E-waste and Health hazard issues in India

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INTRODUCTION

What is E-waste?

In Indian context we have rules for the usage of hazardous substances as per global best practice and to prevent e-waste dumping in the country is a subject of ministry of environment and forest. The E- waste (management) rules, 2016 define E-waste under Rule 3(r) - 'e-waste' means electrical and electronic equipment**,** whole or in part discarded as waste by the consumer or bulk consumer as well as rejects from manufacturing, refurbishment and repair processes

- The newly rules comes with the name of E- waste (management) rules, 2016 and it shall come into force from 1st October 2016 itself. The rule was formed and external manifestation in exercise of the power conferred by section 6, 8 and 25 of the environmental (protection) act, 1986.
- The other rules which were published namely Hazardous and other waste (management and trans-boundary movement) rules, 2016. The rule was formed and external manifestation in exercise of the power conferred by section 6, 8 and 25 of the environmental (protection) act, 1986.

New draft rules on the import and the management of E-waste is currently being considered. Till the rules are notified, the Hazardous Wastes (Management, Handling and Trans-boundary Movement) Rules, 2016 regulate the export import trade or trans-boundary movements of hazardous wastes including e-waste. According to these Rules, import of hazardous wastes for disposal is not permitted. However, import of waste is permitted only for reuse, recycling or reprocessing. Monitoring of units recycling hazardous wastes is the responsibility of the State Pollution Control Board or the Pollution Control Committee in a Union Territory. However, one of the major issues related to E-waste is that there is no standard definition of WEEE/E-waste. A number of countries have come out with their own definitions, interpretation and usage of the term "E-waste/WEEE". The most widely accepted definition and description of WEEE/ E-waste is as per the European Union directive.[2] The countries of the European Union (EU) and other developed countries to an extent have addressed the issue of e-waste by taking policy initiatives and by adopting scientific methods of recycling and disposal of such waste. The EU defines this new waste stream as 'Waste Electrical and Electronic Equipment' (WEEE). As per its directive, the main features of the WEEE include definition of 'EEE', its classification into 10 categories and its extent as per voltage rating of 1000 volts for alternating current and 1500 volts for direct current. The EEE has been further classified into 'components', 'sub-assemblies' and 'consumables'.[3] Since there is no definition of the WEEE in the environmental regulations in India, it is simply called 'e-waste'. E-waste or

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[2] "Mahesh C. Vats, Santosh K. Singh, Status-of-E-waste-in-India--a-Review," accessed March 3, 2017, http://www.rroij.com/open-access/status-of-ewaste-in-india--a-review.pdf.

[3] Amit Jain, 'Global e-waste growth' in Rakesh Johari, *E-waste: Implications, regulations and management in India and current global best practices*, TERI, New Delhi, 2008, p.4

electronic waste, therefore, broadly describes loosely discarded, surplus, obsolete, broken, electrical or electronic devices.[4] The other category as prescribed by EU legislation. *Article 2 – Scope*. The directive applies to electrical and electronic equipment as described in the accompanying Annex IA unless it is contained within a piece of equipment not listed in Annex IB. Military equipment and equipment used by member states as part of their national security systems are also excluded from the directive.

Ten categories of WEEE are covered by Annex IA:

1. Large household appliances
2. Small household appliances
3. IT and telecommunications equipment
4. Consumer equipment
5. Lighting equipment
6. Electrical and electronic tools
7. Toys, leisure and sports equipment
8. Medical devices
9. Monitoring and control instruments
10. Automatic dispensers.[5]

International protection and conventions

There have been numerous conventions and protection was provided by national and international agencies and for the protection of environment there has been convention for our green earth. The Declaration of the United Nations Conference on the Human Environment (Stockholm, 1972).[6] Johannesburg Declaration on Sustainable Development[7] Agenda 21,[8] the

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[4] "Rules on e-waste management by March", *The Hindu*, 20 December 2009.

[5] "E-Waste Laws in India Rajyasabha," accessed March 3, 2017, http://rajyasabha.nic.in/rsnew/publication_electronic/E-Waste_in_india.pdf.

[6] The Stockholm Conference was the first landmark international endeavor aimed at carving a niche for man in harmony with nature. The Declaration of the United Nations Conference on the Human Environment laid down twenty-six "principles" which cover a broad spectrum of ecological rights and duties of man and states. *See* Conference on the Human Environment, *Declaration of the United Nations*, U.N. Doc. A/CONF.48/14/Rev. **I** (Jun. 5-16, 1972). An Action Plan was also adopted, which may be divided into three parts:
(a) Earth Watch Programme;
(b) Environment Management;
(c) Supporting Measures such as education, training, public information and finance.
See Action Plan, *available at* http://www.unep.org/Documents.Multilingual/Default.asp?
Document ld. =97&ArticlelD=1512&l=en (last visited March 1, 2017).

