>12</sup> The conference had three objectives which it seeks to achieve – There will some emerging and challenging situations in the relation to the environment which will be handled rigorously There are two themes which was agreed by member states i.e Green Economy and sustainable development will go hand in hand by striking out adequate balance between the two and Poverty eradication and institutional framework on sustainable development.

Conference of Parties (COP), 2013 was the eleventh conference which was based on effective management of hazardous wastes to improve the effectiveness of the Basel Convention the adoption of Sections 1, 2, 4 and 5 of the guidance documents on environmentally sound management of used and of life computing equipment prepared by Partnership for action on computing equipment (PACE)<sup>13</sup>

Conference of Parties (2015) was the twelfth conference which was held in 2015 as the outcome of the Basel convention which has adopted guidelines in relation to E-waste and mercury wastes<sup>14</sup>

## **B) Agenda 21**

Agenda 21 is a detailed comprehensive and non-legally binding document which has emphasized population, consumption and technology. It has focussed on the importance of sustainable development by balancing out consumption patterns in various parts of the world. Agenda 21 has various programmes and policies which had focussed on the importance of natural resources to build earths life supporting capacity.

This non-legally binding document gave equal importance to both regulatory mechanisms and market mechanisms in a hope that it will reduce hazardous waste at all levels.

According to Article 21.10 of Agenda 21, Governments should initiate programmes to achieve sustained minimisation of waste generation and according to Article 21.9(b), by the year 2000, industrialised nations or developed nations must aim to prepare programmes that will reduce the production of wastes. Agenda 21 had focussed on waste recycling and reusing standards which will eliminate the risk of hazardous waste in the environment. Efficient and sound management of e-waste will reduce the risk of threat, and it will ensure to provide awareness and education to all age groups of society.<sup>15</sup>

Article 20.6 states that women and children are more prone to hazardous waste due to their biological condition due to which there must be conduction of research activities to find out the impact of hazardous waste on women and children

## **2.2 Millennium Development goals (MDG) 2000**

United Millennium development goals have agreed and aim to achieve 8 goals by the year 2015. In the year 2015 UNMDGS have achieve its goal of safe drinking water. These goals are to be enforced both by developing and developed nations. Its 7<sup>th</sup> Goal sets target to achieve environmental sustainability Since 1990 there has been constant increment in percentage of targets. In 1990 only 76% of population was able to have accessibility of safe drinking water However, in 2012 the percentage got increased by 14% and it has achieved target of 90%. Finally In the year 2015 United Nations Millennium Development goal has achieved the goal of safe drinking water.<sup>16</sup>

Millennium Development goals have not given sufficient emphasis on Environment issues. Environmental concerns were not paid any heed to but in reality, these issues required to be addressed with an utmost concern and sensitivity. The concept of E-waste management is not even discussed. Most of the sustainable development goals revolves around combating diseases, Improving Maternity health, Eliminating Poverty and Hunger.

## **2.3 The Johannesburg Declaration on sustainable development, 2002**

It was in Johannesburg ,2002 when world summit on sustainable development was held to evaluate the progress of Rio

Conference. India was an active participant of this declaration in 2002. The declaration has set goals to achieve in the areas of protection of biodiversity, sanitation, food security and access to health care facilities etc. There was a very dismaying moment for declaration when it failed to achieve goal on renewable energy<sup>17</sup> There was a coordinated approach taken by parties of the summit who worked together in ensuring financial assistance for creating development. Issues and concerns related to e-waste management were indirectly addressed by summit. However, due to lack of proper e-waste management when waste gets discharged in ground water and oceans it thoroughly contaminates it. Chapter III elaborates about the rights of workers working in Informal sector are appropriately addressed. Workers tend to get exposed and get in direct contact with such a dangerous environment. It can jeopardize their own life.

