*THINK INDIA JOURNAL*

ISSN:0971-1260

Vol-22-Issue-10-November-2019

# Legal And Regulatory Framework Dealing with Electronic Waste and Its Effect on Children's Health.

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***Abstract:***

*Electrical and electronic waste (e-waste) is a fast growing solid waste stream worldwide which poses a higher level of risk on children's health. About 50 million tons of e-waste are created globally each year. At the same time, complex and sometimes illegal e-waste trade is growing in developing countries. Since only 12.5% of e-waste is recycled currently, there is an urgent need to address the proper recycling of e waste products globally to mitigate the crucial effects on the most vulnerable section of our society i.e. children. The extreme level of lead in electronics is solely responsible for causing damage in the central and peripheral nervous systems, the blood and the kidneys. It is the high time to realize the hidden cost of improper recycling of mobile phones, laptops, computers and other electronic and electrical devises which consists of highly toxic materials such as cadmium, beryllium, brominated flame retardants, lead and mercury. The Basel Convention of 1989,Rotterdam Convention of 1998,Stockholm Convention of 2001 along with Electronic Waste Initiative of 2004,Solving the e-waste Problem (STEP,2007),e-waste and Child health initiative(WHO,2013 and 2017) and the latest United Nations 'Letter of Intent' to end e-waste ,2018 comprehensively forms the legal framework to deal the e-waste challenge globally. It is a well -known principle of sustainable development that it the duty of present generation to meet the needs of the present ,without compromising the ability of future generations to meet there own needs.*

***Key words:*** *E-Waste, Recycle, Children, Health, Legal Framework, Sustainable Development*

## 1. Introduction

Nelson Mandela, The former president of South Africa has rightly said that "There can be no keener revelation of a society's soul than the way in which it treats its children". Newborns,

 

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children and adolescents represent 26% of the world's population and hence they represent the future of our societies. It is the duty of every civilized society to promote the opportunity and conducive environment for the Children so that they can reach their full potential as individuals.Though Children are an intrinsic component of sustainable development yet protecting their health and environment is very crucial. They are in a continuous process of growth and development with "Windows of susceptibility" ranging from fetal development to late adolescence. The health effects of e-waste upon children are due to various chemicals depending upon dose, toxicity, timing and amount of exposure. Such health effects may be cumulative and intergenerational and may include long-term consequences and disabilities. The cathode ray tubes, printed circuit boards, chips, plastics and wires are primarily responsible for the e-waste generation because they consists of hazardous chemicals such as lead, barium, mercury, brominated dioxins, hydrocarbons, chromium, nickel, manganese etc.

## 2. Aim and Objectives

The aim of the study was to evaluate the existing legal framework on e-waste globally and the sources of e-waste generation along with the impact of e-waste exposure on children i.e. the most vulnerable section of our society.

## 3. Reciprocity between Sustainable Development and E-Waste management

'The World Commission on Environment and Development,1987'which is also known as 'Brandt land Commission Report' published with the title "Our Common Future" has defined sustainable development as development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Sustainable development consists of three pillars i.e. economic development, social development and protection of the environment. It is an undisputed fact that protection of the environment is essential for future generations to meet their own needs. Thus it is the primary responsibility of the present generation to make cordial balance between development and environment protection. Proper recycling of e-waste is required in order to safeguard the children and our society at large. Improper disposal of e-waste would greatly harm the environment which in turn would greatly contradict the very concept of sustainable development

## 4. Risk assessment of e-waste on children's health and Child Health Initiative by WHO

The 2013 Geneva Declaration on E-Waste and Children's Health aims to raise awareness of human health risks by exposures to e-waste. According to the declaration there are various health risks of e-waste on children's health such as alterations in thyroid function, defective lung functions ,adverse birth outcomes i.e. preterm birth, low birth weight, stillbirth, and congenital malformations. In e-waste exposed populations height and weight are significantly lower than exposure controlled population. Exposure of children to e-waste also causes mental health outcomes such as behavioral alterations. DNA damage and chromosomal aberrations in lymphocytes along with neurobehavioral disturbances and genotoxicity are also another outcomes of alterations in cellular levels due to e-waste exposure. The World Health Organization has also launched the E-Waste and Child Health Initiatives aiming at

 

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safeguarding and protecting children and their families from detrimental health consequences due to e-waste. Initial support is being provided by United States Environmental Protection agency (US EPA), The United States National Institute of Environmental Health Sciences (NIEHS) and the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety.

