

Chapter 1

INTRODUCTION

1.1 GENERAL

E-waste or electronic waste is created when an electronic product is discarded after the end of its useful life. The rapid expansion of technology means that a very large amount of e-waste is created every minute.

1.2 WHAT IS E-WASTE

Electronic waste or e-waste may be defined as discarded computers, office electronic equipment, entertainment device electronics, mobile phones, television sets, and refrigerators. This includes used electronics which are destined for reuse, resale, salvage, recycling, or disposal as well as re-usables (working and repairable electronics) and secondary scraps (copper, steel, plastic, etc.). The term "waste" is reserved for residue or material which is dumped by the buyer rather than recycled, including residue from reuse and recycling operations, because loads of surplus electronics are frequently commingled (good, recyclable, and non-recyclable). Several public policy advocates apply the term "e-waste" broadly to all surplus electronics. Cathode ray tubess (CRTs) are considered one of the hardest types to recycle. CRTs have relatively high concentration of lead and phosphorss (not to be confused with phosphorus), both of which are necessary for the display. The United States Environmental Protection Agencyy (EPA) includes

discarded CRT monitors in its category of "hazardous household waste" but considers CRTs that have been set aside for testing to be commodities if they are not discarded, speculatively accumulated, or left unprotected from weather and other damage, The EU and its member states operate a system via the European Waste Catalogue (EWC) - a European Council Directive, which is interpreted into "member state law".

1.3 TYPES OF E-WASTE

1. Large household appliances (refrigerators/freezers, washing machines, dishwashers)
2. Small household appliances (toasters, coffee makers, irons, hairdryers)
3. Information technology (IT) and telecommunications equipment (personal computers, telephones, mobile phones, laptops, printers, scanners, photocopiers)
4. Consumer equipment (televisions, stereo equipment, electric toothbrushes)
5. Lighting equipment (fluorescent lamps)
6. Electrical and electronic tools (handheld drills, saws, screwdrivers)
7. Toys, leisure and sports equipment
8. Medical equipment systems (with the exception of all implanted and infected products)
9. Monitoring and control instruments
10. Automatic dispensers.

CHAPTER 2

QUANTIFICATION OF ELECTRONIC WASTE WORLDWIDE

2.1 GENERAL

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

2.2 e-WASTE IN VARIOUS COUNTRIES

Display units (CRT, LCD, LED monitors), processors (CPU, GPU, or APU chips), memory (DRAM or SRAM), and audio components have different useful lives. Processors are most frequently out-dated (by software no longer being optimized) and are more likely to become "e-waste" while display units are most often replaced while working without repair attempts, due to changes in wealthy nation appetites for new display technology. This problem could potentially be solved with smartphones or Phonebloks. These types of phones are more durable and have the technology to change certain parts of the phone making them more environmentally friendly. Being able to simply replace the part of the phone that is broken will reduce e-waste. An estimated 50 million tons of E-waste are produced each year. The USA discards 30 million computers each year and 100 million phones are disposed of in Europe each year. The Environmental Protection

Agency estimates that only 15–20% of e-waste is recycled, the rest of these electronics go directly into landfills and incinerators.

In 2006, the United Nations estimated the amount of worldwide electronic waste discarded each year to be 50 million metric tons. According to a report by UNEP titled, "Recycling – from E-Waste to Resources," the amount of e-waste being produced – including mobile phones and computers – could rise by as much as 500 percent over the next decade in some countries, such as India. The United States is the world leader in producing electronic waste, tossing away about 3 million tons each year. China already produces about 2.3 million tons (2010 estimate) domestically, second only to the United States. And, despite having banned e-waste imports, China remains a major e-waste dumping ground for developed countries.

Society today revolves around technology and by the constant need for the newest and most high-tech products we are contributing to mass amount of e-waste. Since the invention of the iPhone, cell phones have become the top source of e-waste products because they are not made to last more than two years. Electrical waste contains hazardous but also valuable and scarce materials. Up to 60 elements can be found in complex electronics. As of 2013, Apple has sold over 796 million iDevices (iPod, iPhone, iPad). Cell phone companies make cell phones that are not made to last so that the consumer will purchase new phones. Companies give these products such short life spans because they know that the consumer will want a new product and will buy it if they make it. In the United States, an estimated 70% of heavy metals in landfills comes from discarded electronics.

