TOOL KIT

ON

E-WASTE MANAGEMENT RULES 2016

Sponsored by

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1. INTRODUCTION & BACKGROUND

1.1 Introduction

Rapid growth in waste generation is a major by product of increasing consumption. As per the World Bank (2012) estimates, by 2025, 4.3 billion urban residents will generate 2.2 billion tones per year of municipal solid waste[1]. Over the years, the nature and composition of waste has undergone significant changes due to changed consumption and consumer behavior. As a result, diverse waste streams are emerging creating problems for national and local government for their sustainable management. Since waste management has a strong bearing on environment, and public health, the adverse impacts of improper waste management are very serious and well documented. As per UNU-IAS estimates[2] the total amount of WEEE/E-waste generated in the world in 2014 was 41.8 million metric tonnes (Mt). It has been forecasted to increase to 50 Mt by 2018. This E-waste is comprised of 1.0 Mt of lamps, 6.3 Mt of screens, 3.0 Mt of small IT (such as mobile phones, pocket calculators, personal computers, printers, etc.), 12.8 Mt of small equipment (such as vacuum cleaners, microwaves, toasters, electric shavers, video cameras, etc.), 11.8 Mt of large equipment (such as washing machines, clothes dryers, dishwashers, electric stoves, photovoltaic panels, etc.) and 7.0 Mt of cooling and freezing equipment (temperature exchange equipment). One such emerging waste stream is electronic waste (E-waste).

1.2 E-waste Scenario in India

The growing amount of E-waste is not only an environmental issue but also a source of precious metals & rare earth elements. About 15.5% of the total E-waste generated is getting scientifically recycled. Since the last two decades, many national governments in Europe and other developed countries have made continuous efforts for E-waste management.

The Indian IT Hardware market is estimated to be USD 15.87 Billion, contributing about 35% to the overall IT market in India. The hardware market is dominated by PCs Smartphones and Tablets. PCs contributes 21% Smartphones and Tablets together contributes 62% of the IT hardware market in 2014-15 as shown in **Figure 1.1**.

[1] Hoornweg Daniel and Bhada-Tata Perinaz (2012). What a waste? A Global Review of Solid Waste Management
[2] Balde, C.P., Wang, F., Kuehr, Huishman, J. (2015). The Global E-waste Monitor, quantity flows and resources.

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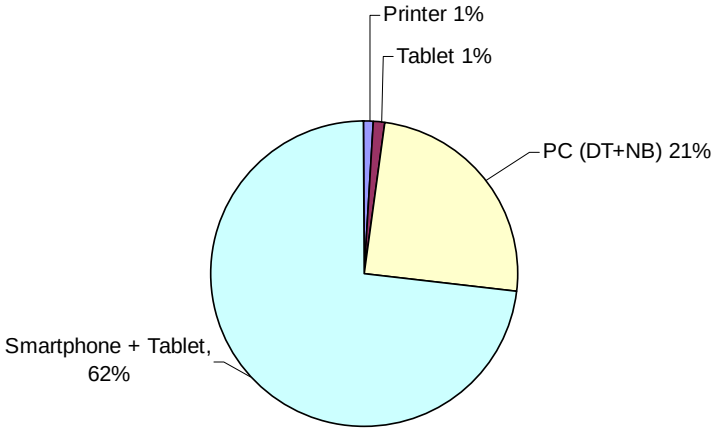

Figure 1.1: Breakup of IT Hardware

Figure 1.2 indicates that PC sales stood at 10.61 million in 2014-15, 1.23 million less than that of previous year. Even though notebooks have de-grown by 15% over last year, notebooks contribute 55% of overall PC sales. The smartphones sales in India grew 33% in 2014-15 to reach 69.67 million units, compared to a growth of 244% during 2013-14. Tablet sales in India grew only by about 4% to reach 3.48 million units in 2014-15 as compared to a growth of 76% during 2013-14. The average printer sales for last 5 years is around 3.0 million. The server market during 2014 has grown by 30% over the 2013-14 and posted sales of 1.82 million. Servers growing consistently for the last 5 years.

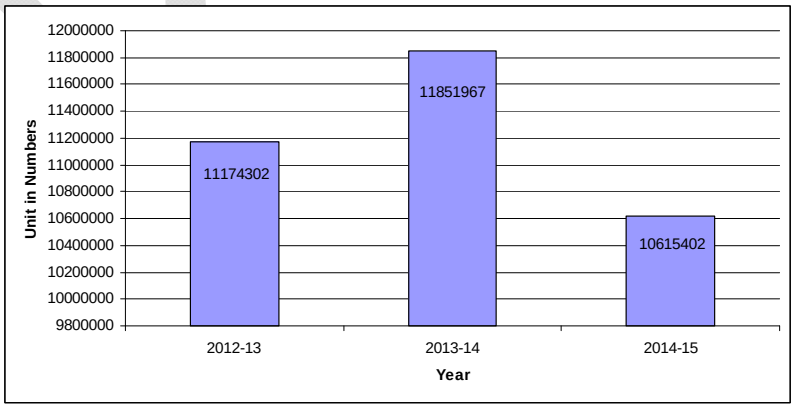

Figure 1.2: Trend of PC Sales in India

The consumer electronics market in India is one of the largest in the world and is anticipated to grow at a compound annual growth rate (CAGR) of 66.1% from US$ 31.6 billion in 2015 to US$ 400 billion in 2020. Some key factors behind this growth in the electronics market are - rising disposable income, changing lifestyles, and easier access to credit. Television industry is going to propel this growth. By 2020, the television industry in India is expected to expand to US$ 16.8 billion from US$ 9.4 billion in 2016. Further, by 2020 demand of telecom equipment in India is expected to rise to US$ 30 billion from US$ 20 billion in FY 16E.

The increasing growth trends of the IT & consumer electronics market in India indicate that "end of life" electronic equipment will a major waste stream in the future. As per CPCB/MoEF estimates, India generated 1,46,000 metric tones of E-waste from six items, which were projected to exceed 8,00,000 metric tones by 2012. A report of UNU predicted that 1.7 million metric tons of E-waste will be generated by 2014. Currently there are registered 178 E-waste dismantling / recycling units with an installed capacity of 438086 metric tons in India. This waste stream needs to be addressed in future. In this regard, E-waste (Management & Handling) Rules have been notified in 2016 & have become effective since 1st October, 2016. These are extended producer responsibility (EPR) based rules wherein targets for collection have been fixed. Further, producers are given major responsibility to address this waste stream & seek EPR authorization. Currently 112 producers have received EPR authorization from CPCB.

1.3 Objectives of Developing Toolkit

The major objective for developing toolkit is to assist the relevant stakeholders to understand assist the relevant stakeholders to understand & implement their roles & responsibilities for achieving not only regulatory compliance but also addressing E-waste management. This toolkit will also serves both as reference material for training of trainers as well as ready reckoner to the target audience.

1.3 Format of the Toolkit

This **Toolkit** has been compiled in **sixteen sections**. **Section 1** gives introduction & background; **Section 2** describes definition of E-waste; **Section 3** describes risks associated with E-waste; **Section 4** describes amount & composition of E-waste & need for management; **Section 5** describes salient features of E-waste Rules 2016; **Section 6** describes toolkit for manufacturer; **Section 7** describes toolkit for producers; Section 8 describes toolkit for collection centres; **Section 9** describes toolkit for transportation; **Section 10** describes toolkit for dealers; **Section 11** describes toolkit for refurbisher; **Section 12** describes toolkit consumer or bulk consumer; **Section 13** describes toolkit for dismantler; **Section 14** describes toolkit for recycler; **Section 15** describes toolkit for RoHS and **Section 16** describes toolkit for miscellaneous stakeholders. **The toolkit will enable the user / stakeholder to read, understand and implement the simplified version of regulation relevant to them. This simplification has been done based on definition, identification of responsibilities, do's & don't infrastructure requirements & regulatory checklist. Further, international best practices have been included to give a fair idea to the audience about practical aspects of implementation.**

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2. DEFINITION OF E-WASTE

2.0 Definition as Per E-waste Rules

Definition: '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;

Definition: 'end-of-life' of the product means the time when the product is intended to be discarded by the user;

2.1 WEEE / E-waste Definition and Classification (International)

AS per Step Initiative, WEEE/E-waste is a term used to cover all items of electrical and electronic equipment (EEE) and its parts that have been discarded by its owner as waste without the intent of re-use. It is also referred to as WEEE (Waste Electrical and Electronic Equipment), electronic waste or E-scrap in different regions. WEEE/E-waste includes a wide range of products, almost any household or business item with circuit or electrical components with power or battery supply. WEEE / E-waste can be classified into following categories.

- **Temperature exchange equipment:** Also more commonly referred to as, cooling and freezing equipment. Typical equipment is refrigerators, freezers, air conditioners, heat pumps.
- **Screens, monitors:** Typical equipment comprises televisions, monitors, laptops, notebooks, and tablets.
- **Lamps:** Typical equipment comprises straight fluorescent lamps, compact fluorescent lamps, fluorescent lamps, high intensity discharge lamps, and LED lamps.

- **Large equipment:** Typical equipment comprises washing machines, clothes dryers, dish washing machines, electric stoves, large printing machines, copying equipment and photovoltaic panels.

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- **Small equipment:** Typical equipment comprises vacuum cleaners, microwaves, ventilation equipment, toasters, electric kettles, electric shavers, scales, calculators, radio sets, video cameras, electrical and electronic toys, small electrical and electronic tools, small medical devices, small monitoring and control instruments).
- **Small IT and telecommunication equipment:** Typical equipment comprises mobile phones, GPS, pocket calculators, routers, personal computers, printers, telephones).

These categories have been defined as per ease of WEEE/E-waste streams requiring specific collection, treatment & disposal mechanism. Further, definition & classification differs from country to country. Examples of definition & classification as per European Union is given below.

European Union

Definition as per EU directive with status of its transposition and variation in major EU countries is described in Annexure 1 followed by WEEE/E-waste's reference in Basel Convention. **WEEE Directive (EU, 2002a) describes WEEE/E-waste as "Electrical or electronic equipment, which is waste including all components, subassemblies and consumables, which are part of the product at the time of discarding."**

Directive 75/442/EEC, Article 1(a) defines **"waste"** as "any substance or object which the holder disposes of or is required to dispose of pursuant to the provisions of national law in force."

'Electrical and electronic equipment' or 'EEE' means equipment which is dependent on electrical currents or electromagnetic fields in order to work properly and equipment for the generation, transfer and measurement of such current and fields falling under the categories set out in Annex IA to Directive 2002/96/EC (WEEE) and designed for use with a voltage rating not exceeding 1000 volts for alternating current and 1500 volts for direct current.

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Annex IA

Categories of electrical and electronic equipment covered by this Directive.

1. Large household appliances
2. Small household appliances
3. IT and telecommunications equipment
4. Consumer equipment
5. Lighting equipment
6. Electrical and electronic tools (with the exception of large-scale stationary industrial tools)
7. Toys, leisure and sports equipment
8. Medical devices (with the exception of all implanted and infected products)
9. Monitoring and control instruments
10. Automatic dispensers

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3. RISKS ASSOCIATED WITH E-WASTE

3.0 Hazardous Nature of E-waste

E-waste is potentially hazardous waste due to unscientific handling, treatment, incineration and dumping. A list of E-waste components containing hazardous substances as per International Labour Organization (ILO) is presented in **Table 3.1**. The list indicates that these components should be treated scientifically and should not end up in a landfill or an incinerator or mixed with other types of waste.

Table 3.1: Hazardous Chemicals Contained in Some E-waste

Chemical	Source in Electronic Products	Health Concerns
Antimony	CRTs, Printed Circuit Boards, etc.	Very hazardous in event of ingestion, hazardous in event of skin of eye contact, and inhalation. Causes damage to the blood, kidneys, lungs, nervous system, liver and mucous membranes.
Arsenic	Used to make transistors	Soluble inorganic arsenic in acutely toxic and intake of inorganic arsenic over a long period can lead to chronic arsenic poisoning. Effects, which can take years to develop, include skin lesions, peripheral neuropathy, gastro-intestinal symptoms, diabetes, renal system effects, cardiovascular disease and cancer.
Barium	Front Panel of CRTs	Short term exposure causes muscle weakness and damage to heart, liver and spleen. It also produces brain swelling after short exposure.
Beryllium	Motherboards of computers	Carcinogenic (causing lung cnacer), and inhalation of fumes and dust can cause chronic beryllium disease or beryllicosis and skin diseases such as warts.
Cadmium	Chip resistors and semiconductors	Has toxic, irreversible effects on human health and accumulates in kidney and liver (Op. cit.). Has toxic effects on the kidney, the skeletal system and the respiratory system, and is classified as a human carcinogen.
Chloro-Fluorocarbons (CFCs)	In older fridges and coolers	Found to destroy the ozone layer and is a potent greenhouse gas. Direct exposure can cause unconsciousness, shortness of breath and irregular heartbeat. Can also cause confusion, drowsiness, coughing, sore throat, difficulty in breathing and eye redness and pain. Direct skin contact with some types of CFCs can cause frostbite or dry skin.

Chemical	Source in Electronic Products	Health Concerns
Cobalt	Rechargeable batteries and coatings for hard disk drives	Hazardous in case of inhalation and ingestion, and is an irritant of the skin. Has carcinogenic effects and is toxic to lungs. Repeated or prolonged exposure can produce target organs damage.
Copper	Used as conductor	Very hazardous in case of ingestion, in contact with the eyes and when inhaled. An irritant of the skin and toxic to lungs and mucous membranes. Repeated or prolonged exposure can produce target organs damage.
Dioxins	Created when electronics are burnt in open air	Highly toxic and can cause chloracne, reproductive and developmental problems, damage the immune system, interfere with hormones and cause cancer.
Gallium	Integrated circuits, optical electronics, etc.	Hazardous in case of skin (may produce burns) and eye contact, ingestion and inhalation. Severe over exposure can result in death. Toxic to lungs and mucous membranes. Repeated or prolonged exposure can produce target organs damage.
Hexavalent Chromium	Used as corrosion protection of untreated and galavanized steel plates and a decorator or hardner for steel housings (Osuagwu & Ikerionwu, 2010)	Damages kidneys, the liver and DNA. Asthamatic bronchitis has been linked to this substance (Osuagwu & Ikerionwu, 2010). Causes irritation of the respiratory system (asthma) and skin, liver and kidney damage, increased or reduced blood leukocytes, cosinophilia, eye injury, and is a known carcinogen.
Indium	LCD Screens	Can be absorbed into the body by inhalation or ingestion. Is irritating to the eyes and respiratory tract and may have long term effects on the kidneys. Environmental effects have not been investigated and information on its effects on human health is lacking therefore utmost care must be taken.

Source: McCann Duncan (2015). *Solving the E-Waste Problem (Step) Green Paper; E-waste Prevention, Take-back System Design and Policy Approaches (13 February, 2015).*

3.1 Impacts of Unorganized / Informal E-waste Recycling

A number of studies have reported negative impacts of unorganized/ informal E-waste recycling on surrounding environment and health of inhabitants. Some of the evidence in developing countries including India is given in **Figure 3.1**.

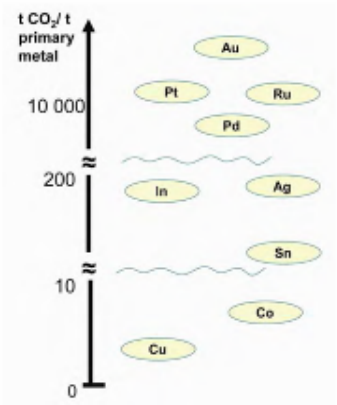
Figure 3.1: Evidences of air, water and soil pollution and Occupational, Health and Safety Hazards

Source: Compendium of Technologies for the Recovery of Materials from WEEE/E-Waste Final Report UNEP / IETC. Jain Amit (20th April, 2017).

Figure 3.1 indicates, air, water, soil pollution as well as occupational health & safety hazards. The material recovery techniques used by informal sector to recover recyclable materials often cause pollution e.g., open-air burning of cables to recover the copper wire from PVC coating. It has serious impacts on the health of the informal workers because of hydrochloric acid produced, which causes acute respiratory problems. Other examples include precious metal leaching using cyanide process, breaking & disposal of mercury containing lamps etc.