#### **2.4 Stockholm Convention on Persistent Organic Pollutants (POPs), 2004**

This convention aims to reduce Persistent Organic Pollutant (POPs) which will remain long in the environment and eventually will jeopardize the life of living organisms such as flora and fauna. It also aims to reduce 12 Persistent Organic Pollutants which are known "Dirty Dozen" by setting up the system for handling additional chemicals. These Persistent Organic Pollutants were amended in 2009, and it added new 9 POPs which were included in Annexure A, B, C, D on August 2016. It had put a lot of emphasis on handling waste with an efficient environmentally sound management technique which will eliminate the risk of threat in environment.<sup>18</sup>

#### **2.5 Rotterdam convention, 1998**

Rotterdam convention had 163 parties and 72 signatories. India became the member of the convention on 24<sup>th</sup> May 2005. The theme of this convention was "Global Agreements for a healthy Planet: Sound Management of chemicals and waste. The convention has set out various objectives to achieve like to have environmentally sound use of hazardous chemicals, Parties to this convention focus on putting up efforts in trading hazardous chemicals at the international level. This convention had listed out two very crucial mechanisms Prior Informed consent (PIC) and Information Exchange<sup>19</sup> **Prior Informed consent** is one of the main procedures to convention that lays down the procedure of importing chemicals in Annexure III. In Annexure III member parties have several choices to allow or disallow import of chemicals

##### **Information Exchange**

In this mechanism the secretariat will be informed about taken a regulatory action regarding banning of chemicals.

#### **2.6 Waste Electrical and Electronic equipment (WEE) Directive in European union**

It was issued in 2003 as EU directive 2002/96/EC which had made an intention to reduce electronic waste by encouraging recycling and reusing electronic products. It was observed that approximately one third of electronic waste is being recycled.

#### **2.7 Bamako Convention**

Bamako convention came into force in 1998. Bamako convention emerged as the response to the failure of Basel convention which is to restrict movement of trade of hazardous substances to less affluent nations. Bamako convention owes its origin to Article 11 of the Basel convention which motivates parties to build multilateral, Bilateral and regional agreements on Hazardous waste. It gave a quick realization to all developed nations who were transporting toxic wastes to African nations like Nigeria, Probo Koala. This convention tried covering more waste than it was covered earlier in Basel convention. The convention included Radioactive wastes, National definition of Hazardous wastes, constituents which are listed as hazardous wastes.

Bamako convention imposed general convention on the countries to restrict the import of hazardous and radioactive wastes. It has also restricted disposal of waste in oceans. Discharge of hazardous waste all disturbs the aquatic life. The convention also ensured that there must be disposal of waste in an environmentally sound manner.

In the year 1991 at Bamako Mali 12 nations of the African union gathered to agree on various terms. Currently, It has 29 signatories 25 parties<sup>20</sup> It was in 1997 when two Italian companies imported 18000 barrels of hazardous waste in Nigeria. These barrels contained severely toxic chemicals like Polychlorinated biphenyls However, this act has led the closing down of many Italian Ports<sup>21</sup>

#### **2.8 E-waste Legislation in selected countries**

There are very few countries who are not signatories to Basel convention US is one among them. certainly, Legality is not a big question when it comes to exporting e-waste in other less affluent Nations. Its federal legislation requires lot of amendments in areas of E-waste barring CRT Monitors. The presence of lead content in CRT monitors makes it more harmful. Hence, there is strict monitoring required by notifying EPA of its intentions. This formal process is completed by Exporter of CRTS who gives detailed information to EPA

- Approximately 25 states till now have agreed to pass legislation in relation to E-waste such E-steward recyclers which are now in use to eliminate e-waste at the time of export waste to less developed nations. It was highlighted by EPA that disposal of e-waste is its first and foremost concern. It is still permitted that in municipal solid waste e-waste can still be safely disposed off which is still the biggest challenge. There are various electronic devices which are used by formal sector like Televisions, Computers, CPU and Monitors etc. Electronic Product Environment Assessment tool (EPEAT) sets a standard by placing a global ecolabel for IT sector. EPEAT has already categorized its products in one category which includes<sup>22</sup>