[7] In 2002, at Johannesburg, the world community reaffirmed its commitment for sustainable development, for "building a humane, equitable and caring global society, cognizant of the need for human dignity for all." The members undertook "a collective responsibility to advance and strengthen the interdependent and mutually reinforcing pillars of sustainable development - economic development, social development and environmental protection - at the local, national, regional and global levels." *See* World Summit on Sustainable Development, *Johannesburg Declaration on Sustainable Development*, art. 5, U.N. Doc. A/CONF. 199/20 (Sept. 4, 2002).

[8] Agenda 21 embodies a very comprehensive action plan to mitigate economic inequity and ecological destruction. Unfortunately, the document is not legally binding and has mere persuasive value. It embraces within its scope several aspects of sustainable development like poverty, consumption patterns, health, human settlements, financial resources, technological transfer, energy, climate, etc. *See* Agenda 21, *available at* http://www.un.org/esa/sustdev/documents/agenda21/English/agenda2Itoc.htm (last visited March 2, 2017).

Cairo Guidelines and Principles for the Environmentally Sound Management of Hazardous Wastes,[9] Recommendations of the United Nations Committee of Exports on the Transport of Dangerous Goods,[10] and Lom IV Convention, [11] Basal conventions.[12] BAMAKO convention.[13] REACH, which stands for Registration, Evaluation, Authorization, and Restriction of Chemical Industries is a European community regulation of the safe use of chemicals which took effect in 2007. The Basel Convention on the Control of Trans boundary Movement of Hazardous Wastes and Their Disposal (the Basel Convention) so was adopted in 1989 and entered into force in 1992 its goal was to prevent the export of hazardous material from developed nations to developing nations.[14] Although the Basel Convention protects developing nations from receiving hazardous materials such as electronic waste from developed nations, the United States is the single developed nation that has refused to ratify it. Even then, many environmental groups and undeveloped nations believed that the terms of the Basel Convention were too weak, and in 1995

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[9] The Cairo Guidelines and Principles for Environmentally Sound Management of Hazardous Waste adumbrate a scheme for 'environmentally sound transport, handling (including storage) and disposal of toxic and dangerous wastes'. *See* Cairo Guidelines and Principles for the Environmentally Sound Management and Disposal of Hazardous Wastes, Annex II, U.N. Doc. U.N.E.P./GC.14/17 (1987), *reprinted in* Final Report of the Working Group, Annex III, U.N. Doc. U.N.E.P./WG.122/3, (1985). However, being guidelines, they are merely recommendatory in character. *See* PHILLIPE SANDS, PRINCIPLES OF INTERNATIONAL ENVIRONMENTAL LAW, CAMBRIDGE UNIVERSITY PRESS, 676-77 (2003).

[10] The Recommendations of the United Nations Committee of Experts on the Transport of dangerous goods primarily focus on prevention of environmental hazards caused by accidents. The Model Regulations classify the goods on the basis of the risk involved and accordingly prescribe the appropriate mode of transport for each class. As far as the issue of waste is considered, it merely prescribes the proper mode of its transport in accordance with the norms laid down for the class in which they fall. The recommendations are not binding; they serve as a 'model' that the states are expected to follow. Secondly, their scope is also very limited, and they exempt from their scope bulk transport of dangerous goods in sea-going or inland navigation bulk carriers or tank-vessels, subject to special international or national regulations. *See* Recommendations on Transport of Dangerous Goods: Model Regulations, Vol. **15**

[11] The State parties are obliged to endeavor to control international movement of hazardous waste and radioactive waste by prohibiting all direct or indirect export and import of such waste in the area governed by it. *See* Fourth ACP-EEC Convention of Lom6, art. 39 (Dec 15, 1989), *unofficial translation at* http://www.acpsec.org/en/conventions/lome4bis-e.htm. The Convention does not define the term 'hazardous substances'; on the contrary, it simply refers to the products listed in Annexures **I** and 2 to the Basel Convention. 'Radioactive waste' has also not been defined and purports to adopt the applicable definitions and thresholds lay down in the framework of the IAEA.

[12] Basel Convention on the Control of Trans-boundary Movements of Hazardous Wastes and their Disposal (1992), http://www.basel.int/text/con-e-rev.pdf [hereafter Basel Convention].

[13] Bamako Convention on the Ban of the Import Into Africa and the Control of Trans boundary Movement and Management of Hazardous Wastes Within Africa (Jan. 30, 1991), http://www.ban.org/Library/bamakotreaty.html [hereafter Bamako Convention].