3.2 Environmental Health & Socio-economic Impact of Primary Production Vs Secondary Production of Metals from WEEE/E-waste

The environmental impact/footprint of the primary metal production has been reported to be significant, since they are mined from ores in which their concentration is low. Some of the impacts include large amount of land required for mining, generation of waste water and emissions of sulfur-dioxide (SO_2), CO_2 and energy consumption. **Figure 3.2** indicates CO_2 emissions from primary production of metals.



Important EEE metals	demand for EEE t/a (2006)	data for primary production [t CO_2/t metal]	CO_2 emissions [Mt]
Copper	4 500 000	3.4	15.30
Cobalt	11 000	7.6	0.08
Tin	90 000	16.1	1.45
Indium	380	142	0.05
Silver	6 000	144	0.86
Gold	300	16 991	5.10
Palladium	32	9 380	0.30
Platinum	13	13 954	0.18
Ruthenium	6	13 954	0.08
CO_2 total [t]			23.4

Figure 3.2: CO_2 emissions of primary metal production calculated using the EcoInvent 2.0 database

Source: Schluep Mathias, Hagelueken Christian, Ruediger Kuehr, Magalini Federico, Maurer Claudia, Meskers Christina, Mueller Esther, Wang Feng (2009). *Sustainable Innovation and Technology Transfer Industrial Sector Studies; Recycling – From E-Waste To Resources; UNEP / STEP Solving the E-waste Problem, Page No. 10*

Recovery of metals from secondary sources like WEEE/E-waste require small amount of land and generate a fraction of gaseous emissions and waste water.

4.1 Amount &I Composition of E-waste

E-waste may consist of 60 different elements, which are valuable as well as hazardous and non-hazardous in nature. Since electrical and electronic equipments are major consumers of precious metals, they create huge global demand. E-waste may contain up to 60 elements, e.g. a mobile phone may contain over 40 elements like copper (Cu), tin (Sn), Cobalt (Co), Indium (In), Antimony (Sb), precious metals & rare earth elements as shown in **Figure 4.1**. The precious metal content in mobile phone may consist of 250 mg Ag (Silver), 24 mg Au (Gold), 9 mg Pd (Palladium) and 9 gm Cu (Copper), while PC & laptops may consist of 1000 mg Ag (Silver), 220 mg Au (Gold), 80 mg Pd (Palladium) and 500 gm Cu (Copper).

H Hydrogen																He
Li Lithium	Be Beryllium	Mobile Phone Substance										B Boron	C Carbon	N Nitrogen	O Oxygen	F Fluorine	Ne
Na	Mg Magnesium											Al Aluminium	Si	P Phosphorus	Se	Cl Chlorine	Ar
K Potassium	Ca	Sc	Ti Titanium	V	Cr Chromium	Mn Manganese	Fe Iron	Co Cobalt	Ni Nickel	Cu Copper	Zn Zinc	Ga Gallium	Ge	As Arsenic	Se	Br Bromine	Kr
Rb	Sr Strontium	Y Yttrium	Zr Zirconium	Nb	Mo Molybedenum	Tc	Ru	Rh	Pd Palladium	Ag Silver	Cd	In Indium	Sn Tin	Sb Antimony	Te	I	Xe
Cs	Ba Barium	La-Lu	Hf	Ta Tantalum	W Tungsten	Re	Os	Ir	Pt Platinum	Au Gold	Hg	Tl	Pb Lead	Bi Bismuth	Po	At	Rn
Fr	Ra	Ac-Lr	Rf	Db	Sg	Bh	Hs	Mt	Uun	Uuu	Uub		Uuq				

Figure 4.1: Material Content of Mobile Phones
Source: Nokia

Studies indicate that metals represent on average 23% of the weight of a phone, the majority being copper, while the remainder is plastic and ceramic material. One ton of phone handsets (without battery) would contain 3.5 kg Ag, 340 g Au, 140 g Pd as well as 130 kg Cu. The Li-ion battery of a phone contains about 3.5 g Co[3].

[3] Schluep Mathias, Hagelueken Christian, Ruediger Kuehr, Magalini Federico, Maurer Claudia, Meskers Christina, Mueller Esther, Wang Feng (2009). *Sustainable Innovation and Technology Transfer Industrial Sector Studies; Recycling – From E-Waste To Resources; UNEP / STEP Solving the E-waste Problem.*

Table 4.1: Important metals used for electric and electronic equipment (based on demand in 2006)

Metal	Primary production (t/y)	By product from	Demand for EEE (t/y)	Demand/ production (%)	Price** (USD/ &/kg)	Value in EEE** (10^6 USD/$)	Main applications
Ag	20 000	(Pb, Zn)	6 000	30	430	2.6	Contacts, switches, solders
Au	2 500	(Cu)	300	12	22 280	6.7	Bonding wire, contacts, integrated circuits
Pd	230	PGM	33	14	11 413	0.4	Multilayer capacitors, connectors
Pt	210	PGM	13	6	41 957	0.5	Hard disk, thermocouple, fuel cell
Ru	32	PGM	27	84	18 647	0.5	Hard disk, plasma displays
Cu	15 000 000		4500000	30	7	32.1	Cable, wire, connector
Sn	275 000		90 000	33	15	1.3	Solders
Sb	130 000		65 000	50	6	0.4	Flame retardant, CRT glass
Co	58 000	(Ni, Cu)	11 000	19	62	0.7	Rechargeable batteries
Bi	5 600	Pb, W, Zn	900	16	31	0.03	Solders, capacitor, heat sink
Se	1 400	Cu	240	17	72	0.02	Electro-optic, copier, solar cell
In	480	Zn, Pb	380	79	682	0.3	LCD glass, solder, semiconductor
Total			4670000			45.4	

*** Using the average price in 2007*

Source: Schluep Mathias, Hagelueken Christian, Ruediger Kuehr, Magalini Federico, Maurer Claudia, Meskers Christina, Mueller Esther, Wang Feng (2009). *Sustainable Innovation and Technology Transfer Industrial Sector Studies; Recycling – From E-Waste To Resources; UNEP / STEP Solving the E-waste Problem.*

Table 4.1 indicates the demand from EEE items as % of primary production. Further, it also indicates valuation and their usage in EEE components. **Broadly, E-waste consists of ferrous and non-ferrous metals, plastics, glass, wood and plywood, printed circuit boards, concrete and ceramics, rubber and other items. Iron and steel constitutes about 50% of the E-waste followed by plastics (21%), non - ferrous metals (13%) and other constituents. The presence of elements like lead, mercury, arsenic, cadmium, selenium, hexavalent chromium and flame retardants in E-waste and their components beyond threshold quantities render them hazardous in nature. These items of economic value can be recovered depending on the recycling / recovery technologies.**

4.2 Need for E-waste Management

Since E-waste consists of items of economic value and poses environmental & health risks, it needs to be managed in an environmentally sound manner. The main challenge is to manage the material flow chain shown conceptually in **Figure 4.2** & in developing country context (India) shown in **Figure 4.3**.

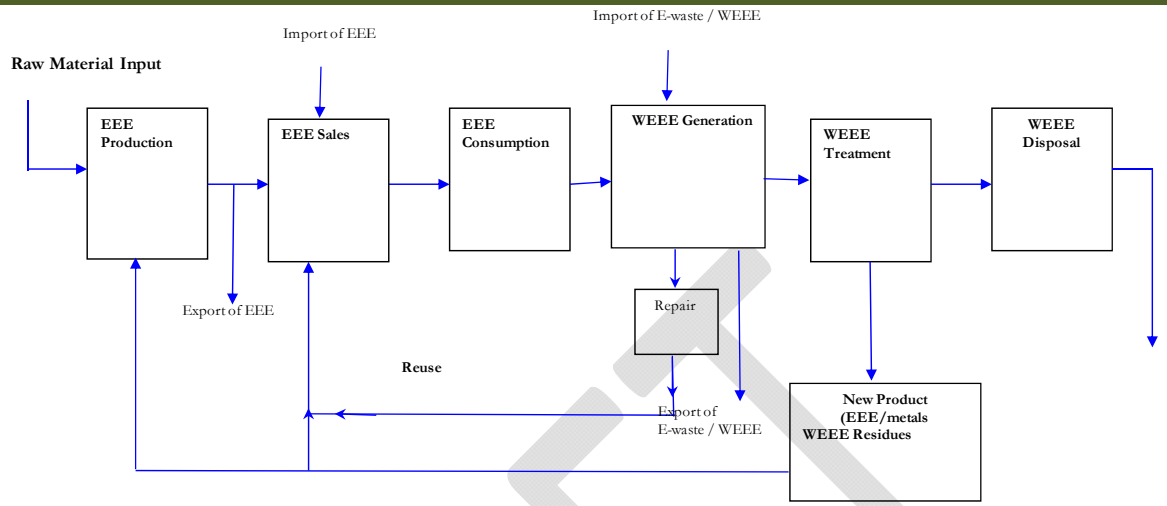


Figure 4.2: Conceptual Material Flow Chain

Source: United Nations Environment Programme International Environmental Technology / Asian Institute of Technology Regional Resource Centre for Asia and the Pacific Centre Compendium of Technologies for the Recovery of Materials from WEEE/E-Waste Final Report

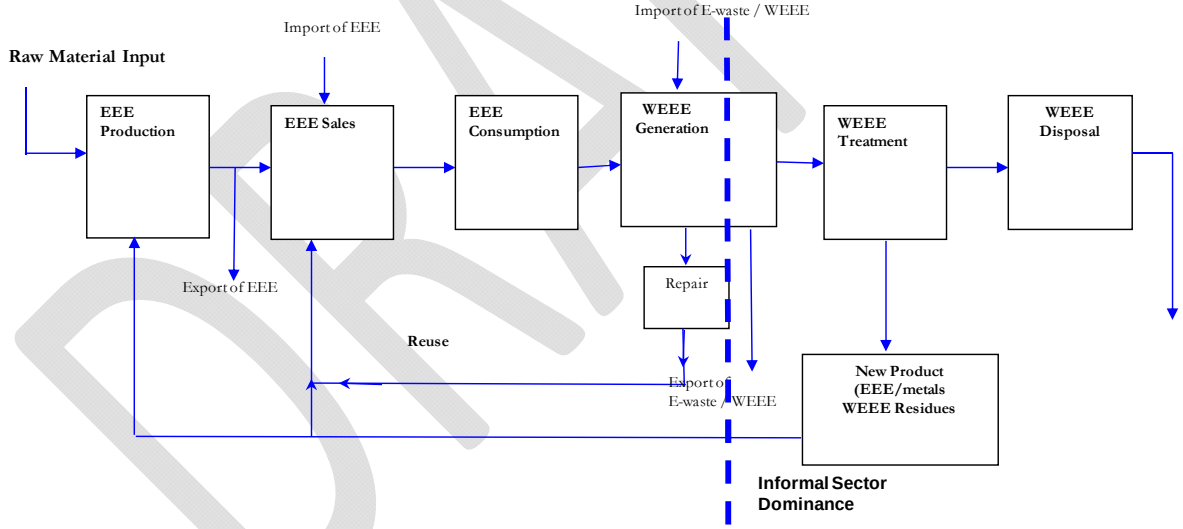


Figure 4.3: Material Flow Chain in Developing Country

Source: United Nations Environment Programme International Environmental Technology / Asian Institute of Technology Regional Resource Centre for Asia and the Pacific Centre Compendium of Technologies for the Recovery of Materials from WEEE/E-Waste Final Report

Figure 4.3 indicates dominance of informal sector in E-waste recycling in India.

4.3 Extended Producer Responsibility (EPR)

Globally, E-waste management is carried out based on the principles of extended producer responsibility (EPR) Principle. EPR term was coined in 1990, where **extended** means more than before, **producer** signifies **shift of responsibility** from "Municipality to Business".

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The responsibility means responsibility for physical & financial management of E-waste.

Conceptual Features under EPR include:

- Environmentally Sound Management of Waste
- Physical Responsibility
- Financial Responsibility
- Information Responsibility
- Product design shift (meeting ROHS, ease of dismantling/recycling, resource efficiency)

Major Enabling Factors to Implement EPR include:

- Defining Targets & planning (short & long term) to achieve
- Clear demarcation of Responsibility (Physical/ Financial/Regulatory)
- Infrastructure to implement responsibility e.g. creation of a backbone to integrate stakeholders for enabling viable "take back" system
- Financial management
- Monitoring and Auditing
- Consumer / Producer / Regulator's Acceptability

Steps to Implementation of EPR (Each Stakeholder along the chain)

Step 1: Identify, quantify & monitor upstream & downstream flow
Step 2: Carry out: Input & Output Analysis both current & historical (number/ weight)
Step 3: Quantify, prepare database & monitor upstream & downstream flow
Step 4: Map regulatory requirements Vs. upstream & downstream flow
Step 5: Refer guidelines to assess requirements for EPR planning
Step 6: Prepare strategic EPR plan for implementation i.e. Individual/ collective/ both or some other mechanism
Step 7: Submit (if applicable) & implement the plan

E-waste (Management & Handling) Rules, 2016 have been formulated based on the principles of Extended Producers Responsibility (EPR).

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5. SALIENT FEATURES OF E-WASTE RULES 2016

5.1 Major Features

Government of India in supersession of E-waste (Management and Handling) Rules, 2011 has notified the E-waste (Management) Rules, 2016 vide G.S.R. 338(E) dated 23.03.2016 which will be effective from 01-10-2016.

1. These rules are applicable to every producer, consumer or bulk consumer, collection centre, dismantler and recycler of e-waste involved in the manufacture, sale, purchase and processing of electrical and electronic equipment or components specified in schedule – I of these Rules.
2. Two categories of electrical and electronic equipment namely (i) IT and Telecommunication Equipment and (ii.) Consumer Electricals and Electronics such as TVs, Washing Machines, Refrigerators Air Conditioners including fluorescent and other mercury containing lamps are covered under these Rules. The main feature, of these rules, is Extended Producer Responsibility (EPR).
3. Target based approach for implementation of EPR has been adopted in the E-Waste (Management) Rules, 2016, which stipulate phase wise collection target to producers for the collection of e-waste, either in number or weight, which shall be 30% of the estimated quantity of waste generation during first two year of implementation of rules followed by 40% during third and fourth years, 50% during fifth and sixth years and 70% during seventh year onwards.
4. Rules are applicable to:

    - Used lead acid batteries as covered under the Batteries (Management and Handling) Rules, 2001 made under the Act.
    - Micro enterprises as defined in the Micro, Small and Medium Enterprises Development Act, 2006 (27 of 2006); and
    - Radio active wastes as covered under the provisions of the Atomic Energy Act, 1962 (33 of 1962) and rules made there under.

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5.2 Application of Rules

Conceptual EPR application to material flow chain in Indian context is shown in **Figure 5.1**, while EPR flow chart in Indian context is shown in **Figure 5.2**. Application to EEE items is given in **Table 5.1**, while targets are given in **Table 5.2**, responsibilities of stakeholders in **Table 5.3** and major compliance / monitoring / reporting in **Table 5.4**.