While there is agreement that the number of discarded electronic devices is increasing, there is considerable disagreement about the relative risk (compared to automobile scrap, for example), and strong disagreement whether curtailing trade in used electronics will improve conditions, or make them worse. According to an article in *Motherboard*, attempts to restrict the trade have driven reputable companies out of the supply chain, with unintended consequences.

CHAPTER 3

E-WASTE MANAGEMENT RULES

3.1 GENERAL

This chapter deals about the rules and management of the various department involved in the treatment of the E-waste prescribed by Government of India, Ministry of Environment, Forest and Climate change in 23rd March ,2016

3.2 RULES AND DEFINITIONS

(1) In these rules, unless the context otherwise requires, -

- (a) 'Act' means the Environment (Protection) Act, 1986 (29 of 1986);
- (b) 'Authorisation' means permission for generation, handling, collection, reception, storage, transportation, refurbishing, dismantling, recycling, treatment and disposal of e-waste, granted to manufacturer, dismantler, refurbisher and recycler;
- (c) 'Bulk consumer' means bulk users of electrical and electronic equipment such as Central Government or State Government Departments, public sector undertakings, banks, educational institutions, multinational organisations, international agencies, partnership and public or private companies that are registered under the Factories Act, 1948 (63 of 1948) and the Companies Act, 2013 (18 of 2013) and health care facilities which have turnover of more than one crore or have more than twenty employees;

- (d) 'Central Pollution Control Board' means the Central Pollution Control Board constituted under sub-section (1) of section 3 of the Water (Prevention and Control of Pollution) Act, 1974 (6 of 1974);
- (e) 'Collection centre' means a centre or a collection point or both established by producer individually or as association jointly to collect e-waste for channelising the e-waste to recycler and play such role as indicated in the authorisation for Extended Producer Responsibility granted to the producer and having facilities as per the guidelines of Central Pollution Control Board, including the collection centre established by the dismantler or refurbisher or recycler which should be a part of their authorisation issued by the State Pollution Control Board where the facility exists;
- (f) 'Component' means one of the parts of a sub-assembly or assembly of which a manufactured product is made up and into which it may be resolved and includes an accessory or attachment to another component;
- (g) 'Consumables' means an item, which participates in or is required for a manufacturing process or for functioning of the electrical and electronic equipment and may or may not form part of end-product. Items, which are substantially or totally consumed during a manufacturing process, shall be deemed to be consumables;
- (h) 'Consumer' means any person using electrical and electronic equipment excluding the bulk consumers;
- (i) 'Channelisation' means to direct the path for movement of e-wastes from collection onwards to authorised dismantler or recycler. In case

of fluorescent and other mercury containing lamps, where recyclers are not available, this means path for movement from collection centre to Treatment, Storage and Disposal Facility;

- (j) 'Dealer' means any individual or firm that buys or receives electrical and electronic equipment as listed in Schedule I of these rules and their components or consumables or parts or spares from producers for sale;
- (k) 'Deposit refund scheme' means a scheme whereby the producer charges an additional amount as a deposit at the time of sale of the electrical and electronic equipment and returns it to the consumer along with interest when the end-of-life electrical and electronic equipment is returned;
- (l) 'Dismantler' means any person or organisation engaged in dismantling of used electrical and electronic equipment into their components and having facilities as per the guidelines of Central Pollution Control Board and having authorisation from concerned State Pollution Control Board;
- (m) 'Disposal' means any operation which does not lead to recycling, recovery or reuse and includes physico-chemical or biological treatment, incineration and deposition in secured landfill;
- (n) 'And-of-life' of the product means the time when the product is intended to be discarded by the user;
- (o) 'Environmentally sound management of e-waste' means taking all steps required to ensure that e-waste is managed in a manner which

shall protect health and environment against any adverse effects, which may result from such e-waste;

- (p) 'Electrical and electronic equipment' means equipment which are dependent on electric current or electro-magnetic field in order to become functional;
- (q) 'e-retailer' means an individual or company or business entity that uses an electronic network such as internet, telephone, to sell its goods;
- (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;
- (s) 'e-waste exchange' means an independent market instrument offering assistance or independent electronic systems offering services for sale and purchase of e-waste generated from end-of-life electrical and electronic equipment between agencies or organisations authorised under these rules;
- (t) 'Extended Producer Responsibility' means responsibility of any producer of electrical or electronic equipment, for channelisation of e-waste to ensure environmentally sound management of such waste. Extended Producer Responsibility may comprise of implementing take back system or setting up of collection centres or both and having agreed arrangements with authorized dismantler or recycler either individually or collectively through a Producer Responsibility Organisation recognised by producer or producers in their Extended Producer Responsibility - Authorisation;