- Computers & Displays
- Imaging Equipment
- Mobile Phones
- Photovoltaic Modules and Inverters (PVMI)
- Televisions
- Servers

In the year 2010, President Barack Obama had put up lot of efforts in building a national strategy by creating electronic stewardship. It was specifically designed to recycle electronic products and also it will enhance the scope of job opportunities in the country. It had made a very significant impact by prohibiting export of E-waste in many developing and developed nations like India, China and Nigeria<sup>23</sup>

**Resource conservation act is not directly but indirectly applicable** to United states its enforced by Environmental Protection agency and its applicable to both civil and criminal matters. Sec 6928(d) is applicable to criminal provisions regarding treatment, disposal storage and import of E-waste. It also offers penalty upto 2 years till 15 years along with fine of \$50,00055 to \$250,00056. In 2003 California became the first state to implement E-waste legislation. Additionally, if we tend to draw a comparison between India and US model both countries had implemented Legislations at central level in relation to conservation and protection of environment. In India we have specific sets of rules which are dedicated to E-waste management known as E-waste Management Rules, 2016 Unlikthere is no specific set of rules for protection of E-waste management. Certainly, India needs to think and bring out constant positive changes in the quantum of punishment which is given in the country itself in respect to environmental protection as its way too less then the quantum of punishment which is imposed in United states of America.

### 2.9 E-waste Legislation in China

Laws which are implemented and executed in china are majorly concerned to reduce import of E-waste. Guiyu in considered as the largest E-waste site on earth. China has been the centre of various illegal activities. However, the pollution which has been spread due to E-waste is managed and handled by a competent authority i.e Ministry of Environmental Protection. In China both manufacturers and Importers and equivalently liable to be charged for fines and penalty for disposal of e-waste.

The Ban on the importance of e-waste (2000) has included Kinescopes, Panel displays, and scrap computers. Alike, India china also has the concept of Polluters Pay Principle which is covered in Environmental Protection Law (1989). However, It's the responsibility of producer to motivate eco-design and environmentally friendly products (Clean Production Law 2003)

In china the concept 3 R's are mentioned in Protection of environmental pollution from solid waste (1995) .3 R'S signify Recycling, Reuse and Reduction. There are about 5 large cities of china who launched a very interesting program named as 'Home appliance old for new Rebate program'<sup>24</sup>. It was a coordinated and a joint effort by various Ministries and agencies. A consumer would be given a benefit of approximately 10% discount in exchange of new home device by delivering old device.

Environmental Protection law of the people's Republic china (1989) was adopted to prevention, and control of environmental pollution and maintain ecological balance. Prevention and control of environmental pollution in 1995 was legislated to prevent and control environmental pollution.

This Law also contains penal provisions from 10,00077 yuan to 500,00078 yuan. In China if there is an inadvertent accident which has taken place leading to loss of property then in this situation wrongdoer will be severely responsible for the same. Indias Environmental protection act and Chinese Environmental Protection Law has many similarities.

### 2.10 E-waste Legislation in Ghana

Ghana has imposed ban on importation of five-year-old electronics. E waste recycling fee which is being imposed on importers who are obliged to pay it as a penalty for transporting e-waste to other countries. Identity theft is one crime which is increasing as it is creating loss of Intellectual property. Hazardous and Electronic waste control and management act 917. In the year 2018 E-Magin Ghana project was introduced to manage E-waste. This project has set out to achieve sustainable growth and helps in preventing environmental pollution.<sup>25</sup> Ghana has ratified Basel convention, Bamako convention and Ban amendment

### 2.11 E-waste legislation in Nigeria

Nigeria has also restricted the import of hazardous waste in the country by the enforcement of National Environmental Regulation of Harmful waste which came into existence in 2011. This act had inserted special criminal provisions in relation to e-waste. However, there were various committees like consultative committee which was prepared to regulate e-waste. Like United states of America Nigeria also had the policy of registering its e-waste importers under Lagos State Environmental protection agency which was formed in the year 2011.