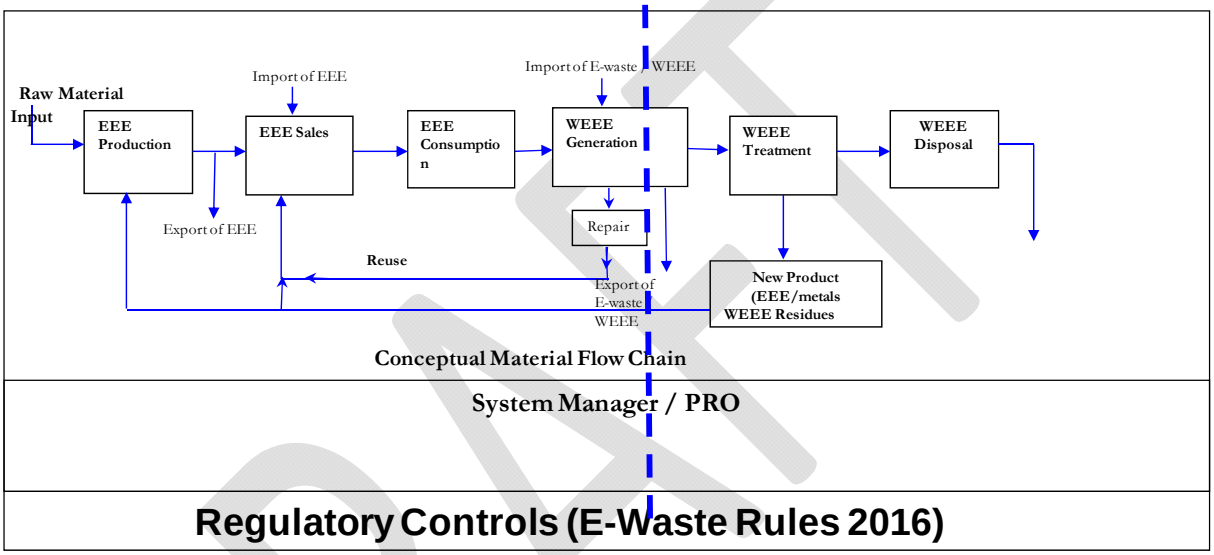

Figure 5.1: Conceptual EPR Application Material Flow Chain in Indian Context

Extended Producer Responsibility (Indian Context)

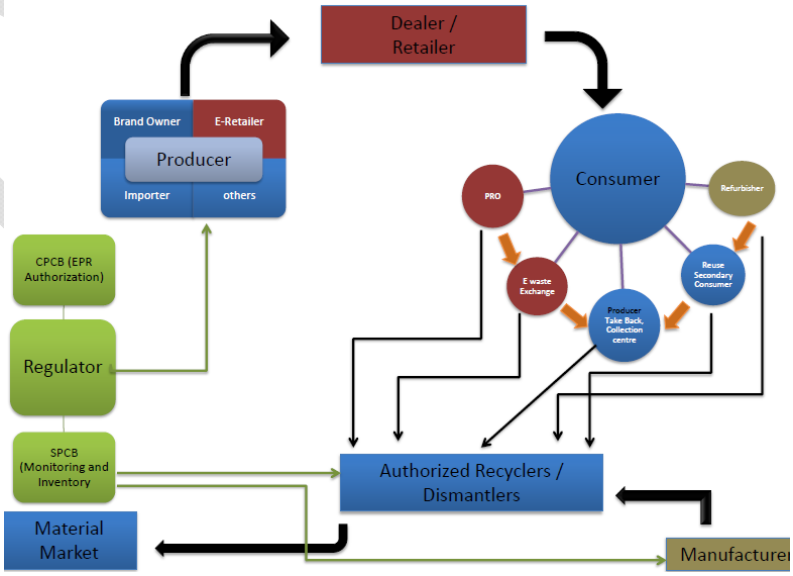

Figure 5.2: Conceptual EPR Flow Chain in Indian Context

Source: Ministry of Environment, Forest and Climate Change Govt. of India. International Workshop on Extended Producer Responsibility in India: Opportunities, Challenges and Lessons from International Experience (May 12-13, 2016).

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Table 5.1: EEE as Per Schedule I

Sr. No.	Categories of Electrical and Electronic	EEE Code	Average Life
i.	**Information Technology and Telecommunication Equipment**		
	Centralized Data Processing	ITEW1	
	Mainframe		10 Years
	Minicomputer		5 Years
	Personal Computing: Personal Computers (Central Processing Unit with Input and Output Devices)	ITEW2	6 Years
	Personal Computing: Laptop Computers (Central Processing Unit with Input and Output Devices)	ITEW3	5 Years
	Personal Computing: Notebook Computers	ITEW4	5 Years
	Personal Computing: Notepad Computers	ITEW5	5 Years
	Printers Including Cartridges	ITEW6	10 Years
	Copying Equipment	ITEW7	8 Years
	Electrical and Electronic Typewriters	ITEW8	5 Years
	User Terminals and Systems	ITEW9	6 Years
	Facsimile	ITEW10	10 Years
	Telex	ITEW11	5 Years
	Telephones	ITEW12	9 Years
	Pay Telephones	ITEW13	9 Years
	Cordless Telephones	ITEW14	9 Years
	Cellular Telephones	ITEW15	
	Feature Phones		7 Years
	Smart Phones		5 Years
	Answering Systems	ITEW16	5 Years
ii.	**Consumer Electrical and Electronics**		

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Sr. No.	Categories of Electrical and Electronic	EEE Code	Average Life
	Television sets (including sets based on (Liquid Crystal Display and Light Emitting Diode Technology)	CEEW1	9 Years
	Refrigerator	CEEW2	10 Years
	Washing Machine	CEEW3	9 Years
	Air-conditioners excluding centralized air conditioning plants	CEEW4	10 Years
	Fluorescent and other Mercury Containing Lamps	CEEW5	2 Years

Table 5.2: Targets as per Schedule III

Sr. No.	Year	E-waste Collection Target (Number / Weight)
(i)	During first two year of implementation of rules.	30% of the quantity of waste generation as indicated in EPR Plan.
(ii)	During third and fourth years of implementation of rules.	40% of the quantity of waste generation as indicated in EPR Plan.
(iii)	During fifth and sixth years of implementation of rules.	50% of the quantity of waste generation as indicated in EPR Plan.
(iv)	Seventh year onward of implementation of rules.	70% of the quantity of waste generation as indicated in EPR Plan.

Table 5.3: Responsibilities of Major Stakeholders for Collection, Transportation and Disposal of E-waste

Responsibilities		Producer	Consumer	Bulk Consumer	Refurbishers	Dismantler	Recycler/ Reprocessor
Collection	Manufacturing	√					
	End of Life	√					
Take-back	Individual	√					
	Collectively	√					
Transportation to	Producer		√	√			
	Collection Centre	√	√	√			

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Responsibilities		Producer	Consumer	Bulk Consumer	Refurbishers	Dismantler	Recycler/ Reprocessor
	Dismantlers/ Recyclers	√	√	√	√	√	
	TSDF* Facility	√				√	√
Financing		√					
Registration		√			√	√	√
Filing of Annual Returns		√		√	√	√	√
Return of Annual Inventory Handled		√		√	√	√	√

Table 5.4: Compliance / Monitoring / Reporting

Stakeholder	EPR Authorization	Record Maintain	Annual Return	Renewal
	Form – 1	Form – 2	Form – 3	Form – 4
Manufacturer	√ 1 (a) SPCB	√ (SPCB)	√ (SPCB)	
Producer	√ (CPCB)	√ (CPCB)	√ (CPCB)	
Collection Centre		√ (CPCB / SPCB)		
Refurbisher	√ 1 (a) SPCB	√ (SPCB)	√ (SPCB)	
Bulk Consumer		√ (SPCB)	√ (SPCB)	
Dismantler		√ (SPCB)	√ (SPCB)	√ (SPCB)
Recycler		√ (CPCB / SPCB)	√ (SPCB)	√ (SPCB)

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6. TOOLKIT FOR MANUFACTURER

6.1 Definition

'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;

6.2 Responsibilities of Manufacturer

Who	Responsibility	DOs	Don't
1. Person 2. Entity 3. Company as defined in the companies Act, 2013 4. Factory as defined in the Factory Act, 1948 5. Micro, Small & Medium Enterprises Development Act, 2006	(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) 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 a; (5) (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.	(1) Carry out safe operations in the authorized place only. (2) Make records available for scrutiny by the concerned SPCB. (3) Take all steps to comply with the conditions specified in the authorization.	

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6.3 Regulatory Checklist

1.	Form 1 a	E-waste Rules
2.	Form 1 bb	E-waste Rules
3.	Form 2	E-waste Rules
4.	Form 3	E-waste Rules
5.	Authorization (if applicable)	Hazardous Waste Rules

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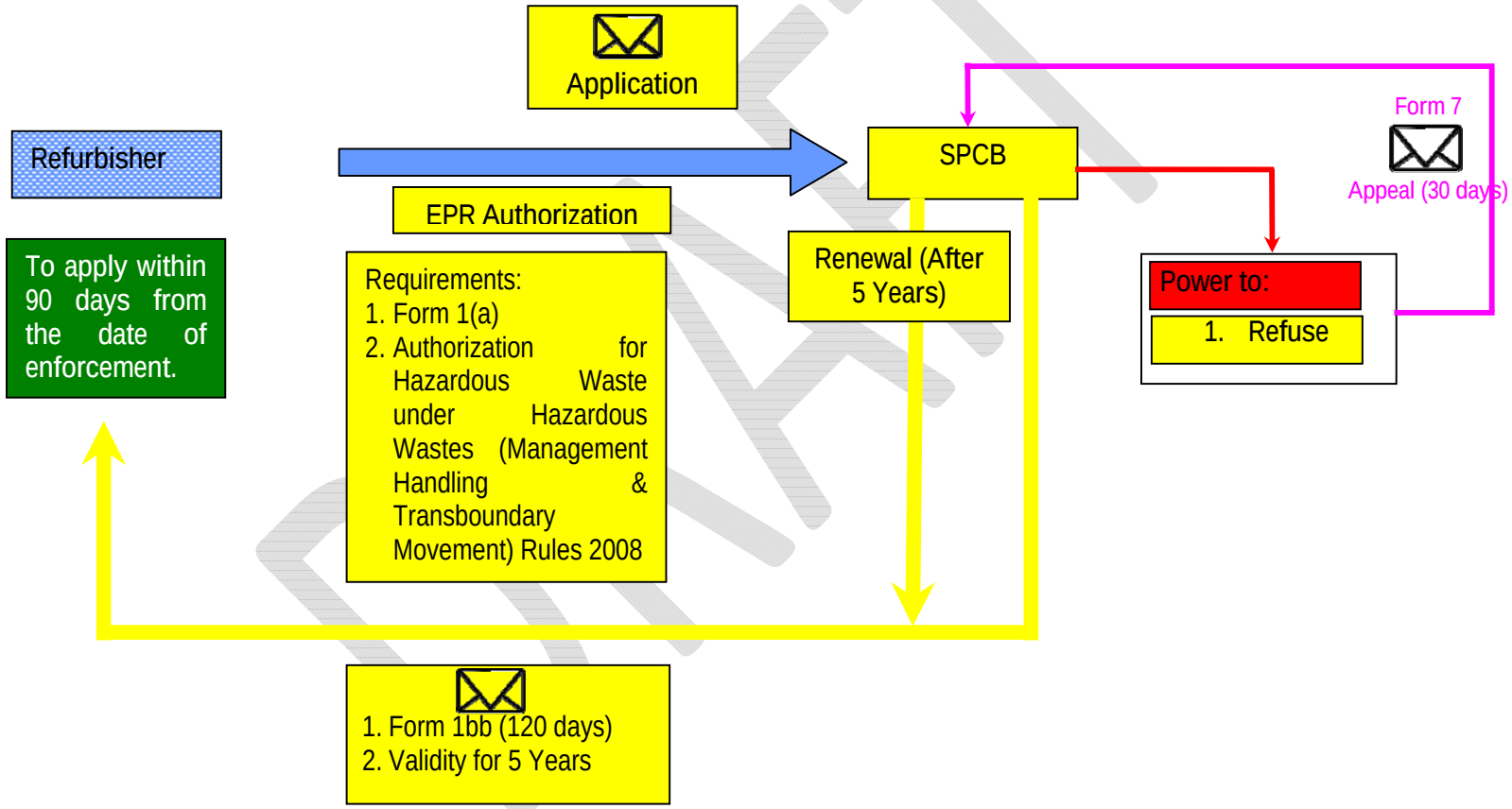
6.4 Procedure for Authorization (Manufacturer)



7. TOOLKIT FOR PRODUCERS

7.1 Definition

'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;

7.2 Responsibilities of Producer

Who	Functions	Responsibilities
Any Person: 1. Manufacturers offers to sell EEE own brand 2. Offers to sell EEE under its brand 3. Offers to sell imported EEE & their components or consumables, parts or spares	Selling	(1) implementing the Extended Producers Responsibility (EPR) 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 as per Schedule I in line with the targets prescribed in Schedule III in Extended Producer Responsibility - Authorisation; (b) channelisation of e-waste including those from their service centres to authorised dismantler or recycler or to TSDF as per EPR authorization. (c) EPR 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 Organisation, 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;

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Who	Functions	Responsibilities
		(d) 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 on 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; (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).

7.3 DOs & DON't & Infrastructure Requirement

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;

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DOs	Don't
• A producer can implement its EPR either through take-back system or by setting up collection centres or both for channelization of E-waste / end of life products to authorized dismantlers / recyclers. • The producers are required to have arrangements with authorized dismantlers / recyclers either individually or collectively or through a Producer Responsibility Organization 9PRO) or E-waste Exchange System as spelt in their EPR Plan which is approved / authorized by Central Pollution Control Board (CPCB). • 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; • creating awareness through media, publications, advertisements, posters, or by any other means of communication and product user documentation accompanying the equipment, with regard to – (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	• Operation without Extended Producer Responsibility- Authorisation by any producer, as defined in this rule, shall be considered as causing damage to the environment.

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;

- 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;
- The Producers can revise their EPR Plan from time to time with information to CPCB.
- Make assessment of potential collection of E-waste, area or region wise.
- Take help of any professional agency like Producer Responsibility Organization (PRO) and E-waste exchange.
- Identify authorized dismantlers / recyclers for channelization of quantum of E-waste assessed above. Assess the capacity of each identified authorized dismantlers / recyclers to ensure environmentally sound management of E-waste channelized to them.
- Provide details of collection centres such as address and name(s) of the entity (producer, group of producers, refurbisher, recyclers or dismantlers) who are operating the collection centres in tabular form.
- The number of collection centres should be proportionate and

justifiable with the estimated generation for channelization of E-waste. These collection centres or collection points should have facilities as specified in section 4.0 of this document. • Provide details such as name, location, processing capacity and contact details of the authorized dismantling / recycling facilities, which are part of channelization of E-waste of the producer would be provided in a separate table to Form – 1. • In case there are no recyclers available for recycling of end-of-life EEE item code: EEW5 (fluorescent and other mercury containing lamps), then the producers should provide list of Treatment Storage and Disposal Facilities with whom they have agreement.	

7.4 Content of EPR Plan

The EPR Plan requires estimating the quantity of E-waste generated from their end-of-life products, outlining a scheme for collection and channelization of their end-of-life products or products with same EEE code to authorized dismantlers/recyclers, estimated budget for implementing EPR, outline the scheme of creating awareness, declaration on ROHS compliance.

Estimation of E-waste Generation: the generation of E-waste from end of life products.

E-waste generation (weight or number) in the financial year 'x – y' – Sales in the financial year '(x-z) – (y-z)'

Where, 'x – y' = financial year in which generation is estimated, and

Z= average life span of EEE (Examples are given at Annexure – 1)

Average life of the EEE to be used in the above formula is given below.

Sr. No.	Categories of Electrical and Electronic	EEE Code
i.	**Information Technology and Telecommunication Equipment**	
	Centralized Data Processing	ITEW1
	Mainframe	
	Minicomputer	
	Personal Computing: Personal Computers	ITEW2
	(Central Processing Unit with Input and Output Devices)	

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Sr. No.	Categories of Electrical and Electronic	EEE Code
	Personal Computing: Laptop	ITEW3
	Computers (Central Processing Unit with Input and Output Devices)	
	Personal Computing: Notebook Computers	ITEW4
	Personal Computing: Notepad Computers	ITEW5
	Printers Including Cartridges	ITEW6
	Copying Equipment	ITEW7
	Electrical and Electronic Typewriters	ITEW8
	User Terminals and Systems	ITEW9
	Facsimile	ITEW10
	Telex	ITEW11
	Telephones	ITEW12
	Pay Telephones	ITEW13
	Cordless Telephones	ITEW14
	Cellular Telephones	ITEW15
	Feature Phones	
	Smart Phones	
	Answering Systems	ITEW16
ii.	**Consumer Electrical and Electronics**	
	Television sets (including sets based on (Liquid Crystal Display and Light Emitting Diode Technology)	CEEW1
	Refrigerator	CEEW2
	Washing Machine	CEEW3
	Air-conditioners excluding centralized air conditioning plants	CEEW4
	Fluorescent and other Mercury Containing Lamps	CEEW5

Estimation of Target for Collection: The target for collection of E-waste shall be based on estimated generation calculated for each EEE code for a specific financial year as specified above.

E-waste Target

Year	Target
2016-17	15%
2017-18	30%
2018-20	40%
2020-22	50%
2022-23 onwards	70%

If a producer enters the business in the year 2016-17 for item code ITEW7 (copying equipment), the collection targets for which would be applicable from the year 2021-22 at 50% collection target.