- (u) 'Extended Producer Responsibility - Authorisation' means a permission given by Central Pollution Control Board to a producer, for managing Extended Producer Responsibility with implementation plans and targets outlined in such authorisation including detail of Producer Responsibility Organisation and e-waste exchange, if applicable;
- (v) 'Extended Producer Responsibility Plan' means a plan submitted by a producer to Central Pollution Control Board, at the time of applying for Extended Producer Responsibility - Authorisation in which a producer shall provide details of e-waste channelisation system for targeted collection including detail of Producer Responsibility Organisation and e-waste exchange, if applicable;
- (w) 'Facility' means any location wherein the process incidental to the collection, reception, storage, segregation, refurbishing, dismantling, recycling, treatment and disposal of e-waste are carried out;
- (x) 'Form' means a form appended to these rules;
- (y) 'Historical e-waste' means e-waste generated from electrical and electronic equipment as specified in Schedule I, which was available on the date from which these rules come into force;
- (z) 'Manufacturer' means a person or an entity or a company as defined in the Companies Act, 2013 (18 of 2013) or a factory as defined in the Factories Act, 1948 (63 of 1948) or Small and Medium Enterprises as defined in Micro, Small and Medium Enterprises Development Act, 2006 (27 of 2006), which has facilities for manufacture of electrical and electronic equipment;

(aa) 'Orphaned products' means non-branded or assembled electrical and electronic equipment as specified in Schedule I or those produced by a company, which has closed its operations;

(bb) 'Part' means an element of a sub-assembly or assembly not normally useful by itself, and not amenable to further disassembly for maintenance purposes. A part may be a component, spare or an accessory;

(cc) 'Producer' means any person who, irrespective of the selling technique used such as dealer, retailer, e-retailer, etc.;

(i) Manufactures and offers to sell electrical and electronic equipment and their components or consumables or parts or spares under its own brand; or

(ii) Offers to sell under its own brand, assembled electrical and electronic equipment and their components or consumables or parts or spares produced by other manufacturers or suppliers; or

(iii) Offers to sell imported electrical and electronic equipment and their components or consumables or parts or spares;

(dd) 'Producer Responsibility Organisation' means a professional organization authorised or financed collectively or individually by producers, which can take the responsibility for collection and channelisation of e-waste generated from the 'end-of-life' of their products to ensure environmentally sound management of such e-waste;

(ee) 'Recycler' - means any person who is engaged in recycling and reprocessing of waste electrical and electronic equipment or assemblies or their components and having facilities as elaborated in the guidelines of Central Pollution Control Board;

(ff) 'Refurbishment' means repairing of used electrical and electronic equipment as listed in Schedule I for extending its working life for its originally intended use and selling the same in the market or returning to owner;

(gg) 'Refurbisher' for the purpose of these rules, means any company or undertaking registered under the Factories Act, 1948 or the Companies Act, 1956 or both or district industries centre engaged in refurbishment of used electrical and electronic equipment;

(hh) 'Schedule' means the Schedule appended to these rules;

(ii) "spares" means a part or a sub-assembly or assembly for substitution which is ready to replace an identical or similar part or sub-assembly or assembly including a component or an accessory;

(jj) 'State Government in relation to an Union territory means, the Administrator thereof appointed under article 239 of the Constitution;

(kk) 'State Pollution Control Board' means the concerned State Pollution Control Board or the Pollution Control Committee of the Union Territories constituted under sub-section (1) of section 4 of the Water (Prevention and Control of Pollution) Act, 1974 (6 of 1974);

(ll) 'Target' means the quantity of e-waste to be collected by the producer in fulfilment of Extended Producer Responsibility;

(mm) 'Transporter' means a person or company or entity engaged in the off-site transportation of e-waste by air, rail, road or water carrying a manifest system issued by the person or company or entity who has handed over the e-waste to the transporter, giving the origin, destination and quantity of the e-waste being transported.

CHAPTER 4

RESPONSIBILITIES

4.1 RESPONSIBILITIES OF THE MANUFACTURER:

- (1) collect e-waste generated during the manufacture of any electrical and electronic equipment and channelise it for recycling or disposal
- (2) apply for an authorisation in Form 1 (a) in accordance with the procedure
 - (a) prescribed under sub-rule (2) of rule 13 from the concerned State Pollution Control Board, which shall give the authorisation in accordance with Form 1 (bb);
- (3) ensure that no damage is caused to the environment during storage and transportation of e-waste;
- (4) maintain records of the e-waste generated, handled and disposed in Form-2 and make such records available for scrutiny by the concerned State Pollution Control Board;
- (5) file annual returns in Form-3, to the concerned State Pollution Control Board on or before the 30th day of June following the financial year to which that return relates.