[14] The Basel Convention on the Control of Trans boundary Movements of Hazardous Wastes and Their Disposal, Mar. 22, 1989, U.N. Doc. UNEP/WG.190/4, 28 I.L.M. 649 *available at* http://basel.int/text/documents.html. The Basel Convention was an outgrowth of the United Nations Environment Programme that established an "international legal regime governing the export and import of hazardous wastes for disposal." U.S. Gov'T ACCOUNTABILITY OFFICE,

protests led to an amendment to the Basel Convention known as the Basel Ban Amendment (the Basel Ban)[15]

Composition of E-waste and Health Hazard

E-waste consists of all waste from electronic and electrical appliances which have reached their end- of- life period or are no longer fit for their original intended use and are destined for recovery, recycling or disposal. It includes computer and its accessories monitors, printers, keyboards, central processing units; typewriters, mobile phones and chargers, remotes, compact discs, headphones, batteries, LCD/Plasma TVs, air conditioners, refrigerators and other household appliances. The composition of e-waste is diverse and Falls under 'hazardous' (which includes Americium, lead, mercury, cadmium, Hexavalent chromium, Brominated Flame Retardants (BFRs), Perfluorooctanoic acid (PFOA), Beryllium oxide Beryllium oxide[16] and 'non-hazardous' categories. Broadly, it consists of ferrous and non-ferrous metals, plastics, glass, wood and plywood, printed circuit boards, concrete, ceramics, rubber and other items. Iron and steel constitute about 50% of the waste, followed by plastics (21%), non-ferrous metals (13%) and other constituents. Non-ferrous metals consist of metals like copper, aluminum and precious metals like silver, gold, platinum, palladium and so on. The presence of elements like lead, mercury, arsenic, cadmium, selenium, hexavalent chromium, and flame retardants beyond threshold quantities make e-waste hazardous in nature. It contains over 1000 different substances, many of which are toxic, and creates serious pollution upon disposal.[17]Obsolete computers pose the most significant environmental and health hazard among the e-wastes. Electronic and electrical products make life comfortable, but are a Pandora's Box once discarded. E-waste contains a brew of toxic substances, such as lead (responsible for causing damage to the central and peripheral nervous system, circulatory system, kidney, reproductive system, and endocrine system, as well as slowing brain development in children),[18] cadmium (widely believed to cause irreversible effects on human health upon accumulation in the human body, particularly the kidneys),[19] mercury (responsible for causing damage to various organs including the brain and kidneys, as well as to fetuses),[20] chromium-VI[21] plastics' (including PVC),[22]"

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[15] Many felt that the Basel Convention only served to legitimize hazardous waste trade rather than prohibit it. The passing of the Basel Ban was a victory against very powerful opposition from such countries as the United States, Australia, Germany, Canada, Japan, and the United Kingdom. *What is the Basel Ban?*, BASEL ACTION NETWORK, http://ban.org/about Basel ban/what is Basel ban.html

[16] *See* Jennifer Kutz, *You've Got Waste, The Exponentially Increasing Problem of Hazardous E-waste*

[17] The Basel Action Network (BAN) and Silicon Valley Toxics Coalition (SVTC), Exporting *Harm: The High-Tech Thrashing of Asia*, February 25, 2002.

[18] *See* Technology Transfer Network Air Toxics Web Site, *Lead Compounds*, U.S. ENVTL.PROTECTION AGENCY (2000), http://www.epa.gov/ttn/uatw/hlthef/lead.html (last visited Sep. 15 2016).

[19] *See* OCCUPATIONAL SAFETY & HEALTH ADMIN., U.S. DEP'T OF LABOR, CADMIUM HEALTH EFFECTS (2005), http://www.osha.gov/SLTC/cadmiun/recognition.html (last visited Sep. 15, 2016).

[20] *See* OFFICE OF RESEARCH FACILITIES, NATIONAL INSTITUTES OF HEALTH, MERCURYHEALTH HAZARDS (2006), http://orf.od.nih.gov/Environmental+Protection/Mercury+Free/ MercuryHealthHazards.htm (last visited Sep. 15, 2016)

[21] causing toxic effects in the cells and damage to DNA

[22] The dioxin forming property of PVC qualifies it as a highly toxic substance, capable of causing cancer, reproductive, developmental (birth defects and genetic changes) and immunity problems. Secondly, the large toxic

Brominated Flame Retardants (BFRs)[23],' and beryllium (which can cause lung cancer and beryllicosis).[24]

Towards new legislation: The E- waste (management) rules, 2016

Considering the rapid growth of generation of e-waste, the MoEF (ministry of environment and forestry) has proposed to notify separate Rules on e-waste under the Environment (Protection) Act, 1986. The salient features of the proposed Rules in brief, provided by the MoEF, are as given below