7.5 Details of Extended Producer Responsibility

- Details of scheme / incentive for returning of E-waste by consumers / bulk consumers whether through dealers or buy-back arrangement or take-back systems or exchange scheme for channelization of E-waste.
- If producer is opting to manage its EPR responsibility through PRO, then details of PRO's organizational structure and system of collection and channelization to the authorized dismantlers / recyclers of E-waste.
- If E-waste exchange is part of channelization then the details thereof,
- If producer is opting for 'deposit refund scheme' (DRS) or exchange scheme for collection and channelization of E-waste, then the details of mode of refund of the deposited amount taken from the consumer or bulk consumer at the time of sale has to be specified along with interest that becomes due at the prevalent rate for the period of the deposit at the time of take-back of the end-of-life products.
- Producers of item code: CEEW5 (fluorescent and other mercury containing lamp) may provide list of waste deposition centre or collection points financed by them obligation under rule 17 (1) of the Solid Waste Management Rules 2016 for channelizing such wastes to recyclers or TSDFs.

Collection and Storage Plan: Information pertaining to collection and storage

Channelization Plan

Details of Collection Centres, Dismantlers & Recyclers & TSDF: Producers shall specify details of their own collections centres or the collection centres with which they have agreement.

7.6 Regulatory Checklist

1.	Form 1	E-waste Rules
2.	Form 1 (aa)	E-waste Rules
3.	Form 2	E-waste Rules
4.	Form 3	E-waste Rules

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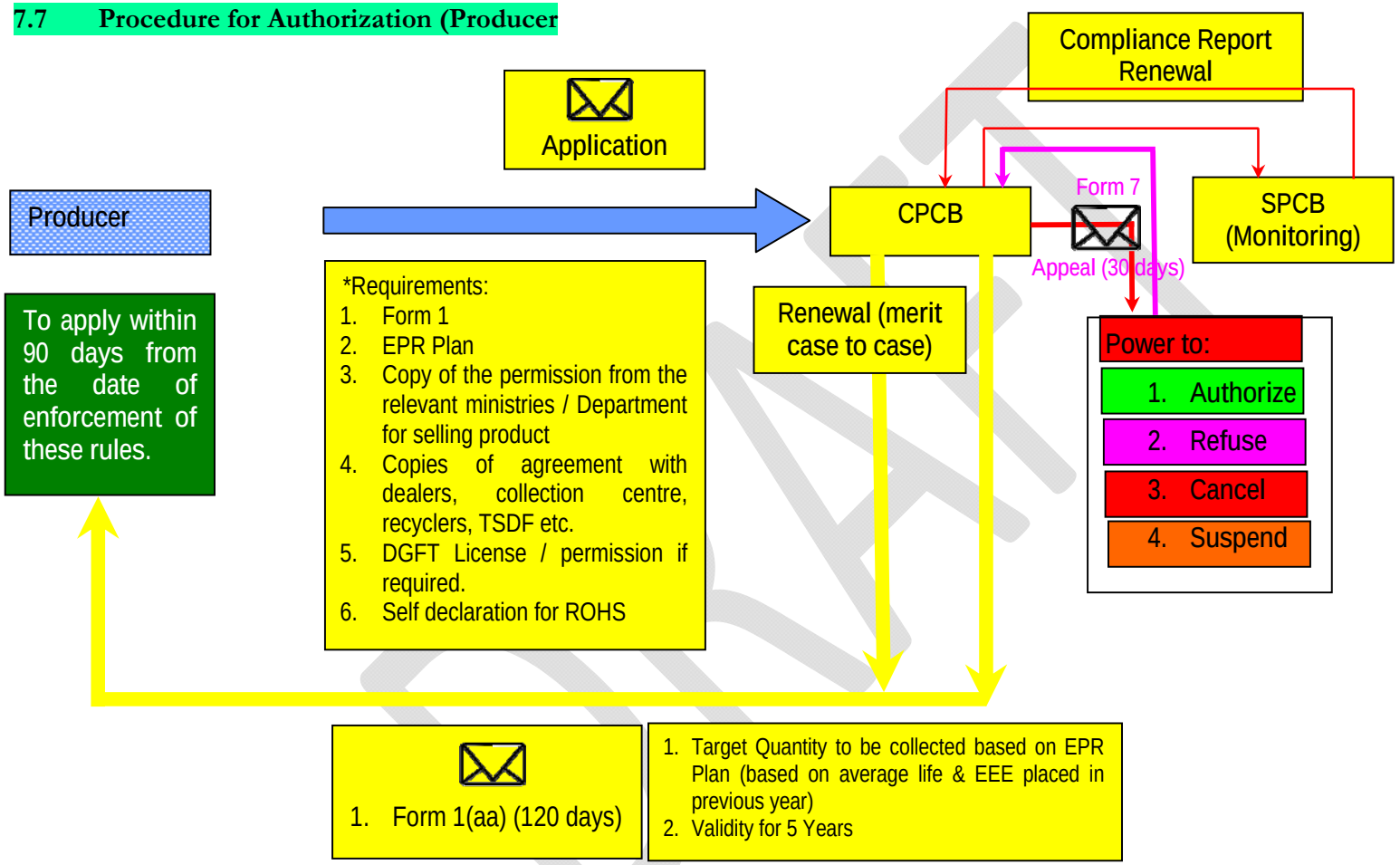
7.7 Procedure for Authorization (Producer



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1. Documents related to EPR plan as envisaged in sections 2.1.
2. Details of proposed awareness programmes and allied initiatives.
3. Copies of agreement document with dealers, collection centres, dismantlers, recyclers, treatment, storage and disposal facilities (TSDFs) etc.
4. Self-declaration for compliance of RoHS as per the format.
5. The technical documents (supplier declaration description of product, document for materials, parts, and / or sub-assemblies and analytical test result) as an evidence that the reduction of hazardous substance (RoHS) provisions are complied by the product based on standard EN 501581 of EU.
6. Copy of the permissions / licences from the relevant ministry / department for marketing various products or for doing the business are: (i) Tin details (ii) Pan details (iii) Incorporation certificate (iv) Copy IEC in case of importers
7. Copy of authorization issued by the SPCBs / PCCs earlier under E-waste (Management & Handling) Rules, 2011 in case of those producers who are operating in the country prior to 01-10-2016.

7.8 EPR Planning (Individual)

PUBLICIZE DETAILS OF COLLECTION SYSTEM

Take-Back system (Accessible to any citizen located anywhere in country)
Deposit Refund Scheme
E-waste Exchange
Retailers/Dealers and PRO etc.

PRODUCER

COLLECTION CENTRE

Dealers/Retailer

Formal / Informal Sectors

Consumers (bulk / individual) Residential

Formal / Informal Sectors

Dismantlers / Recyclers

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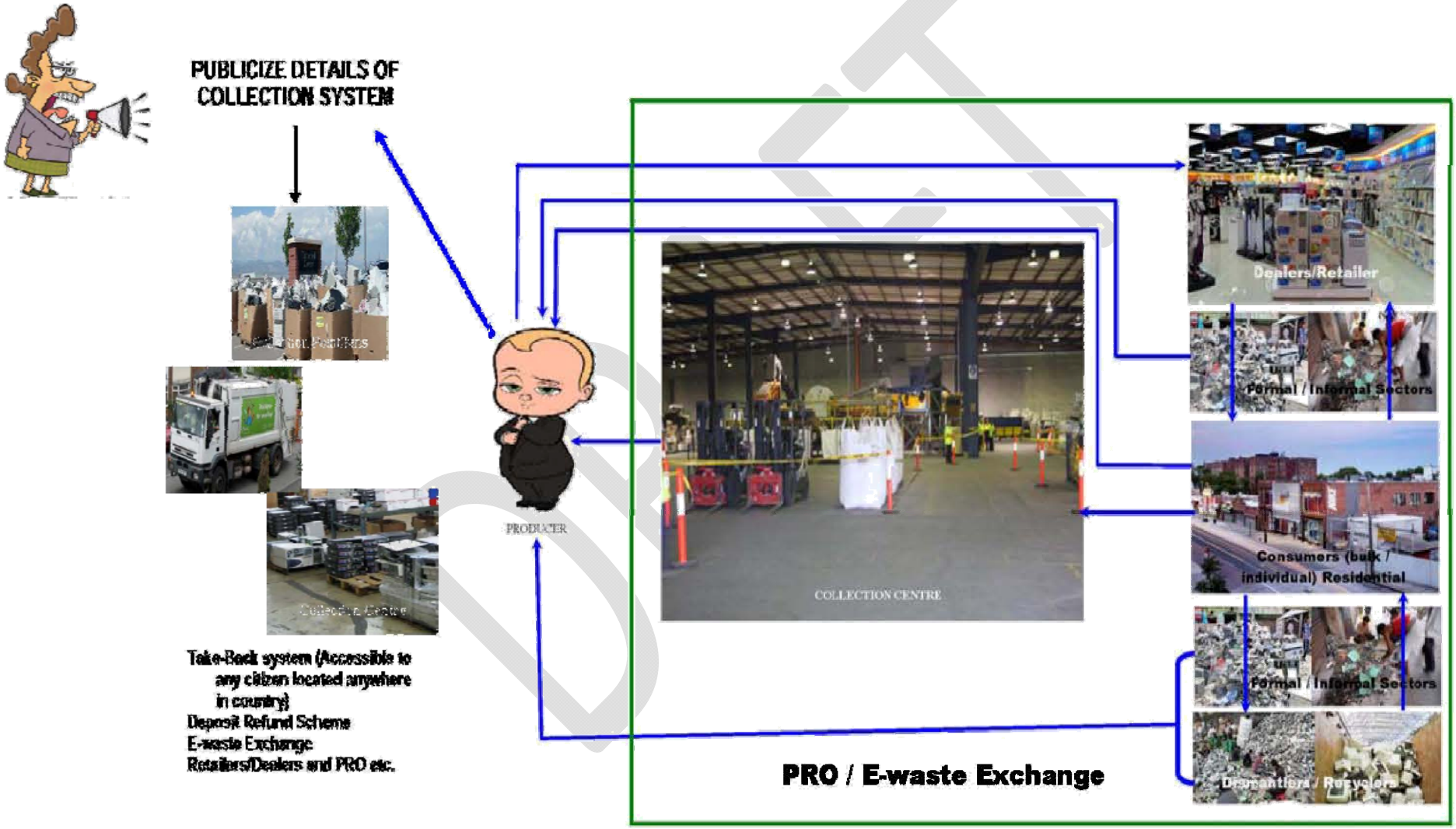
7.9 EPR Planning (PRO)



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8. TOOLKIT FOR COLLECTION CENTRES

8.1 Definition

'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;

8.2 Responsibilities of Collection Centre

Who	Responsibilities
1. Registered Producer/s 2. Authorized Refurbishers 3. Authorized Dismantlers 4. Authorized Recyclers 5. Dealers / Retailers 6. Others / PRO on behalf of 1 to 5 (Provided all are mentioned in EPR Plan of Producers)	1. Collect E-waste on behalf of producer or dismantler or recycler or refurbisher including those arising from orphaned products; 2. The collection centres established by producer can also collect E-waste on behalf of dismantler, refurbisher and recycler including those arising form orphaned products. 3. Ensure that the facilities are in accordance with the standards or guidelines issued by CPCB; 4. Ensure that the E-waste collected by them is stored in a secured manner till it is sent to authorized dismantler or recycler; 5. Ensure that no damage is caused to the environment during storage and transportation of E-waste; 6. Maintain records in Form-2 of the E-waste handled;

8.3 Functions & DO's for Collection Centres

Functions	Dos
1. Loading	• Loading, transportation, and unloading & storage of end of life product should

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Functions	Dos
2. Transportation 3. Unloading 4. Storage	be carried out so that there is no damage to health, environment and to the product itself. • Refrigerator, Air Conditioners and fluorescent and other mercury containing lamps should be given adequate attention to avoid breakage. • Cathode Ray Tubes (CRT), LCD / LED / Plasma TV and fluorescent and other mercury containing lamps should be stored either in containers or stored in stable manner to avoid damage or breakage. • Collection Centre should store E-waste product category wise. • Collection Centre should maintain the records of E-waste collected and account the same to respective producers. • Spills involving broken fluorescent lamps, oils spills should first be contained to prevent spread of the material to other areas. (use dry sand, proprietary booms / absorbent pads, stabilizing chemicals etc. for subsequent transfer of hazardous waste to TSDFs). • Make records available to CPCB / SPCB.

8.4 Infrastructure Requirements

Collection Infrastructure
1. Collection Centre should have weighing equipment for weighing & record keeping. 2. The storage capacity of any collection centre should commensurate with volume of operations (weight & numbers) and category of E-waste. 3. Space needed for storage of different category of E-waste are: Mainframe, Minicomputer, Personal Computing: Personal Computers (Central Processing Unit with input and output devices), Laptop Computers (Central Processing Unit with input and output devices), Notebook Computers, Notepad Computers & Printers including cartridges (ITEW1 to ITEW6) – 4.0m3/tonne; Monitors (CRT) – 5.0m3/tonne; Copying equipment, Electrical and electronic typewriters, User terminals and systems & Facsimile (ITEW7 to ITEW10) – 5.0 m3/tonne; Telex, Telephones, Pay telephones & Cordless telephones (ITEW11 to ITEW14) – 3.0 m3/tonne; Cellular telephones, Feature phones & Smart phones (ITEW15) – 1.0 m3/tonne; Answering systems (ITEW16) – 3.0 m3/tonne; Television sets (including sets based on (Liquid Crystal Display and Light Emitting Diode technology) (CEEW1) – 6.5 m3/tonne;

Collection Infrastructure
Refrigerator (CEEW2) – 10.0 m3/tonne; Washing Machine (CEEW3) – 7.5 m3/tonne; Air-conditioners excluding centralized air conditioning plants (CEEW4) – 6.0 m3/tonne & Fluorescent and other Mercury containing lamps (CEEW5) – 1.0 m3/tonne 4. Adequate facilities for managing leakage of compressor oils, coolant/refrigerant gases such as CFCs/HCFCs and mercury from end of life fluorescent and other mercury containing lamp etc. 5. Covered shed / spaces have to be used for storage of E-waste. 6. Collection Centre should necessarily have adequate fire-fighting arrangement, escape route for emergency exit. 7. Storage capacity for 180 days commensurate with volume (weight & number) of E-waste.

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9. TOOLKIT FOR TRANSPORTATION

9.1 Definition

'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;

9.2 Responsibilities Related to Transportation

Who	Functions	Responsibility	Sender	Dos
1. Person 2. Company	Off site transportation of e-waste by air, rail, road or water.	The responsibility of safe transportation of E-waste shall be with the sender of E-waste	Manufacturer	Identify transporter or make arrangements for a transporting E-waste.
			Producer	Transportation in such a manner that health & environmental consequences of hazards associated are minimum.
			Recycler	Transport of E-waste should be carried out as per the manifest system
			Dismantler	The transporter will be required to carry a document (three copies) as per form 6 of the rules provided by the sender.
			Bulk Consumer	Fluorescent and other mercury containing lamps may be transported to TSDF where no recyclers of CFL are available.
			Refurbisher	The manufacturers and recyclers while transporting waste generated destined for final disposal to a TSDF will follow the provisions under Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016.
			Collection Centre	
			Accident Reporting	Where an accident occurs at the facility processing E-waste or during transportation of E-waste. • the producer • refurbisher • transporter • dismantler • recycler Shall report immediately to the concerned State Pollution Control Board about the accident through telephone and e-mail.