Overall, if at all we analyse the preparedness of the country towards e-waste is not very satisfactory. Environmental laws in the country are facing the hard time in implementation also there is manhandling of e-waste in the country due to lack of proper solid waste management structure. Approximately, 1000,000 people work in informal sector.<sup>26</sup>

### **2.12 E-waste legislation in United Kingdom**

In United Kingdom waste Electric and Electronic equipment Regulation 2013 was given a legal status on 1<sup>st</sup> January, 2014. Household sector discard Millions of e-waste which had become threat to the environment.<sup>27</sup> UK must aim to achieve and collect 4kg/per person Waste Electric and Electronic Equipment  
EU has launched certain directives in relation to Electrical and Electronic goods-

- In 2007 Energy using product directive was being issued to protect energy products throughout their lifetime by having closely monitoring their Environmental performance.
- In July 2006, Restriction on the use of hazardous substances directive was implemented to prohibit hazardous materials like lead and flame etc

### **2.13 E-waste Legislation in South Africa**

South Africa is one such developing Nations which has a very old legislation working at the central level in relation to hazardous waste. Hazardous substances Act,1973 does not deal with electronic waste directly. Section 163 of this act mentions about electronic product. There is a controlled mechanism which has been set up by this act in relation to disposal, sale, manufacture and Importation etc.

The concept of polluters pay principle was included by National Environmental Management Act (1998) in a hope that it shall reduce environmental pollution and maintain ecological balance in the environment. It has also majorly focussed on 3 R'S reducing, Recycling and Reusing. There is a rigorous quantum of punishment which is available i.e from 1 year till 10 years. However, if we tend to draw a comparison after a certain analysis we would be able to find that the penal provisions of south Africa are much more stringent than India. Since August 2021, a ban was laid on fluorescent lamps and acid batteries to restrict the disposal of these too in landfills. The discharge of these batteries in landfills would disturb the ecological balance.<sup>28</sup>

South African government has established e waste Association of south Africa in the year 2008 to manage appropriate disposal of e-waste in the country.

### **2.14 E-waste Legislation In Israel**

Electrical and Electronic equipment was passed by Knesset in 2012. The primary reason of passing of this law is to maintain ecological balance by reusing and have a sound management of electronic equipments. E-waste which is generated through informal sectors are being manhandled as the amount of which is generated gets disposed off in ground water aquifers leading to ground water pollution and depletion of ozone layer. Israeli E-waste laws have not achieved much success due to complexity which is involved between Formal and Informal sectors.<sup>29</sup> In Israel it's the duty of producers as well as Importers to manage E-waste properly this principle is termed as Extended Producers Responsibility Principle. The quantum of punishment is also available under this act ranging from 6 months to one year. However, Indian Law and Israeli Law has many similarities in relation to e-waste laws of both the countries. There is one very interesting concept of financial sanction which is included in this act. According to this concept a liability is being imposed on producers and importers by administrators for not recycling the products. It is the duty of both importers and producers to maintain annual and quarterly records and submit it before administrators. India has many legislations but none of the act covers this legislation.

### **2.15 E-waste Legislation In Pakistan**

Pakistan is already a party to Basel convention, Rotterdam convention, Stockholm convention on Persistent organic pollutants, Vienna convention and Montreal protocol on ozone depleting substances. Pakistan's Environmental Protection Act 1997 directly covers the concept of hazardous substances under section 13. It has restricted the import of hazardous waste in other countries. This act has majorly focussed on protection and conservation of environment from hazardous substances. Pakistan has various drawbacks in relation to e-waste as there is no strategy or action plan enforced to manage disposal e-waste in the country. In Pakistan 25% of Tax is being imposed on computer screens by the Pakistan's government

## **CONCLUSION**

There are very few countries who are not signatories to Basel convention US is one among them. certainly, Legality is not a big question when it comes to exporting of e-waste in other less affluent Nations. Its Federal legislation requires lot of amendments in areas of E-waste barring CRT Monitors. The presence of lead content in CRT monitors makes it more harmful. Hence, there is strict monitoring required by notifying EPA of its intentions. This formal process is completed by Exporter of CRTS who gives detailed information to EPA