4.2. RESPONSIBILITIES OF THE PRODUCER:

The producer of electrical and electronic equipment listed in Schedule I shall be responsible for ,

(1) implementing the Extended Producers Responsibility with the following frameworks, namely:-

- (a) collection and channelisation of e-waste generated from the ‘end-of-life’ of their products or ‘end-of-life’ products with same electrical and electronic equipment code and historical waste available on the date from which these rules come into force as per Schedule I in line with the targets prescribed in Schedule III in Extended Producer Responsibility - Authorisation;
- (b) the mechanism used for channelisation of e-waste from ‘end-of-life’ products including those from their service centres to authorised dismantler or recycler shall be in accordance with the Extended Producer Responsibility - Authorisation. In cases of fluorescent and other mercury containing lamps, where recyclers are not available, channelisation may be from collection centre to Treatment, Storage and Disposal Facility;
- (c) for disposal in Treatment, Storage and Disposal Facility, a pre-treatment is necessary to immobilise the mercury and reduce the volume of waste to be disposed off;

- (d) Extended Producer Responsibility - Authorisation should comprise of general scheme for collection of waste Electrical and Electronic Equipment from the Electrical and Electronic Equipment placed on the market earlier, such as through dealer, collection centres, Producer Responsibility Organization, through buy-back arrangement, exchange scheme, Deposit Refund System, etc. whether directly or through any authorised agency and channelising the items so collected to authorised recyclers;
- (e) providing contact details such as address, e-mail address, toll-free telephone numbers or helpline numbers to consumer(s) or bulk consumer(s) through their website and product user documentation so as to facilitate return of end-of-life electrical and electronic equipment;
- (f) creating awareness through media, publications, advertisements, posters, or by any other means of communication and product user documentation accompanying the equipment.
- (i) information on address, e-mail address, toll-free telephone numbers or helpline numbers and web site;
 - (ii) information on hazardous constituents as specified in sub-rule 1 of rule 16 in electrical and electronic equipment;
 - (iii) information on hazards of improper handling, disposal, accidental breakage, damage or improper recycling of e-waste;
 - (iv) instructions for handling and disposal of the equipment after its use, along with the Do's and Don'ts;

- (v) affixing a visible, legible and indelible symbol given below on the products or product user documentation to prevent e-waste from being dropped in garbage bins containing waste destined for disposal;
- (vi) means and mechanism available for their consumers to return e-waste for recycling including the details of Deposit Refund Scheme, if applicable;

(g) the producer shall opt to implement Extended Producer Responsibility individually or collectively. In individual producer responsibility, producer may set up his own collection centre or implement take back system or both to meet Extended Producer Responsibility. In collective system, producers may tie-up as a member with a Producer Responsibility Organisation or with e-waste exchange or both. It shall be mandatory upon the individual producer in every case to seek Extended Producer Responsibility - Authorisation from Central Pollution Control Board in accordance with the Form-1 and the procedure laid down in sub-rule (1) of rule 13;

- (1) to provide information on the implementation of Deposit Refund Scheme to ensure collection of end-of-life products and their channelisation to authorised dismantlers or recyclers, if such scheme is included in the Extended Producer Responsibility Plan. Provided that the producer shall refund the deposit amount that has been taken from the consumer or bulk consumer at the time of sale, along with interest at the prevalent rate for the period of the deposit at the time of take back of the end-of life product;

- (2) the import of electrical and electronic equipment shall be allowed only to producers having Extended Producer Responsibility authorisation;
- (3) maintaining records in Form-2 of the e-waste handled and make such records available for scrutiny by the Central Pollution Control Board or the concerned State Pollution Control Board;
- (4) filing annual returns in Form-3, to the Central Pollution Control Board on or before the 30th day of June following the financial year to which that return relates. In case of the Producer with multiple offices in a State, one annual return combining information from all the offices shall be filed;
- (5) the Producer shall apply to the Central Pollution Control Board for authorisation in Form 1, which shall thereafter grant the Extended Producer Responsibility -Authorisation in Form 1(aa).
- (6) Operation without Extended Producer Responsibility-Authorisation by any producer, as defined in this rule, shall be considered as causing damage to the environment.