9.3 Infrastructure Requirement

1. Modes of transportation with manifest system.

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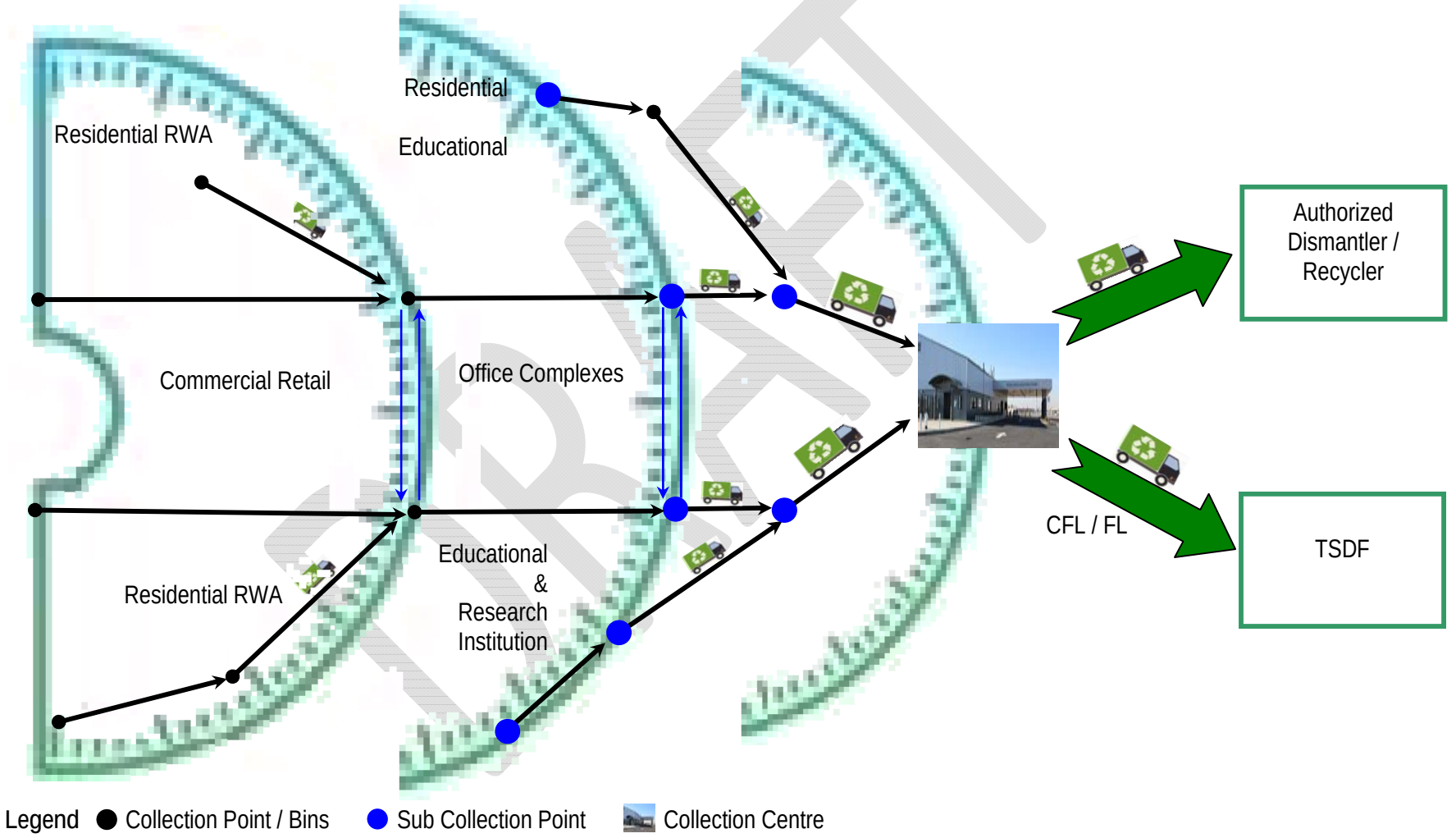
9.4 Collection, Storage & Transportation Planning of E-waste (Geographical Context)



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9.5 International Best Practices for Collection & Transportation of E-waste

9.5.1 Logistics / Collection Channels

There are three primary channels of WEEE/E-waste collection. These channels are

1. Municipal sites / Municipal Collection & Storage
2. In store retailer take-back & storage
3. Producer take-back & storage

All the three channels address "Business to Consumer" (B2C) and "Business to Business" (B2B) WEEE/E-waste collection.

9.5.2 Guiding Principles (Design Specifications of WEEE/E- waste Collection Points)

(i) Layout of Collection Point/ Storage Area

1. Collection point/ storage area should be easily accessible i.e the identification of their location is very important.
2. Area of the collection point/ storage should be able to accommodate separated/ sorted WEEE/ E-waste with respect to size.
3. Collection point/ storage area should have impermeable surface with sealed drainage system.
4. Weatherproofing of collection point/ storage area.

(ii) Area of Collection Point/ Storage Facility

Area of collection point and storage facility is an important feature for fixing up layout of storage area.

Some of the examples of the collection bins / cages & collection system is shown in **Figure 9.1 & Figure 9.3**.

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9.5.3 Number of Collection Point/ Storage Facility

Collection target defines the number of collection points. The number of WEEE/ E-waste collection points will vary from country to country. An example of local collection facilities per population in some European countries.

Table 9.1: Local Authority Collection Facilities Per Population in 2003

Country	Population (million)	Local Authority Collection Facilities	Ration (facilities / person)
The Netherlands	16.0	600	1/27 000
Sweden	8.8	600	1/15 000
Norway	4.5	400	1/11 000

Source: EPA Ireland 2003, Waste Electrical and Electronic Equipment (WEEE) Collection trials in Ireland. Authors: Wilkinson, S. and Duffy, N. Environmental Protection Agency, Wexford, Ireland

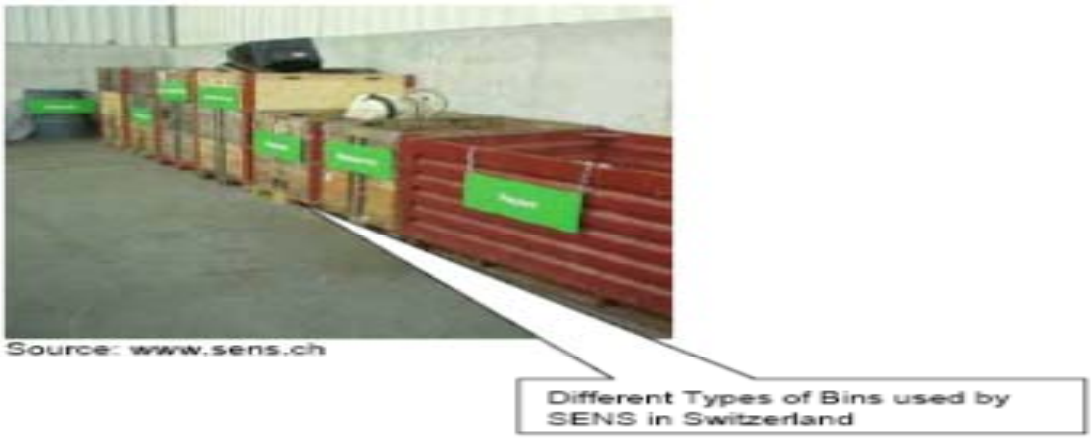
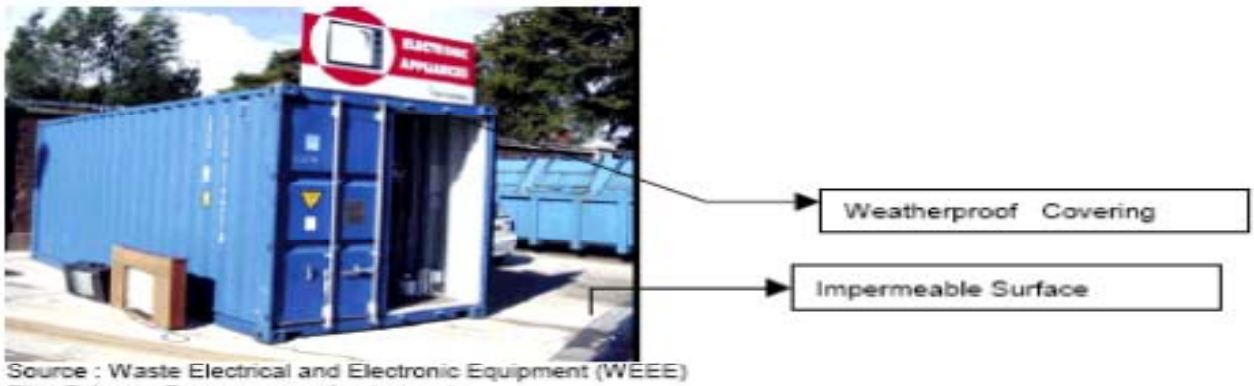
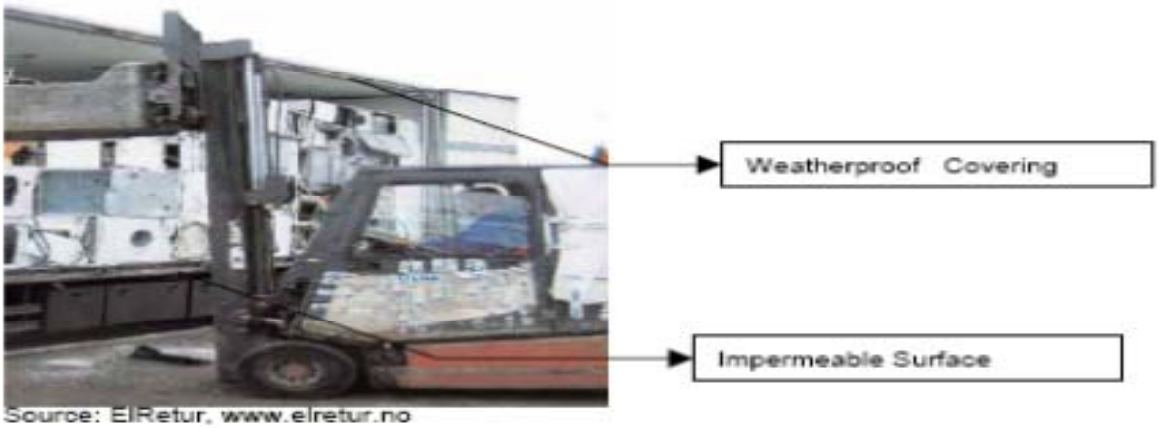


Figure 9.1: WEEE/E-waste Collection Bins / Cages

Source: UNEP E-waste Manual 2 & 3



Source : Waste Electrical and Electronic Equipment (WEEE) Pilot Scheme Report, www.ehsni.gov.uk



Source: ElRetur, www.elretur.no

Figure 9.2: Examples of WEEE/E-waste Collection System (impermeable surface & weatherproof covering) at a collection facility

Source: UNEP E-waste Manual 2 & 3

10. TOOLKIT FOR DEALERS

10.1 Definition

'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;

10.2 Responsibilities of Dealers

Who	Functions	Responsibilities
(1) Individual (2) Firm / Company / Business entity	Buying & receiving EEE, their components or consumables.	(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.

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10.3 DOs & Infrastructure Requirement

DOs	Infrastructure Requirement
(1) Provide environmentally sound storage & transportation of E-waste to collection centre, dismantler / recycler. (2) Maintain account of refund as per deposit refund scheme or take back system.	1. Provide box, bin or a demarcated area to deposit e-waste.

10.4 Regulatory Checklist

NIL

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11. TOOLKIT FOR REFURBISHER

11.1 Definition

'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;

'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;

11.2 Responsibilities of Refurbishers

Who	Functions	Responsibilities	Essential Requirements
1. Company 2. Undertaking registered under the Factories Act, 1948 or the Companies Act, 1956. 3. District Industries Centre, engaged in	1. Repairing of used electrical and electronic equipment. 2. Should not be any damage to health and environment.	(1) collect e-waste generated during refurbishing (2) Channelise the waste to authorised dismantler or recycler through its collection centre; (3) Apply for one time authorization (4) ensure that no damage is caused to the environment during storage and transportation of e-waste;	• A refurbisher has to obtain consent to establish under the Water (Prevention and Control of Pollution) Act, 1974, (25 of 1974). • the Air (Prevention and Control of Pollution) Act, 1981 (21 of 1981) from the concerned State Pollution Control Board / Pollution ontrol Committee. • A refurbisher has to obtain

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Who	Functions	Responsibilities	Essential Requirements
refurbishment of used electrical and electronic equipment.		(5) ensure that the refurbishing process do not have any adverse effect on the health and the environment; (6) ensure that the e-waste thus generated is safely transported to authorized collection centres or dismantlers or recyclers; (7) file annual returns in Form-3 to the concerned SPCB, on or before the 30th day of June following the financial year to which that return relates; (8) maintain records of the e-waste handled in Form-2.	certificate of registration and proof of installed capacity from District Industries Centre or any other government agency authorised in this regard; • A refurbisher has to obtain one-time authorization from concerned SPCB.

11.3 DOs & Don't & Infrastructure Requirement

DOs	Don't	Infrastructure Requirement
• Any e-waste generated during	The refurbisher shall	• The premise for refurbishing should have: (i)

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DOs	Don't	Infrastructure Requirement
refurbishment should be collected separately and sent to collection centre /authorised recycler. • In case of refurbisher not having own collection centre, the e-waste may be channelized to an authorised recycler. • If refurbisher opts to sell refurbished EEE then he is required to seek EPR authorisation from CPCB.	not sell any refurbished EEE without having EPR authorization.	Water proof roofing and impermeable surfaces (ii) As a general rule a refurbisher of capacity of 1 Ton per day shall require a minimum of 150 square meters' area for refurbishing, temporary storage of e waste generated and space for refurbished EEE. • The refurbishing area should be ventilated and have proper dust control equipment. De-dusting system over refurbishment tables should be provided • System to manage leakage of coolant / refrigerant gases and compressor oils from used electrical and electronic equipment during refurbishing operations.

11.4 Regulatory Checklist

1.	Form 1 a	E-waste Rules
2.	Form 1 bb	E-waste Rules
3.	Form 2	E-waste Rules
4.	Form 3	E-waste Rules
5.	Consent to Establish & Operate	Water Act
6.	Consent to Establish & Operate	Air Act
7.	Certificate of Registration	DIC / Any Other
8.	Proof of Installed Capacity	DIC / Any Other

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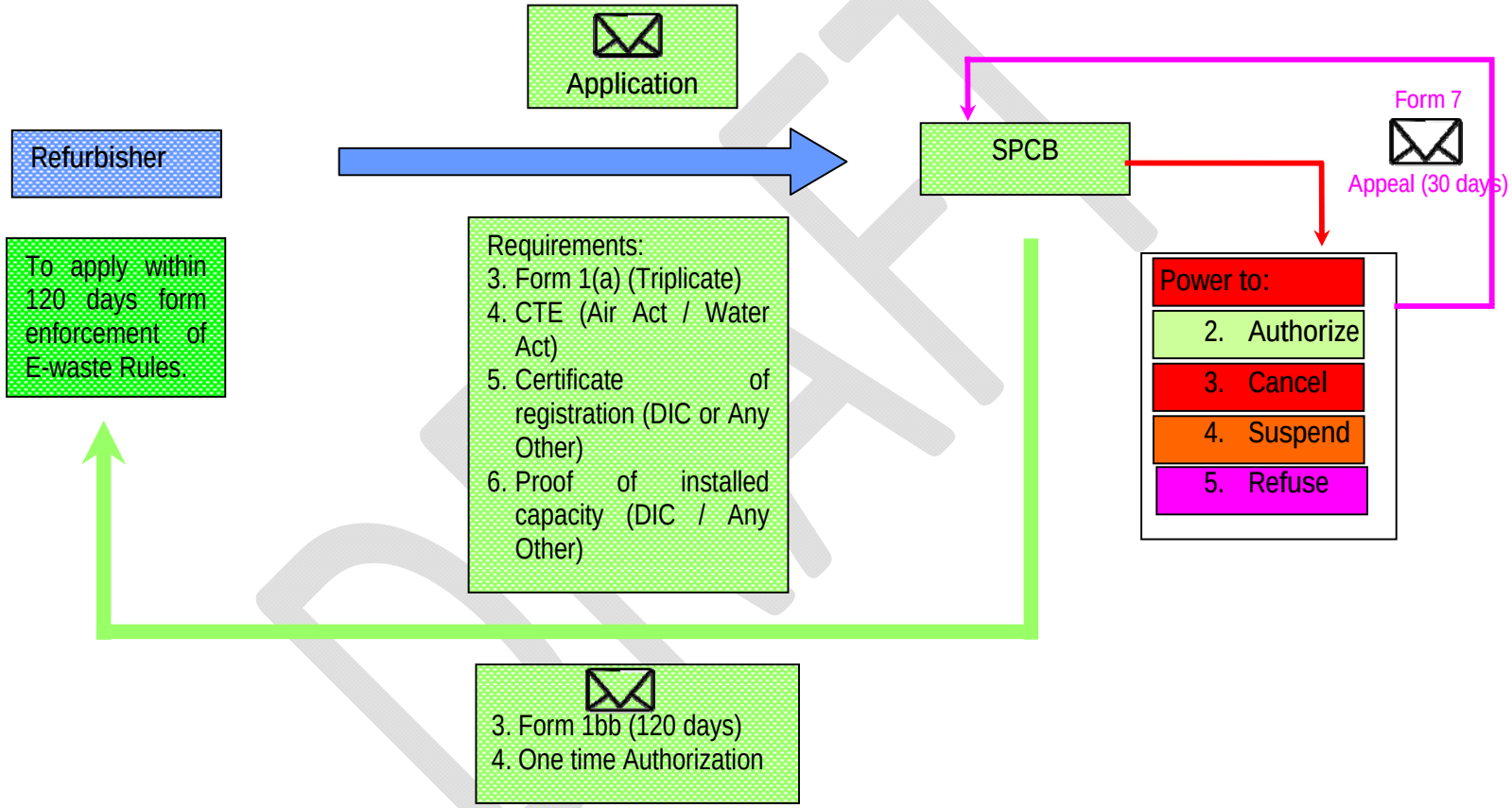
11.5 Procedure for Authorization (Refurbisher)



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12. TOOL KIT FOR CONSUMER or BULK CONSUMER

12.1 Definition

'consumer' means any person using electrical and electronic equipment excluding the bulk consumers;

'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;

12.2 Responsibilities of Consumer or Bulk Consumer

Who	Responsibility	DOs	Don't
Consumer: Any person using electrical & electronic equipment **Bulk Consumer:** 1. Central Government 2. State Government 3. Departments, Public Sector undertakings, 4. Banks, 5. Educational institutions, 6. Multinational organizations, 7. International agencies, 8. Partnership and public or private companies registered under the Factories Act, 1948 (63 of	(1) Ensure that e-waste generated by them is channelised through: - collection centre - dealer of authorised producer - dismantler - recycler - through the designated take back service provider of the producer to authorised dismantler or recycler; (2) bulk consumers shall maintain records of e-waste generated by them in Form-2. (3) Ensure that e-waste 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 shall file annual	• The end of life intact fluorescent and other mercury containing lamp may be stored either in the same boxes in which new lamps are brought or other boxes of similar size. • They should be sorted upright. • The due precaution may be taken while packing more than one used lamp, so as not to cause the possibility of breakage during the storage and transpiration. • Bulk consumers should ensure that used lamps are not disposed in the	The consumer should not throw e-waste in municipal bins.