Approximately 25 states till now have agreed to pass legislation in relation to E-waste such E-steward recyclers which are now in use to eliminate e-waste at the time of export waste to less developed nations. It was highlighted by EPA that disposal of e-waste is its first and foremost concern. It has still permitted that in municipal solid waste e-waste can still be safely disposed off which is still a biggest challenge. There are various electronic devices which are used by formal sector like Televisions, Computers, CPU and Monitors etc. Electronic Product Environment Assessment tool (EPEAT) sets a standard by placing a global ecolabel for IT sector.

E-waste is a waste which is hampering the health of Individuals. The life of Individuals becomes at stake when they come in close contact with the harmful chemicals present in the air making the atmosphere toxic. E-waste is an

emerging issue and it became the major However, the Researcher has come across the list of following solutions which need to be practiced appropriately while dealing with the E-waste. The suggestions are as follows -

- Reusing the precious metals and plastics in old cell phones alone instead of making or mining more of them would save as much energy as flipping off the power to 24,000 US homes for an entire year. The typical American household has 24 electronic devices and in 2009 the EPA estimated that there are 2.37 million tons worth of electronics ready to be disposed of. This would fill almost five football stadiums.
- Extend the life of your electronics. Buy a case, keep your device clean, and avoid overcharging the battery.
- Buy environmentally friendly electronics. Look for products labeled Energy Star or certified by the Electronic Product Environmental Assessment Tool (EPEAT). Donate used electronics to social programs—and help victims of domestic violence, children safety initiatives, environmental causes, and more.
- Recycle electronics and batteries in e-waste recycling bins located around campus. Large electronics can go in the larger bins found in your building.
- There has to be robust Legislations made and strict punitive measures adopted regarding to curb E-waste.
- US has no federal law for E-Waste. The developed countries like US generating E-waste in humogonus amount should come forward with stricter punishments and Legislations. Similarly, In India we also need to adopt robust measures to curb e-waste and best possible recycling methods need to be adopted so the health of e-waste pickers need not to be diminished .
- However, e-waste also effects aquatic flora and fauna batteries and other e-waste are found discarded in the seas and harm aquatic life too because they contain leach heavy metals like mercury and lead. . If electronics are thrown in landfills, these toxins may leach into groundwater, affecting local aquifers and entering the food chain. Although these problems are more prevalent right now in the developing countries that accept our shipments of e-waste for processing, toxic waste knows no borders. The more electronics we discard, the greater the environmental and health dangers for everyone. We need robust and stringent measures to reduce e-waste.
- As per suggestions from the environmental experts the researcher concludes that in industries the management of e-waste should begin at the point of generation. There has to be waste minimization techniques and sustainable product design to be followed to reduce e-waste and thereby e-waste can be properly handled by taking adequate amount of steps towards it.

The manufacturing of these devices and the use of rare materials that go into their production represent a huge source of embodied energy. Minimizing e-waste helps to conserve resources and reduces the amount of energy we take from the earth

- The Researcher emphasizes that there must be more companies emphasizing the need of E-steward recycler for the proper management of E-waste. There are companies that will take our old electronics, take them apart, and separate and recycle the materials inside – like plastic, glass, and metals. Many of these materials can then be used to make new products.

When you recycle your old electronics, you should try to find a recycler called an e-Steward. E-Stewards are recyclers who meet the highest standards for how they recycle our stuff, including not just shipping it off to poor countries.

If there is no e-Steward recycler near you, you can also take some electronics (but not TVs) back to any Staples store for recycling. Staples has a free recycling program that works with an e-Steward recycler.

- The Researcher emphasizes the need of safe disposal of E-waste which can generate more employment opportunities. Hence, we also need standardization of technologies and implementation of law . we need to follow four R's i.e Refuse, Reduce, Reuse and Recycle

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