4.3 RESPONSIBILITIES OF COLLECTION CENTRES.

- (1) Collect e-waste on behalf of producer or dismantler or recycler or refurbisher including those arising from orphaned products; Provided the collection centres established by producer can also collect e-waste on behalf of dismantler, refurbisher and recycler including those arising from orphaned products

- (2) Ensure that the facilities are in accordance with the standards or guidelines issued by Central Pollution Control Board from time to time;
- (3) Ensure that the e-waste collected by them is stored in a secured manner till it is sent to authorised dismantler or recycler as the case may be;
- (4) Ensure that no damage is caused to the environment during storage and transportation of e-waste; maintain records in Form-2 of the e-waste handled as per the guidelines of Central Pollution Control Board and make such records available for scrutiny by the Central Pollution Control Board or the concerned State Pollution Control Board as and when asked for.

4.4 RESPONSIBILITIES OF DEALERS.

- (1) in the case the dealer has been given the responsibility of collection on behalf of the producer, the dealer shall collect the e-waste by providing the consumer a box, bin or a demarcated area to deposit e-waste, or through take back system and send the e-waste so collected to collection centre or dismantler or recycler as designated by producer;
- (2) the dealer or retailer or e-retailer shall refund the amount as per take back system or Deposit Refund Scheme of the producer to the depositor of e-waste;
- (3) every dealer shall ensure that the e-waste thus generated is safely transported to authorised dismantlers or recyclers;
- (4) ensure that no damage is caused to the environment during storage and transportation of e-waste.

4.5 RESPONSIBILITIES OF THE REFURBISHER

- (1) collect e-waste generated during the process of refurbishing and channelise the waste to authorised dismantler or recycler through its collection centre;
- (2) make an application in Form 1(a) in accordance with the procedure laid down in sub-rule (4) of rule 13 to the concerned State Pollution Control Board for grant of one time authorization, the concerned State Pollution Control Board shall authorise the Refurbisher on one time basis as per Form 1 (bb) and authorisation would be deemed as considered if not objected to within a period of thirty days; the authorized. Refurbisher shall be required to submit details of e-waste generated to the concerned State Pollution Control Board on yearly basis;
- (3) ensure that no damage is caused to the environment during storage and transportation of e-waste;
- (4) ensure that the refurbishing process do not have any adverse effect on the health and the environment;
- (5) ensure that the e-waste thus generated is safely transported to authorized collection centres or dismantlers or recyclers;
- (6) file annual returns in Form-3 to the concerned State Pollution Control Board, on or before the 30th day of June following the financial year to which that return relates;
- (7) maintain records of the e-waste handled in Form-2 and such records should be available for scrutiny by the appropriate authority.

4.6 RESPONSIBILITIES OF CONSUMER OR BULK CONSUMER

- (1) consumers or bulkconsumers of electrical and electronic equipment listed in Schedule I shall ensure that e-waste generated by them is channelised through collection centre or dealer of authorised producer or dismantler or recycler or through the designated takeback service provider of the producer to authorised dismantler or recycler;
- (2) bulk consumers of electrical and electronic equipment listed in Schedule I shall maintain records of e-waste generated by them in Form-2 and make such records available for scrutiny by the concerned State Pollution Control Board;
- (3) consumers or bulk consumers of electrical and electronic equipment listed in Schedule I shall ensure that such end-of-life electrical and electronic equipment are not admixed with e-waste containing radioactive material as covered under the provisions of the Atomic Energy Act, 1962 (33 of 1962) and rules made there under;
- (4) bulk consumers of electrical and electronic equipment listed in Schedule I shall file annual returns in Form-3, to the concerned State Pollution Control Board on or before the 30th day of June following the financial year to which that return relates. In case of the bulk consumer with multiple offices in a State, one annual return combining information from all the offices shall be filed to the concerned State Pollution Control Board on or before the 30th day of June following the financial year to which that return relates