## 5. Global Legal Initiatives for E-Waste Management

The transition towards a more digital world and a growing information society and economy offer great opportunities for sustainable development. At the same time, they contribute to the growth of the global consumption of electrical and electronic equipment, and consequently to growing amounts of electronic waste. Humans have evolved for better and in the age of science and technology, man and machines work effectively and accurately. Nowadays, technology has advanced almost to the peak. It gave birth to a never ending debate that advanced technology is the culprit of pollution. Hence due need of the hour, there are several legal and structural initiatives taken by world community to address the emerging challenge of e-waste management. They are:

### 5.1.Basel Convention

"The Basel Convention on the Control of Trans-boundary Movements of Hazardous Wastes and their Disposal" was adopted on 22 March 1989 in Basel, Switzerland to satisfy the public outcry and increased public resistance after discovering the deposits of toxic wastes in Africa and other parts of developing countries imported from abroad in 1980s.The Basel Convention entered into force in 1992 with an aim to combat the "toxic trade" as it was termed. Basel Convention aims the reduction of hazardous waste, generation and the promotion of environmentally sound management of hazardous wastes, wherever the place of disposal. It also aims in restriction of trans-boundary movements of hazardous wastes except where it is perceived to be in accordance with the principles of environmentally sound management and developing a regulatory system applying to cases where trans-boundary movements are permissible.

### 5.2 Rotterdam Convention

Rotterdam Convention was adopted on 10 September 1998 by a Conference of Plenipotentiaries in Rotterdam, the Netherlands. The Convention entered into force on 24 February 2004.The main objective of the Convention is the promotion of shared responsibility and cooperative efforts among Parties in the international trade of certain hazardous chemicals in order to protect human health and the environment from potential harm. The Rotterdam Convention aims in contributing to the environmentally sound use of those hazardous chemicals, by facilitating information exchange about their characteristics, by providing for a national decision-making process on their import and export and by disseminating these decisions to parties. The Convention creates legally binding obligations for the implementation of the Prior Informed Consent (PIC) procedure. It covers pesticides and industrial chemicals that have been banned or severely restricted for health or

 

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environmental reasons. Once a chemical is included in Annex III, a "decision guidance document" (DGD) containing information concerning the chemical and the regulatory decisions to ban or severely restrict the chemical for health or environmental reasons, is circulated to all Parties.

### 5.3.Stockholm Convention

"The Stockholm Convention on Persistent Organic Pollutants" is a global treaty to protect human health and the environment from chemicals that remain intact in the environment for long periods, become widely distributed geographically, accumulate in the fatty tissue of humans and wildlife, and have harmful impacts on human health or on the environment. Exposure to Persistent Organic Pollutants (POPs) can lead to serious health effects including certain cancers, birth defects, dysfunctional immune and reproductive systems, greater susceptibility to disease and damages to the central and peripheral nervous systems especially in children. Given their long range transport, no government acting alone can protect its citizens or its environment from Pops. In response to this global problem, the Stockholm Convention, which was adopted in 2001 and entered into force in 2004, requires its parties to take measures to eliminate or reduce the release of POPs into the environment. The 14th meeting of the Conference of the Parties (COP) to Basel Convention (COP 14) was held along with the 9th meeting of the COP to Rotterdam Convention and the 9th meeting of the COP to Stockholm Convention in Geneva, Switzerland, from 29 April to 10 May 2019. The theme of 2019 meetings was "Clean Planet, Healthy People: Sound Management of Chemicals and Waste".

### 5.4 Electronic waste Initiatives of United Nations Industrial Development Organization (UNIDO)

United Nations Industrial Development Organization with its 170 members as of 1st April 2019, having it's headquarter in Vienna, Austria is a specialized agency of United Nations to promote inclusive globalization and environmental sustainability. The UNIDO's programmatic focus is structured as detailed in the **'Organization's Medium Term Program Framework 2018-2021'** which includes various measures to combat e-waste challenges.

### 5.5Solving the E-Waste problem (STEP)

The Solving the E-waste Problem (STEP) Initiative first emerged in 2004 as an independent, multi-stakeholder platform for designing strategies that address all dimensions of electronics in an increasingly digitized world. STEP applies an integrated, science-rooted approach to create salient solutions to global e-waste challenges along the entire electronics life cycle. In this respect STEP addresses especially UN Sustainable Development Goals 12 with title "Responsible Consumption and Production"**.**

 

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### 5.6Partnership for Action on Computing Equipment (PACE)

In 2006, the eighth meeting of the Conference of the Parties to the Basel Convention on the Control of Trans-boundary Movements of Hazardous Wastes and their Disposal adopted the "Nairobi Declaration on the Environmentally Sound Management of Electrical and Electronic Waste" which called for more structured and enhanced efforts towards achieving global solutions for management of e-waste problems and among others encouraged Parties to develop further partnerships targeting e-waste. The Partnership for Action on Computing Equipment (PACE) was developed as a multi-stakeholder public-private partnership that provides a platform for representatives of personal computer manufacturers, academia ,environmental groups, recyclers, international organizations, associations and governments to tackle environmentally sound refurbishment, repair, recycling, material recovery and disposal of used and end-of-life computing equipment. PACE was launched in 2008 by the ninth meeting of the Conference of the Parties to the Basel Convention. In 2017, the PACE Working Group submitted the final guidance documents on environmentally sound management of used and end-of-life computing equipment.