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Who	Responsibility	DOs	Don't
1948) and Companies Act, 2013 (18 of 2013) 9. Health care facilities which have turnover of more than one crore or have more than twenty employees;	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. (5) 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	municipal bin but handed over (in a properly packed form) to take back system / collection and channelization system of producer or to a collection centre of an authorised recycler who is part of producer channelisation system.	

12.3 Infrastructure Requirement

- The bulk consumers must create special type of disposal bins (suitable for the purpose) at site for depositing the end of life intact fluorescent and other mercury containing lamp only.

12.4 Regulatory Checklist

1.	Form 2	E-waste Rules

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13. TOOLKIT FOR DISMANTLER

13.1 Definition

'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;

13.2 Responsibilities of Dismantler

Who	Functions	Responsibilities	Essential Requirements
1. Any Person **2. Organization** **3. Registered Society** **4. Designated Agency** **5. Company** **6. Association**	1. Dismantling of e-waste into their components 2. May set up their collection centre (details shall be entered in their authorization & shall not require separate authorization).	(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; (3) ensure that no damage is caused to the health & environment during storage, transportation and dismantling process of e-waste; (4) ensure that dismantled e-waste are segregated and sent to the authorized recycling facilities for recovery of materials; (5) ensure that non-recyclable or non-recoverable components are sent to authorized treatment storage and disposal facilities; (6) maintain record of e-waste collected, dismantled and sent to authorised recycler in Form-2; (7) file a return in Form-3, to the concerned State Pollution Control Board, on or before	• Connected to either Producers or PRO or e-waste exchange or takeback system or authorised recycler. • Obtain both consent to establish and operate from SPCBs / PCCs under the Water (Prevention and Control of Pollution) Act, 1974 and the Air (Prevention and Control of Pollution) Act, 1981 • Obtain authorisation from SPCBs/PCCs under E-Waste (Management) Rules, 2016, if fresh or post expiry of authorization under the Hazardous Wastes (Management,

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Who	Functions	Responsibilities	Essential Requirements
		30th day of June following the financial year to which that return relates; (8) not process any e-waste for recovery or refining of materials, unless he is authorised as a recycler for refining and recovery of materials; (9) Operation without Authorisation by any dismantler, shall be considered as causing damage to the environment.	Handling and Transboundary Movements) Rules, 2008, and the E-waste (Management & Handling) Rules, 2011.

13.3 Dismantling DOs & DON't

Dismantling

Dismantling Process	DOs	Don't
1. Essentially a manual operation for segregating various components/ parts and sending them to respective users/ recyclers. 2. Directly usable components to be sent to an authorised refurbisher. 3. The other parts can be sent to recyclers having valid CTO / authorised e-waste recyclers . 4. Perform the following operations (i) De-dusting (ii) Manual dismantling 5. Operation shall comprise of physical separation and segregation after opening the electrical and electronic	• Maintain record of each delivery received by it. • The unloading of e-waste/end of life products should be carried out in such a way that there should not be any damage to health, environment and to the product itself. • Unloading of Cathode Ray Tubes (CRT), LCD / LED / Plasma TV, refrigerator, air conditioners and fluorescent and other mercury containing lamps should be carried out under supervision to avoid breakage. • Dismantler may use screwdrivers, wrenches, pliers, wire cutters, tongs and hammers etc. for dismantling. • The dismantled components should be sent to authorised e-waste recyclers or recyclers having valid consent to operate (CTO). • Manual dismantling operations should be carried out over the dismantling table with space de-dusting system as per the factories Act. • Collection boxes should be placed near dismantling table for keeping the dismantled components. • The workers should use proper personal protective	• Shall not carry out shredding / crushing / fine grinding/wet grinding/ enrichment operations and gravity/ magnetic/density/eddy current separation of printing circuit board or the components attached with the circuit board. • Shall not be permitted for dismantling of fluorescent and other mercury containing lamps, CRT / LCD / Plasma TV. • Shall not be permitted for chemical leaching or heating

Dismantling Process	DOs	Don't
equipment into the component by manual operations.	equipment such as goggles, masks, gloves, helmet and gumboot etc. • (i) Batteries (ii) Printed Circuit Boards (PCBs) of EEE (iii) Toner cartridges (iv) Plastic (v) External Electrical Cables components must be removed from end of life products and stored in a safe manner for transportation to recyclers. • Dismantled and segregated plastic from e-waste shall only be given to registered plastic recyclers having registration under Plastic Waste (Management) Rules, 2016. • In case of dismantling refrigerators and air conditioners, only skilled manpower having required tools and personal protective equipment (PPEs) must be deployed to manually separate compressors.	process or melting the material.

13.4 Infrastructure Requirement

1. Adequate facilities for managing leakage of compressor oils, coolant/refrigerant gases such as CFCs/HCFCs and mercury from end of life fluorescent and other mercury containing lamp etc.
2. Spills involving broken Fluorescent lamps, Oils spills should first be contained to prevent spread of the material to other areas (use of dry sand, proprietary booms / absorbent pads, stabilizing chemicals etc. for subsequent transfer to hazardous waste TSDFs).
3. The premise for dismantling operation should have: a) Water proof roofing and impermeable surfaces. b) Storage space for dissembled spare parts.
4. Separate containers for storage of batteries, capacitors containing PCBs (Polychlorinated biphenyls) or PCTs (Polychlorinated terphenyls)
5. Prior to dismantling the compressors, adequate facilities should be provided for collection of coolant/refrigerant gases and compressor oil.
6. During the volume/size reduction of dismantled steel/aluminium/plastic parts, the dismantlers should have arrangement for dust and noise controls. These operations should be under acoustic enclosure for noise reduction.

7. Volume/Size reduction may be carried out after dismantling operations for the parts like steel/aluminium/plastic, for ease of transportation.
8. The de dusting system should consist of suction hoods over dismantling table connected with a cyclone, bag filter and venting through a chimney of three-meter height above roof level.
9. Should have weigh bridge and other appropriate weighing equipment for Weighing
10. Should have facilities for destroying or permanently deleting data stored in the memory of end of life products (Hard Disk, Telephones, Mobile phones) either through hammering or through data eraser.
11. Space for storage of electrical and electronic equipment up to 180 days, for process of dismantling and volume reduction and space for storage of dismantled and segregated material and free space for movement and office/ administration and other utilities (Layout Requirement).
12. A minimum of 300 square meter area for a dismantling capacity of 1T/day is required for storage of raw material, segregated material, dismantling operations and office/ administration & other utilities.

13.5 Regulatory Checklist

1.	Form 4	E-waste Rules
2.	Form 2 (Record Keeping)	E-waste Rules
3.	Form 3 (Return Filing)	E-waste Rules
4.	Consent to Establish & Operate	Water Act
5.	Consent to Establish & Operate	Air Act
6.	Certificate of Registration	DIC / Any Other
7.	Proof of Installed Capacity	DIC / Any Other
8.	If renewal the certificate of compliance	SPCB

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14. TOOLKIT FOR RECYCLER

14.1 Definition

'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;

14.2 Responsibilities of Recycler

Who	Functions	Responsibilities	Essential Requirement
(1) Dismantling along with recovery operation. (2) Any person who is engaged in recycling and reprocessing of e-waste or assemblies or their components.	1. Recycling and reprocessing of e-waste. 2. May set up their collection centres, (details of which shall be entered in their authorization & shall not require separate authorization). 3. Obtain raw material such as waste electrical and electronic assemblies or components or used components	(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; (3) ensure that no damage is caused to the health & environment during storage, transportation, dismantling / recycling of e-waste; (4) ensure that the fractions or material not recycled in its facility is sent to the respective authorised recyclers; (5) ensure that residue generated during recycling process is disposed of in an authorised treatment storage disposal facility; (6) maintain record of e-waste collected, dismantled, recycled and sent to	• A recycler should be part of producer's e-waste channelisation system. • A recycler has to obtain consent to establish & operate from SPCBs/PCCs under the Water (Prevention and Control of Pollution) Act, 1974 and the Air (Prevention and Control of Pollution) Act, 1981 • A recycler has to obtain authorisation from SPCBs / PCCs under E-Waste (Management) Rules, 2016, if fresh or post expiry of authorization under the provisions of the

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Who	Functions	Responsibilities	Essential Requirement
	from producers / PRO / e-waste exchange / dismantlers and consumers / bulk consumers. 4. The Product of recyclers has to be sent or sold to users or other recyclers having valid CTO from SPCBs / PCCs. 5. Any hazardous waste generated will be sent to TSDF'	authorized recycler in Form-2; (7) 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; (8) 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; (9) operation without Authorisation by any recycler, shall be considered as causing damage to the environment.	Hazardous Wastes (Management, Handling and Transboundary Movements) Rules, 2008, and the E-waste (Management & Handling) Rules, 2011.

14.3 Recycling

Recycling Process	Dos
(i) Manual / semi- automatic / automatic dismantling operations (ii) Shredding / crushing / fine grinding/wet grinding/ enrichment operations, gravity/ magnetic/density/eddy current separation (iii) Pyro metallurgical operations - Smelting furnace (iv) Hydro metallurgical operations	• Maintain record of each delivery received by it. • The unloading of end of life product should be carried out in such a way that there should not be any damage to health, environment and to the product itself. • Unloading of Cathode Ray Tubes (CRT),

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Recycling Process	Dos
(v) Electro-metallurgical operations (vi) Chemical leaching (vii) CRT/LCD/Plasma processing (viii) Toner cartridge recycling (ix) Melting, casting, moulding operations (for metals and plastics) Processing of CRT are: (i) CRT monitors and TVs should be manually removed from plastic/ wooden casing. The CRT should be split into funnel and panel glass using different splitting technology such as Ni-Chrome hot wire cutting, Diamond wire method or Diamond saw separation in a closed chamber under low vacuum conditions (650 mm of Hg). (ii) The funnel section is then lifted off from the panel glass section and the internal metal gasket is removed for facilitating the removal of internal phosphor coating. (iii) The internal phosphor coating from the inner side of panel glass is removed by using an abrasive wire brush with suction arrangement under low pressure as given above at (i). The extracted air is cleaned through high efficiency bag-filter system and collected in appropriate labelled containers and then disposed at an authorised TSDF. (iv) Manual shredding, cutting, and segregation operations for CRTs should be carried out in low vacuum (650 mm of Hg) chambers where the dust is extracted through cyclones, bag filters, ID fan and a suitable chimney. (v) Segregated CRTs can also be shredded in mechanical/automatic shredding machines connected with dust control systems. The mixed shredded glass is separated into leaded glass and glass cullet using electro-magnetic field or by density separation.	LCD/LED/Plasma TV, Refrigerator, Air Conditioners and fluorescent and other mercury containing lamps should be carried out under supervision to avoid breakage. • The recycling facilities shall comply with the requirements as specified for dismantlers. • The discharges from the facility shall comply with general standards under E (P) Act, 1986 for discharge of wastewater. • In case of air emissions, the unit shall comply with emission norms prescribed under Air (Prevention and Control of Pollution) Act, 1981. • The workers involved in recycling operations shall use proper personal protective equipment such as goggles, masks, gloves, helmet and gumboot etc. • Adequate facilities for onsite collection and storage of bag filter residues, floor cleaning dust and other hazardous material shall be provided and sent to secure landfill by obtaining membership of TSDF. • The CRT / LCD / Plasma TV should be processed only at a recycler's facility. • For recycling of CRT monitor and TVs care should be taken to contain release of harmful substances.

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Recycling Process	Dos
The LCD / Plasma TV should be dismantled piece by piece, starting: • The removal of the plastic backing shell, • Printed circuit boards, • Aluminium or steel frame, • Screen, • PET plastics, • LCD Panel and backlight. • The metal frame, wire, other metallic material • plastic backing cabinet may be sent to recyclers with valid CTO. • Printed Circuit Board and LCD panel may be recycled or in case recycling facility is not available then sent to respective authorised recycling facility.	

14.4 Infrastructure Requirement

1. For fluorescent and other mercury containing lamp recycling, the unit shall have at least following systems:
   (i) Mechanical feeding system.
   (ii) Mercury spill collection system.
   (iii) Lamp Crushing System, under vacuum, for separation of mercury-contaminated phosphor powder & mercury vapors from other crushed components, so as not to cause release of any pollutant, including mercury vapor.
   (iv) System for segregation of mercury vapour from the phosphor powder through a distillation system for separation & recovery of mercury.
   (v) Air pollution control system (APCS) which shall include HEPA (High Efficiency Particulate Arrestor) filter system or activated carbon filter system or any other equivalent efficient system for separation/ removal of mercury vapor from mercury contaminated phosphor powder'
   (vi) Arrangement for disposal of mercury contaminated filter pads to TSDF.
   (vii) On line mercury monitoring system, to have check on emission of mercury, which has to be in compliance to the consented norms.

2. For LCD and Plasma TV a recycler should have sealed vacuum dismantling platform for dismantling of LCD / Plasma panels.
3. In case of furnace, a minimum stack height of 30 meter shall be installed depending on emission rate of SO_2.
4. Noise control arrangement for equipment like crusher, grinder and shredder needs to be provided.
5. Fume hoods to be connected with bag dust collectors followed wet (chemical) scrubbers and carbon filters shall be installed for control of fugitive emissions from furnaces or reactor.
6. De dusting equipment such as suction hood shall be installed where manual dismantling is carried out.
7. A recycling facility shall install adequate wastewater treatment facilities for process wastewater and air pollution control equipment (off gas treatment, wet/alkaline/packed bed scrubber and carbon filters) depending on type of operations undertaken.
8. A recycler should have facilities for destroying or permanently deleting data stored in the memory of end of life products (Hard Disk, Telephones, Mobile phones) either through shredding or grinding or through data eraser.
9. A recycler should have weigh bridge and other appropriate weighing equipment for weighing.
10. A recycler of capacity of 1 Ton per day shall require a minimum of 500 square meters area.
11. Authorisation to recyclers may be preferred if they have minimum operational capacity of 5 MT/day with an area of about 2500 square meter.