4.7 RESPONSIBILITIES OF THE DISMANTLER

- (1) ensure that the facility and dismantling processes are in accordance with the standards or guidelines prescribed by Central Pollution Control Board from time to time;
- (2) obtain authorisation from the concerned State Pollution Control Board in accordance with the procedure under sub-rule (3) of rule 13;
- (3) ensure that no damage is caused to the environment during storage and transportation of e-waste;
- (4) ensure that the dismantling processes do not have any adverse effect on the health and the environment;
- (5) ensure that dismantled e-waste are segregated and sent to the authorised recycling facilities for recovery of materials;
- (6) ensure that non-recyclable or non-recoverable components are sent to authorised treatment storage and disposal facilities;
- (7) maintain record of e-waste collected, dismantled and sent to authorised recycler in Form-2 and make such record available for scrutiny by the Central Pollution Control Board or the concerned State Pollution Control Board;
- (8) file a return in Form-3, to the concerned State Pollution Control Board as the case may be, on or before 30th day of June following the financial year to which that return relates; not process any e-waste for recovery or refining of materials, unless he is authorised with concerned State Pollution Control Board as a recycler for refining and recovery of materials;

- (9) operation without Authorisation by any dismantler, as defined in this rule, shall be considered as causing damage to the environment.

4.8 RESPONSIBILITIES OF THE RECYCLER

- (1) shall ensure that the facility and recycling processes are in accordance with the standards or guidelines prescribed by the Central Pollution Control Board from time to time;
- (2) obtain authorisation from concerned State Pollution Control Board in accordance with the procedure under the sub-rule (3) of rule 13;
- (3) ensure that no damage is caused to the environment during storage and transportation of e-waste;
- (4) ensure that the recycling processes do not have any adverse effect on the health and the environment;
- (5) make available all records to the Central Pollution Control Board or the concerned State Pollution Control Board for inspection;
- (6) ensure that the fractions or material not recycled in its facility is sent to the respective authorised recyclers;
- (7) ensure that residue generated during recycling process is disposed of in an authorised treatment storage disposal facility;
- (8) maintain record of e-waste collected, dismantled, recycled and sent to authorized recycler in Form-2 and make such record available for scrutiny by the Central Pollution Control Board or the concerned State Pollution Control Board;

- (9) file annual returns in Form-3, to the concerned State Pollution Control Board as the case may be, on or before 30th day of June following the financial year to which that return relates;
- (10) may accept waste electrical and electronic equipment or components not listed in Schedule I for recycling provided that they do not contain any radioactive material and same shall be indicated while taking the authorisation from concerned State Pollution Control Board;
- (11) operation without Authorisation by any recycler, as defined in this rule, shall be considered as causing damage to the environment.

4.9 RESPONSIBILITIES OF STATE GOVERNMENT FOR ENVIRONMENTALLY SOUND MANAGEMENT OF E-WASTE.

- (1) Department of Industry in State or any other government agency authorised in this regard by the State Government, to ensure earmarking or allocation of industrial space or shed for e-waste dismantling and recycling in the existing and upcoming industrial park, estate and industrial clusters;
- (2) Department of Labour in the State or any other government agency authorised in this regard by the State Government shall:
 - a. ensure recognition and registration of workers involved in dismantling and recycling;
 - b. assist formation of groups of such workers to facilitate setting up dismantling facilities;

- c. undertake industrial skill development activities for the workers involved in dismantling and recycling;
- d. undertake annual monitoring and to ensure safety & health of workers involved in dismantling and recycling;

(3) State Government to prepare integrated plan for effective implementation of these provisions, and to submit annual report to Ministry of Environment, Forest and Climate Change.

4.10 POWER TO SUSPEND OR CANCEL AN AUTHORISATION

- (1) The State Pollution Control Board may, if in its opinion, the holder of Manufacturer or Dismantler or Recycler or Refurbisher Authorisation has failed to comply with any of the conditions of the authorisation or with any provisions of the Act or these rules and after giving a reasonable opportunity of being heard and after recording reasons thereof in writing cancel or suspend the authorisation issued under these rules for such period as it considers necessary in the public interest and inform Central Pollution Control Board within ten days of cancellation;
- (2) The Central Pollution Control Board, if in its opinion, the holders of the Extended Producer Responsibility- Authorisation has failed to comply with any of the conditions of the authorisation or with any provisions of the Act or these rules and after giving a reasonable opportunity of being heard and after recording reasons thereof in writing cancel or suspend the Extended Producer Responsibility- Authorisation issued under these rules for such period as it considers

necessary in the public interest and inform State Pollution Control Boards or Pollution Control Committees within ten days of cancellation;

CHAPTER 5

E-WASTE MANAGEMENT PRACTICE IN CEG CAMPUS

5.1 GENERAL

This chapter deals with data which has been collected in various department inside the CEG campus. It comprises of name of the department , types of E-waste ,frequency of generation ,current method of processing and condemnation method.