### 5.7United Nations 'Letter of Intent' to end e-waste,2018

On 21st March, 2018, organizations from the United Nations system, responsible for addressing the global e-waste challenge, signed a Letter of Intent paving the way for coordination and collaboration on United Nations system-wide support for e-waste management. The signatories' organizations included the UN Environment Assembly, the International Telecommunication Union, United Nations University, International Labor Organization, the Basel and Stockholm Convention, the United Nations Institute for Training and Research, and the United Nations Industrial Development Organization. The two major reports on the global e-waste situation and the United Nations efforts to address the e-waste challenge, were released at the end of 2017.The Environment Management Group report on the "United Nations System-wide Response to Tackling E-waste" highlighted the urgent need for strengthened collaboration among United Nations organizations, with over 20 organizations active in tackling e-waste and over 150 e-waste initiatives having been undertaken since 2004. The Global E-waste Monitor, developed by the International Telecommunication Union, United Nations University and International Solid Waste Association has proactively highlighted the increasing generation of e-waste.

## 6. E-Waste Management in India

According to Global E-Waste Monitor 2017,India generates 2 million tons of e- waste annually and ranks fifth among e-waste producing countries, after the US, China, Japan and Germany.About 95 per cent of India's e-waste is recycled in a crude manner. A recent report on e-waste presented by United Nations in World Economic Forum on 24th January,2019 categorically said that waste stream reached to 48.5 million tons in 2018 and the figure is expected to double if nothing changes. The central government has enacted several rules and regulations regarding proper disposal and recycling of E-waste, but their implementation in various states is not up to the standards. In a landmark Judgment of Supreme court of India in

 

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the case of **Research Foundation for Science, Technology and Natural Resource Policy vs. Union of India and Others** it was held that dumping of hazardous waste and E-waste into water bodies had severe adverse implications on marine life, marine quality, water quality and the environment in general.
The Supreme Court looked into the various guidelines enacted by State Governments and also looked at the status of their implementation. The Supreme Court referred to a CAG report which stated that over 75% of the state bodies were noncompliant of these laws. It show that e-waste management has been totally neglected by the State Governments, and runs contrary with the ideals of sustainable development. Recently in previous year i.e. March 2018 the Delhi High Court also expressed its concern over the rising e-waste in the capital city of India and asked the municipal bodies and government whether there was any policy to deal with the menace of e-waste. It shows the sluggish attitude of our institutions to deal with the challenge of e-waste.

### 6.1 E-Waste Management Rules, 2016

The Government of India enacted the E-Waste Management Rules, 2016 in order to tackle the problem of increase in E-waste streams. The legislation lays down provisions for recycling of E-waste materials generated by producers, consumers, dismantlers and recyclers alike. The applicability of these rules is extended to components, consumables, spares and parts of electrical and electronic equipment (EEE) in addition to the equipment as listed under Schedule I. Schedule III of the Rules lays down the targets of recycling such equipment by producers and authorization given to producers to do so as well. The disposal of e-waste that have reached the end of their life are also covered under these rules. The rules were recently amended in 2018 in order to revise the targets for waste collection and recycling. The rules give guidelines to set up collection centers to collect E-waste for the purpose of recycling and also lays down guidelines to makethe collection of e-waste easier.

### 6.2 Hazardous and Other Wastes (Management and Trans-boundary Movement) Rules, 2016 (amended in 2019)

These Rules were enacted to complement the E-Waste Management rules and to deal with disposal of hazardous waste generated as a result of manufacturing of electrical and electronic equipment. These rules also mention their use by middlemen and consumers too. Recently in March 2019, these rules of 2016 has been amended to include prohibition on import of solid plastic waste even in special economic zones(SEZ) and export oriented units (EOUs).Hazardous and Other Wastes (Management and Trans-boundary Movement) amendment Rules, 2019 have now ensured that electrical and electronic assemblies and components manufactured in and exported from India, if found defective can now be imported back into the country ,within a year of export, without obtaining the permission from the Ministry of Environment.

 

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## 7. Conclusion and Recommendation

As this is a man -made problem, the solution of this problem also lies in the hands of the people. On the one hand a strong regulatory legal framework is required especially for children being the most vulnerable section of our society, on the other side there is an urgent need of awareness among the general population especially those who are in directly or indirectly contact or involved in e-waste business or trade. Still a very large amount of population is ignorant about the e-waste despite the overwhelming amount of electronic devises we all use. There should be proper implementation of National level Risk management Program along with proper response to international agreements.The Government must implement standards, actions and programs on e-waste toxicant exposures by improving downstream monitoring of e-waste and by phasing out certain chemicals. The reuse and minimization waste policies must ensure the reduction of toxicity and maximization of repair ability, reuse and durability. Child Protection Authorities must also eradicate child labor within e-waste in order to safeguard them from exposures. The proper surveillance and epidemiological vigilance for acute and chronic related illness is must for the government authorities. Health care providers should observe e-waste processes and e-waste dumping sites regularly. Government must invest in better solutions for recyclability and ease of disassembly keeping in mind the sensitivity especially towards children because they are in a continuous process of growing and hence their intake of air, water and food in proportion to their weight is significantly increased compared to adults. They also possess the higher risk of absorption of hazardous chemicals.

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