- The concept of Extended Producer Responsibility (EPR) has been enshrined in the proposed Rules.[25]
- The rules propose to extend producers' responsibility to the post-consumer stage of the product life cycle and fix their responsibility for collection of end of life products and to ensure that such wastes are channelized for safe handling. In addition, Producers are required to finance, and organize a system to meet the costs involved in the environmentally sound Management of e-waste generated from the 'end of life' of their products and the historical waste available on the date from which these rules come into force.
- Producers, as necessary, can designate agencies to set up an effective take back system for all electrical and electronic equipment at the end of their life.
- The threshold limits prescribed in EU RoHS Directive, which is globally accepted standard for the hazardous substance used in manufacture of electrical and electronics components have been adopted.
- Rules also provide for granting authorization and registration by the State Pollution Control Board or the Pollution Control Committee concerned, to a person's/agency engaged in collection or dismantling or recycling of e-waste; provided that the applicant possesses appropriate facilities to handle e-waste safely. This is to ensure management of e-waste in an environmentally sound manner.
- Collection Centers, which are being run by individuals/ jointly or by agencies will be required to take authorization from respective State Pollution Control Boards/Committees

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additives (used for making PVC plastic stable and usable) released during the use and disposal of PVC products enhance human exposures to phthalates, lead, cadmium, tin and other toxic chemicals. *See* Michael Belliveau & Stephen Lester, Ctr. for Health, Env't, & Just. And Envtl. Health Strategy Ctr., PVC: BAD NEWS COMES IN 3'S - THE POISON PLASTIC, HEALTH HAZARDS AND THE LOOMING WASTE CRISIS (2004), *available* at http://www.watoxics.org/files/pvc-bad-news.pdf.

[23] BFRs are believed to cause cancer of the digestive and lymph systems. BFR exposure in early life has been found to affect the neural system. *See* Iowa Dep't of Nat. Res., Environmental and Health Hazards of Electronic Waste, http:/lwww.iowadnr.com/waste/ recycling/hazards.html#flame (last visited Sep.13 2016).

[24] AGENCY FOR TOXIC SUBSTANCES & DISEASE REGISTRY, U.S. DEP'T OF HEALTH & HUM. SERVS., TOXFAQs FOR BERYLLIUM (2002), *available at* http://www.atsdr.cdc.gov/ tfacts4.pdf (last visited March,2 2017).

[25] "E-Waste (Management and Handling) Rules, 2011," accessed March 3 2017, http://www.moef.nic.in/downloads/rules-and-regulations/1035e_eng.pdf.

and file annual return thereafter providing details of e-waste collected. Dismantlers and recyclers will have to obtain authorization and registration from the concerned State Pollution Control Board and file annual return regarding e-waste handled by them[26]

Conclusion

Current sociologist and criminologist recognize this human-caused environmental damage is seen as one of the major contributors to contemporary 'risk society'. In which the industrialization, urbanization pollution and other man made hazard made this contemporary society worth calling a risk society. This problem of illegal transports (in form of second hand goods) of e-waste illustrated that the line between legal and illegal activities and actors is often thin. As with other environmental issues, it is not always easy to determine what is right and wrong because these definitions change, along with the perspectives taken in different times and places. It is nevertheless important to continue discussing environmental issues within the field of criminology precisely because of this thin line between environmental crimes and harmful effects that are not (yet) criminalized. The green criminology included itself this problem in the form of green crime as a precaution and it's the time to name this environmental harm and imposes penalty upon those who are doing this trade without any government rules. India though a signatory of basal convention and proposed recent legislation namely E- waste (management) rules, 2106 and Hazardous and other waste (management and trans boundary movement) rules, 2016. These documents content some of the global slandered rules and regulation with respect to E-waste disposal and management. It include The rules propose to extend producers' responsibility to the post-consumer stage of the product life cycle and fix their responsibility for collection of end of life products and to ensure that such wastes are channelized for safe handling The e-waste industry which is growing day by day has neglected victimization perspective in true sense. The disposal and recycling process contain multiple stages and at each stage the workers suffers the hazardous consequences. While the industries are growing with the rate of 10% every year it's my opinion that the safety issues and working condition has been deteriorating. The consequences of e-waste transports also affect humans. However, the harmful effects are not always immediately noticeable, which brings the risk of this type of environmental crime being considered simply a 'victimless' crime. It is my assertion that to call them just a victimless crime will be injustice to them as they are the victim of poverty itself. The author here proposes some question with respect to environmental crime and victimization processes, whether these workers are in true sense a victim of green crime? Whether this green crime can be termed as a real crime or victimless crime? What could be the possible suggestion to improve working condition of e-waste industries? Whether the newly made rules are sufficient to tackle the preset condition of workers?

[26] "E-WASTE IN INDIA RESEARCH UNIT (LARRDIS) RAJYA SABHA SECRETARIAT NEW DELHI." http://rajyasabha.nic.in/rsnew/publication_electronic/E-Waste_in_india.pdf