Table 5.1 e-waste data in different departments

Name of dept	Types of e - Waste	Frequency of generation	Quantity	Current method of processing	Condemnation Separately/Mixed
ECE	Copier, UPS, Functional generators, CROs	6 to 12 months	5-8 nos	Condemnation	Separately
Printing Technology	Computer, Printer, Scanner, Projector, UPS	2 to 3 years	6-7 nos	Condemnation	Separately
Information Technology	CPU, Monitor, Laptop, CCTV Camera, Interface Board,	1 year	20 nos	Condemnation	Separately
Manufacturing	Computers, Printer, Scanner, Projector	1 year	-	Condemnation	Separately
Industrial	Computer and its related equipments	1 year	-	Condemnation	Mixed
Geology	Computer	2 to 3 years	-	Condemnation	Separately

	system				
Computer Science & Engineering Mechanical	Computer, Printer, Catridge,	10 years	-	Condemnation	Separately
	No	-	-	-	-
Dean office	Computer, printer	4-5 years	-	Condemnation	separetely

5.2 QUANTIFICATION OF E-WASTE GENERATION IN CEG DEPARTMENTS

So we have collected information regarding e-waste in various department and we come to the conclusion.

Steps involved in e-waste treatment in CEG:

Step 1: collection of e-waste within the department

Step 2: e-waste were stored in junk rooms.

Step 3: e-waste were stored for few years.

Step 4: e-waste were sent for the condemnation.

Step 5: Then e-waste were re-cycled properly.

Step 6: Then e-waste were utilized by end-users.

Based on the above study in CEG, it was observed that the following suggestions are recommended, in order to comply the new e-waste management rules 2016.