14.5 Regulatory Checklist

1.	Form 4	E-waste Rules
2.	Form 2 (Record Keeping)	E-waste Rules
3.	Form 3 (Return Filing)	E-waste Rules
4.	Consent to Establish & Operate	Water Act
5.	Consent to Establish & Operate	Air Act
6.	Certificate of Registration	DIC / Any Other
7.	Proof of Installed Capacity	DIC / Any Other
8.	If renewal the certificate of compliance	SPCB

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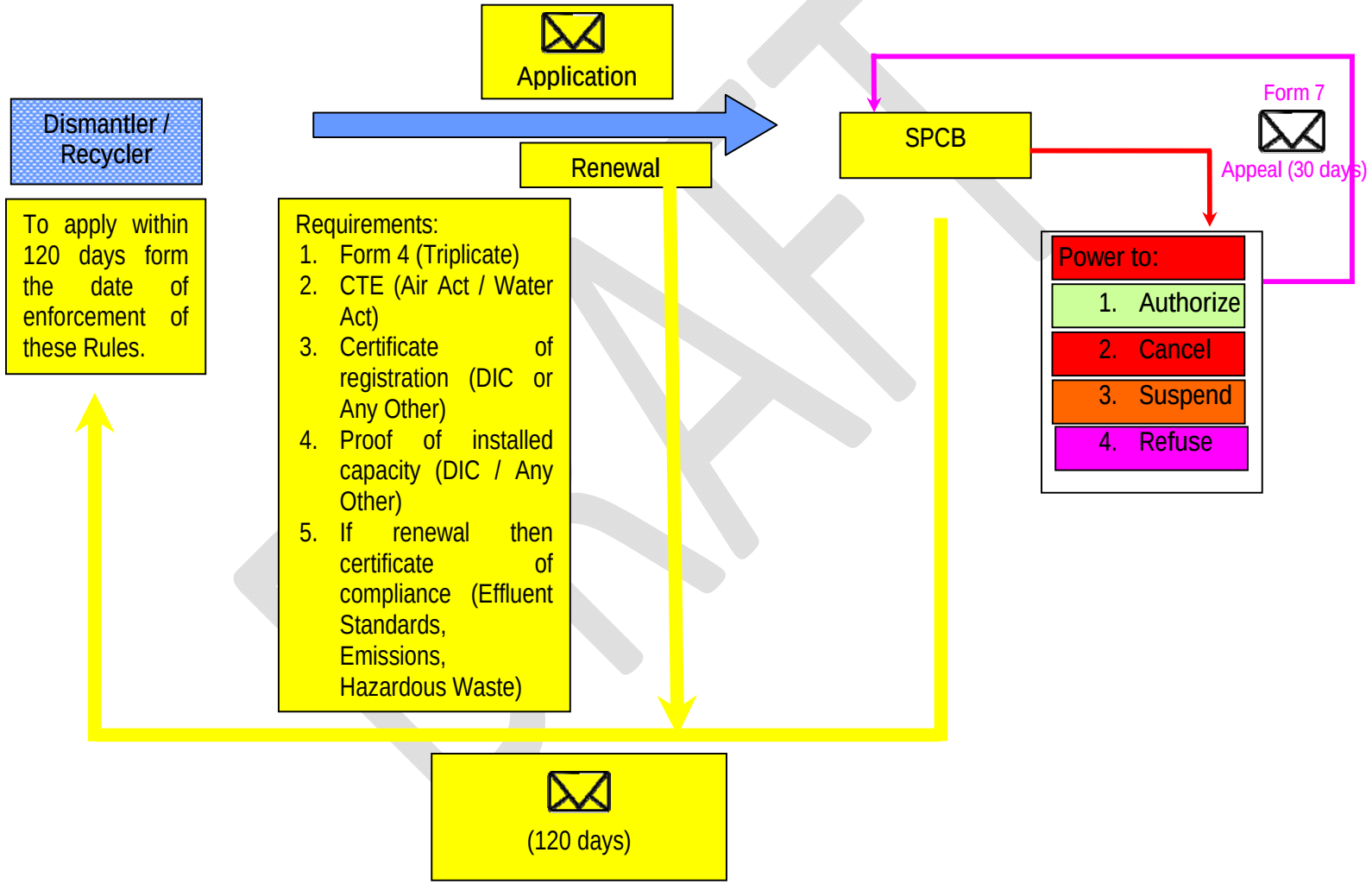
14.6 Procedure for Authorization (Dismantler / Recycler)



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14.7 International Best Practices for Dismantling and Recycling of E-waste

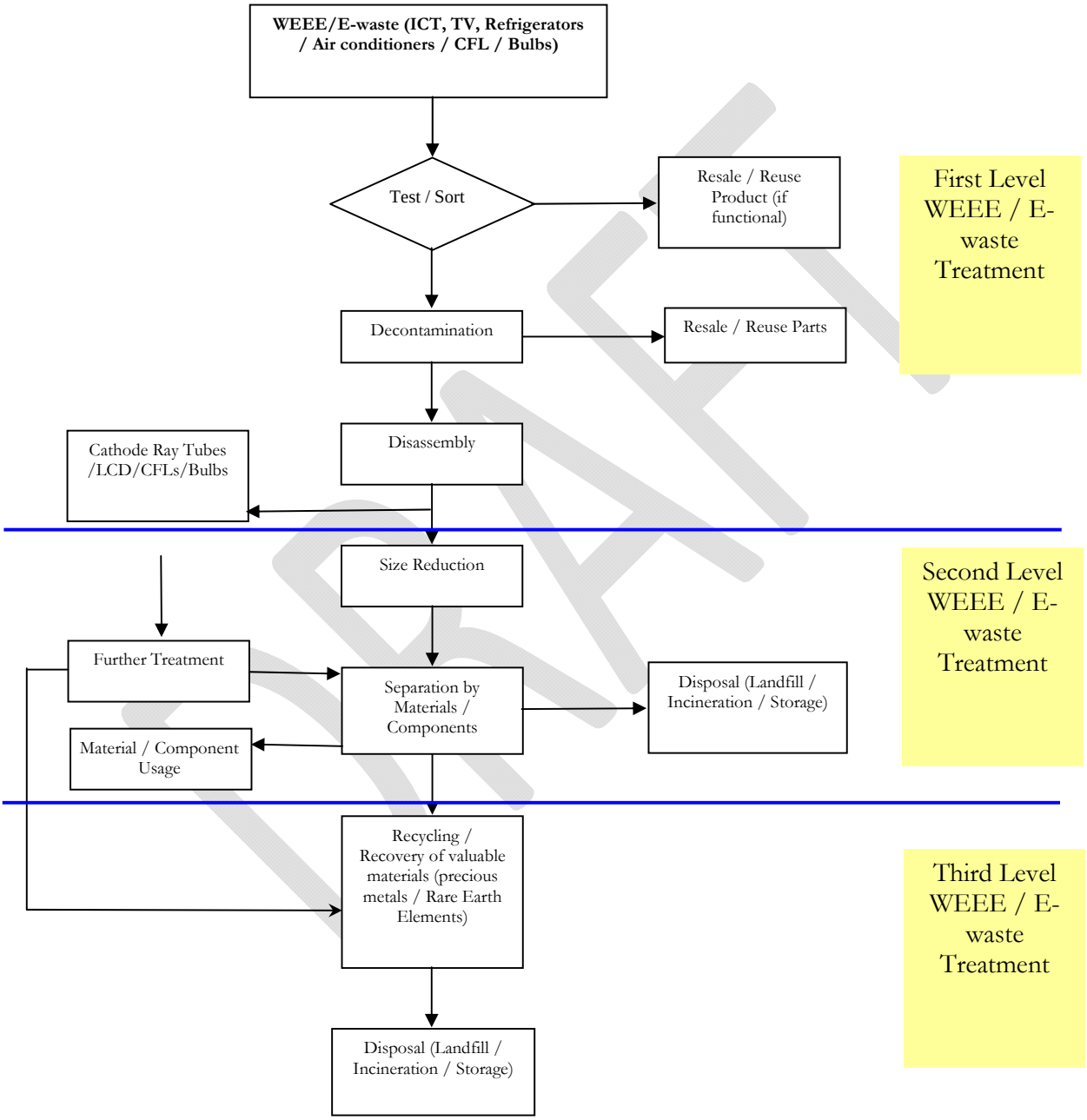

Figure 14.1: Simplified Flow Diagram for the Recycling of WEEE/E-waste

Source: Compendium of Technologies for the Recovery of Materials from WEEE/E-Waste Final Report. Jain Amit (20th April, 2017).

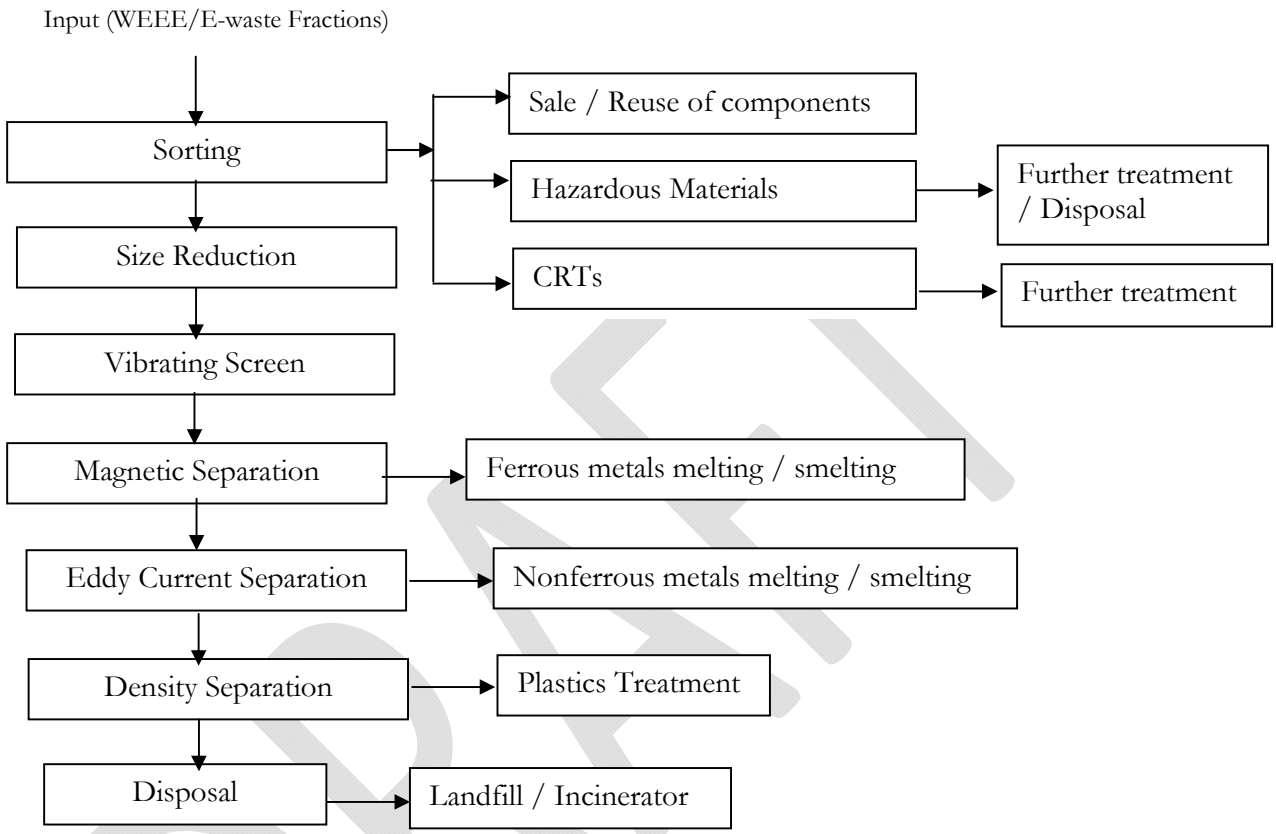

Figure 14.2: Simplified Flow Diagram for second Level WEEE/E-waste treatment

Source: Compendium of Technologies for the Recovery of Materials from WEEE/E-Waste Final Report. Jain Amit (20th April, 2017).

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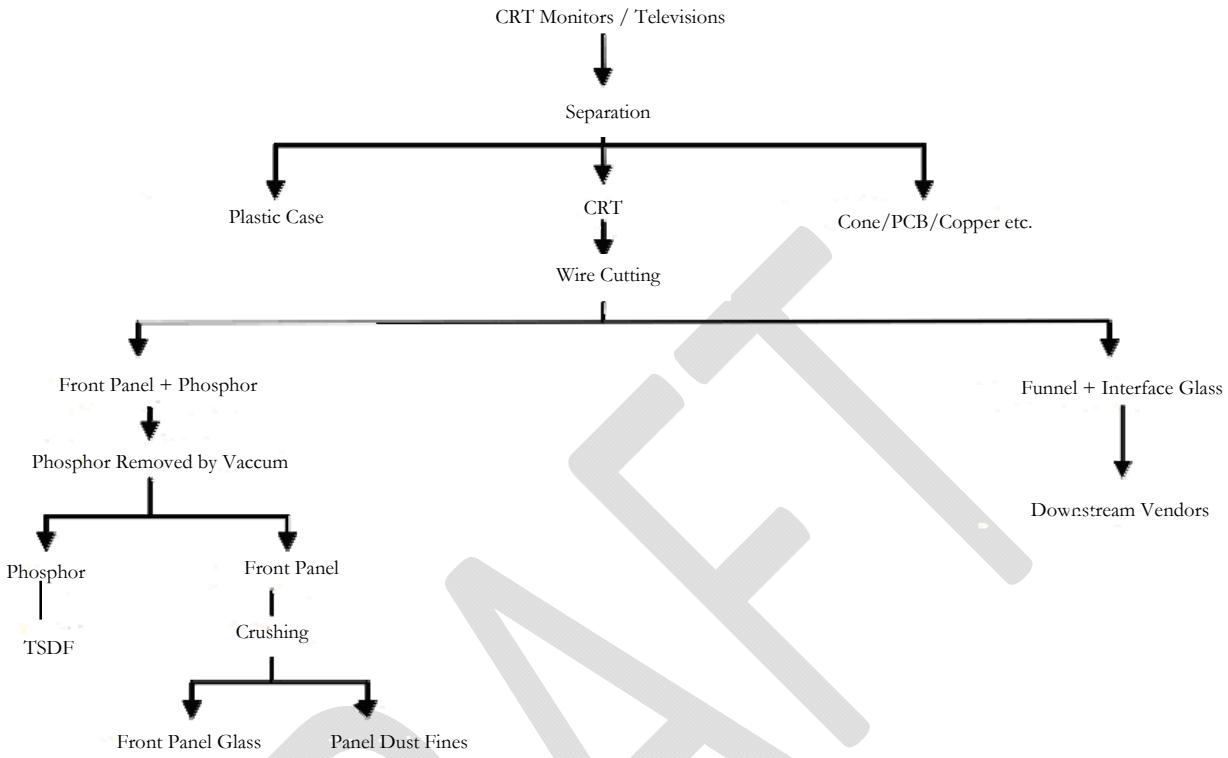

Figure 14.3: CRT Dismantling Operation Procedure

Source: Compendium of Technologies for the Recovery of Materials from WEEE/E-Waste Final Report. Jain Amit (20th April, 2017).