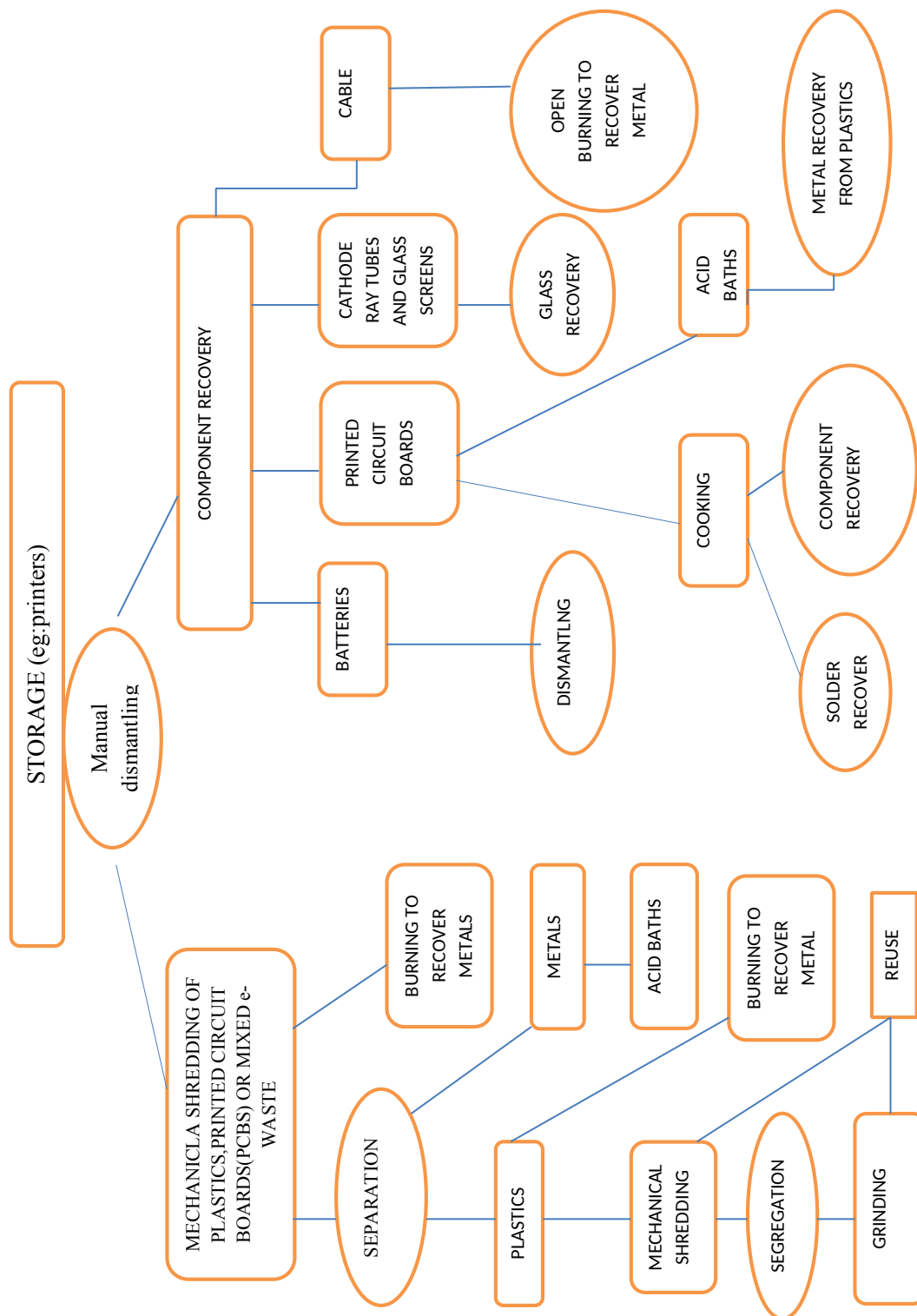


Figure 5.2 e-waste management

5.3 RECOMMENDATIONS

5.3.1 AUTHORIZED e-WASTE RECYCLERS IN AND AROUND CHENNAI

1. M/s Trishyiraya Recycling India Pvt. Ltd., Plot No.A-7, Phase-I, MEPZ-SEZ, Tambaram, Chennai-600 045 (740 MTA)
2. M/s. TES AMM Private Limited, Plot No.A-18, SIPCOT Industrial Growth, Centre Oragadam, Panruti 'A' Village, Sriperumpudur, Kanchipuram District Tamil Nadu – 630 304 (30000 MTA)
3. M/s Victory Recovery & Recycle Technologies India Pvt.Ltd., 672/2, Doubal Dragon Industrial Park, Kannur Village & Post Kottaiyur, Thiruvallur, District - Tamil Nadu - 602 108 (6000 MTA)
4. M/s Ultrust Solutions (India)Pvt.Ltd., S.F.No.297/1B, Pappankuppam,
5. Village : Gummidipoondi Taluk, Thiruvallur District, Tamil Nadu (15000 MTA)
6. M/s INAA Enterprises, Plot No.AC31/24, SIDCO Industrial Estate, Thirumudivakkam, Sriperumpudur, Taluk, Chennai-600 044 (300 MTA)
7. M/s. SEZ Recyclers, Acenue, Mahindra World City Developers Ltd., Industrial Park, Thenmelpakkam, Kancheepuram District.
8. M/s. Trittech Systems, Porur Village, Ambattur Taluk, Thiruvallur District
9. M/s. Shri Raaam Recycling, SIDCO Industrial Estate, Gummidipoondi, Tiruvallur Taluk & Tiruvallur District. M/s. Green

R2 Re-Processors Pvt. Ltd., plot No. 19, TASS Industrial Estate,
Ambattur, Chennai- 98

10.M/s. Abishek Enterprises., Ambattur Village & Taluk, Thiruvallur
Dt.

5.3.2 SUGGESTIONS REGARDING e-WASTE MANAGEMENT IN CEG CAMPUS

- (1) Committee should be formed for effective collection and management of e-waste by assigning any of the above mentioned mentioned e-waste recyclers who were authorized by CPCB
- (2) Centralized location should be assigned for effective collection and management of e-waste from various departments in CEG
- (3) Post collection management should be monitored by the committee .
- (4) E-waste should be collected separately.

ANNEXURE
COLLEGE OF ENGINEERING GUINDY
ANNA UNIVERSITY, CHENNAI

In campus Summer Internship Programme for IV semester Students
Inventorization of E-waste in CEG Campus and its Management Plan

Name of the Student

Name of the Branch

Name of the Mentor

Name of the department :

Type of electronic items used in the department :

Type of e-waste generated :

Approximate quantity or nos :

Frequency of waste generation (year-wise) :

Are you collecting e-waste separately or mixing with other type of wastes

How are you storing the e-waste? :

How long it is stored :

Current method of processing :

If current method of processing is condemnation of e-waste, when was last
condemnation?

Was it centralized condemnation through College / University or by the department?

What was the quantity of e-waste condemned?

Was condemnation of e-waste done separately or with other wastes?

Who was the vendor for collecting the e-waste?

Was he an authorized collector or recycler of e-waste?

What was done by the collector of e-waste (disposal / recycle / second hand sale) etc.,