Table 14.1: Input/ Output and unit operations for third level treatment of WEEE/E-waste

Input/ WEEE Residues	Unit Operation/ Disposal/ Recycling Technique	Output
Sorted Plastic	Recycling	Plastic Product
Plastic Mixture	Energy Recovery/ Incineration	Energy Recovery
Plastic Mixture with Flame Retardants (FR)	Incineration	Energy Recovery
Lead Smelting	Secondary Lead Smelter	Lead
Ferrous metal scrap	Secondary steel/ iron recycling	Iron
Non Ferrous metal Scrap	Secondary copper and aluminum smelting	Copper/ Aluminum
Precious Metals	Au/ Ag separation (refining)	Gold/ Silver/ Platinum and Palladium
Batteries (Lead Acid/ NiMHand LiION)	Lead recovery and smelting Remelting and separation	Lead
CFC	Recovery/ Reuse and Incineration	CFC/ Energy recovery
Oil	Recovery/ Reuse and	Oil recovery/ energy

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Input/ WEEE Residues	Unit Operation/ Disposal/ Recycling Technique	Output
	Incineration	
Capacitors	Incineration	Energy recovery
Mercury	Separation and Distillation	Mercury
Glass	Remelting	Glass

Source: UNEP Manual, E-waste Volume II: E-waste Management Manual, http://www.unep.or.jp/ietc/publications/spc/ewastemanual_vol2.pdf, (Accessed on 14 July, 2016)

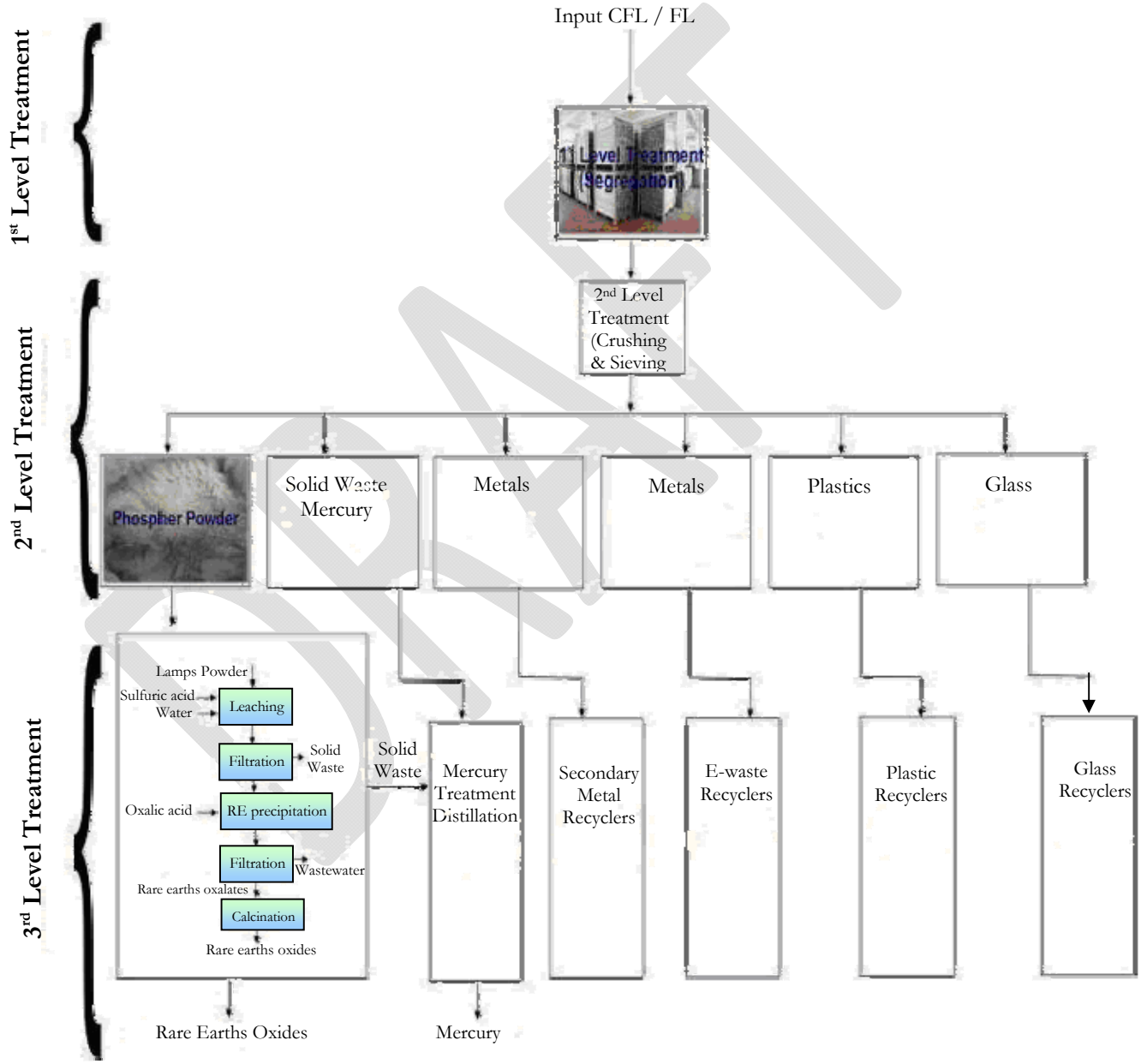

Figure 14.4: Conceptual CFL/FL Waste Treatment Scheme and Process Flow

Source: Compendium of Technologies for the Recovery of Materials from WEEE/E-Waste Final Report. Jain Amit (20th April, 2017).

RoHS: Every producer of electrical and electronic equipment and their components or consumables or parts or spares listed in Schedule I shall ensure:

- new Electrical and Electronic Equipment and their components or consumables or parts or spares do not contain Lead, Mercury, Cadmium, Hexavalent Chromium, polybrominated biphenyls and polybrominated diphenyl ethers beyond a maximum concentration value of 0.1% by weight in homogenous materials for lead, mercury, hexavalent chromium, polybrominated biphenyls and polybrominated diphenyl ethers

- 0.01% by weight in homogenous materials for cadmium.

Exclusions

- Components or consumables or parts or spares required for the electrical and electronic equipment placed in the market prior to 1st May, 2014 provided Reduction of Hazardous Substances compliant parts and spares are not available.

- The applications listed in Schedule II shall be exempted from provisions of sub-rule (1) of rule 16.

- Manufacture and supply of electrical and electronic equipment used for defence and other similar strategic applications shall be excluded from provisions RoHS.

Producers	**CPCB**
(1) Every producer of applications listed in Schedule II shall ensure that the limits of hazardous substances as given in Schedule II are to be complied. (2) Every producer shall provide the detailed information on the constituents of the equipment and their components or consumables or parts or spares along with a declaration of conformance to the provisions in the product user documentation. (3) Imports or placement in the market for new electrical and electronic equipment shall be permitted only for those which are compliant to provisions of RoHS. (4) Every producer while seeking EPR – Authorisation will provide information on the compliance of the provisions. This information shall be in terms of self-	(1) Central Pollution Control Board shall conduct random sampling of electrical and electronic equipment placed on the market to monitor and verify the compliance of RoHS provisions. (2) The cost for sample and testing shall be borne by the Producer. (3) Random sampling shall be as per the guidelines of Central Pollution Control Board. (1) Central Pollution Control Board shall publish the methods for sampling and analysis of Hazardous Substances to the items listed in Schedule I and II.

Producers	CPCB
declaration. (5) If the product does not comply with RoHS provisions, the Producers shall take corrective measures to bring the product into compliance (6) Withdraw or recall the product from the market, within a reasonable period as per the guidelines of the Central Pollution Control Board.	(2) Also enlist the labs for this purpose.

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16. TOOLKIT FOR MISCELLANEOUS STAKEHOLDERS

16.1 Central Pollution Control Board, Delhi

AUTHORITY	DOs
	i. Grant and Renewal of EPR - Authorisation and monitoring of its compliance. ii. Maintain information on EPR - Authorisation on its web site. iii. Set and revise targets for collection of e-waste. iv. Coordination with State Pollution Control Boards v. Preparation of Guidelines for Environmentally Sound Management of e-waste. vi. Conduct random check for ascertaining compliance of the e-waste rules vii. identification of such importers or producers who have not applied for EPR authorisation or are not complying with RoHS provision. viii. Seek the help of customs department or any other agency of the Government of India. ix. Conduct random inspection of dismantler or recycler or refurbisher. x. Documentation, compilation of data on e-waste and uploading on websites of Central Pollution Control Board xi. Actions against violation of these rules. xii. Conducting training programmes. xiii. Submit Annual Report to the MoEF&CC by 30th December every year. xiv. Enforcement of provisions regarding RoHS in manufacture of EEE. xv. Interaction with IT industry for reducing hazardous substances. xvi. Set and revise targets for compliance to the RoHS. xvii. Any other function delegated by the MoEF&CC.

16.2 State Pollution Control Boards or Committees of Union Territories

Authority	DOs
SPCB / PCC	i. Inventorisation of e-waste. ii. Grant and renewal of authorisation to manufacturers, dismantlers, recyclers and refurbishers. iii. Monitoring and compliance of EPR - Authorisation as directed by CPCB and that of dismantlers, recyclers and refurbishers authorisation. iv. Conduct random inspection of dismantler or recycler or refurbisher. v. Maintain online information regarding authorisation granted to manufacturers, dismantlers, recyclers and refurbishers. vi. Implementation of programmes to encourage environmentally sound recycling. vii. Action against violations of these rules. viii. Any other function delegated by the Ministry under these rules.

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16.3 Urban Local Bodies (Municipal Committee or Council or Corporation)

Authority	DOs
Urban Local Bodies	(i) To ensure that e-waste if found to be mixed with Municipal Solid Waste is properly segregated, collected and is uthorized to uthorized dismantler or recycler. (ii) To ensure that e-waste pertaining to orphan products is collected and uthorized to uthorized dismantler or recycler.

16.4 Port Authority Under Indian Ports Act, 1908 (15 of 1908) and Customs Authority Under the Customs Act, 1962 (52 of 1962)

Authority	DOs
Port authority	(i) Verify the EPR - Authorisation. (ii) Inform Central Pollution Control Board of any illegal traffic for necessary action. (iii) Take action against importer for violations under the Indian Ports Act, 1908/Customs Act, 1962.

16.5 State Government

Authority	DOs
State Government	(1) Department of Industry / Other Department: 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 / Other Department: 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 e. Ensure safety & health of workers involved in dismantling and recycling; (3) Prepare integrated plan for effective implementation of these provisions, and to submit annual report to MoEF&CC.

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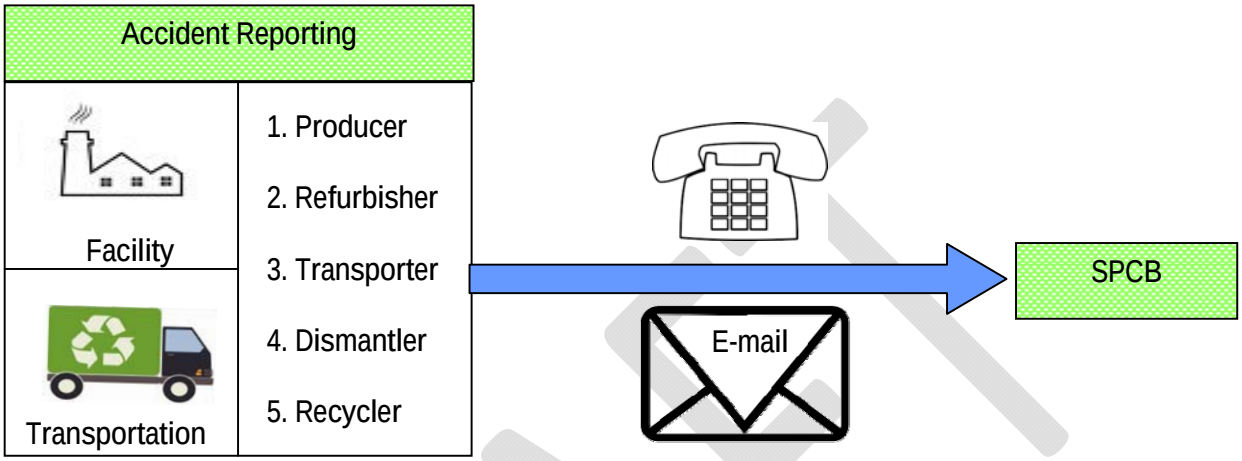
16.6 Others



Liability (Who)	Type
1. Manufacturer 2. Producer 3. Importer 4. Transporter 5. Refurbisher 6. Dismantler 7. Recyclesr	1. Damage to the environment 2. Third Part

Violation by (Who)	Type
1. Manufacturer 2. Producer 3. Importer 4. Transporter 5. Refurbisher 6. Dismantler 7. Recyclesr	Financial levied by SPCB after approval from CPCB.

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ANNEXURE – 1: IMPORTANT DEFINITIONS

Definition: '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;

Definition: '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;

Definition: '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;

Definition: '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;

Definition: '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;

Definition: '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;

Definition: 'electrical and electronic equipment' means equipment which are dependent on electric current or electro-magnetic field in order to become functional;

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Definition: '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;

Definition: '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;

Definition: '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;

Definition: '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;

Definition: "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;

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Schedule II from E-waste Rules

Applications, which are exempted from the requirements of sub-rule (1) of rule 16	
	Substance
1	Mercury in single capped (compact) fluorescent lamps not exceeding (per burner):
1(a)	For general lighting purposes <30 W : 2.5 mg
1(b)	For general lighting purposes ≥ 30 W and <50 W : 3.5mg
1(c)	For general lighting purposes ≥ 50 W and <150 W : 5mg
1(d)	For general lighting purposes ≥150 W : 15 mg
1(e)	For general lighting purposes with circular or square structural shape and tube diameter ≤17 mm : 7mg
1(f)	For special purposes:5 mg
2(a)	Mercury in double-capped linear fluorescent lamps for general lighting purposes not exceeding (per lamp):
2(a)(1)	Tri-band phosphor with normal life time and a tube diameter < 9mm (e.g. T2): 4mg
2(a)(2)	Tri-band phosphor with normal life time and a tube diameter ≥ 9 mm and ≤ 17 mm (e.g. T5): 3 mg
2(a)(3)	Tri- band phosphor with normal life time and a tube diameter >17 mm and ≤ 28 mm(e.g. T8): 3.5 mg
2(a)(4)	Tri-band phosphor with normal life time and a tube diameter >28 mm (e.g. T 12):3.5 mg
2(a)(5)	Tri-band phosphor with long life time (≥25000 h):5mg
2(b)	Mercury in other fluorescent lamps not exceeding(per lamp):
2(b)(1)	Linear halophosphate lamps with tube >28 mm (e.g. T 10 and T12):10 mg
2(b)(2)	Non-linear halophosphate lamps(all diameters):15mg
2(b)(3)	Non-linear tri-band phosphor lamps with tube diameter >17 mm(e.g.T9): 15 mg
2(b)(4)	Lamps for other general lighting and special purposes (e.g. induction lamps):15mg
3	Mercury in cold cathode fluorescent lamps and external electrode fluorescent lamps (CCFL and EEFL)for special purposes not exceeding (per lamp):
3(a)	Short length(≤ 500 mm):3.5mg
3(b)	Medium length(>500 mm and≤1500 mm): 5mg
3(c)	Long length(>1500 mm): 13mg
4(a)	Mercury in other low pressure discharge lamps (per lamp): 15mg
4(b)	Mercury in High Pressure Sodium(vapour) lamps for general lighting purposes not exceeding (per burner)in lamps with improved colour rendering index Ra>60:
4(b)-I	P ≤155 W : 30 mg
4(b)-II	155 W < P ≤405 W : 40 mg
4(b)-III	P >405 W: 40 mg
4(c)	Mercury in other High Pressure Sodium(vapour)lamps for general lighting purposes not exceeding (per burner):
4(c)-I	P≤155 W:25mg

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Applications, which are exempted from the requirements of sub-rule (1) of rule 16	
4(c)-II	155 W < P ≤ 405 W:30 mg
4(c)-III	P >405 W:40 mg
4(d)	Mercury in High Pressure Mercury (vapour) lamps (HPMV)
4(e)	Mercury in metal halide lamps (MH)
4(f)	Mercury in other discharge lamps for special purposes not specifically mentioned in this Schedule
5(a)	Lead in glass of cathode ray tubes
5(b)	Lead in glass of fluorescent tubes not exceeding 0.2% by weight
6(a)	Lead as an alloying element in steel for machining purposes and in galvanized steel containing up to 0.35% lead by weight
6(b)	Lead as an alloying element in aluminium containing up to 0.4% lead by weight
6(c)	Copper alloy containing up to 4% lead by weight
7(a)	Lead in high melting temperature type solders (i.e. lead-based alloys containing 85% by weight or more lead)
7(b)	Lead in solders for servers, storage and storage array systems, network infrastructure equipment for switching, signalling, transmission, and network management for telecommunications
7(c)-I	Electrical and electronic components containing lead in a glass or ceramic other than dielectric ceramic in capacitors, e.g. piezoelectronic devices, or in a glass or ceramic matrix compound.
7(c)-II	Lead in dielectric ceramic in capacitors for a rated voltage of 125 V AC or 250 V DC or higher
7(c)-III	Lead in dielectric ceramic in capacitors for a rated voltage of less than 125 V AC or 250 V DC
8(a)	Cadmium and its compounds in one shot pellet type thermal cut-offs
8(b)	Cadmium and its compounds in electrical contracts
9	Hexavalent chromium as an anticorrosion agent of the carbon steel cooling system in absorption refrigerators up to 0.75% by weight in the cooling solution
9(b)	Lead in bearing shells and bushes for refrigerant-containing compressors for heating, ventilation, air conditioning and refrigeration (HVACR) application.
11(a)	Lead used in C-press compliant pin connector systems
11(b)	Lead used in other than C-press compliant pin connector systems
12	Lead as a coating material for the thermal conduction module C- ring
13(a)	Lead in white glasses used for optical applications
13(b)	Cadmium and lead in filter glasses and glasses used for reflectance standards.
14	Lead in solders consisting of more than two elements for the connection between the pins and the package of microprocessors with a lead content of more than 80% and less than 85% by weight
15	Lead in solders to complete a viable electrical connection between semiconductor die and carrier within integrated circuit flip chip packages.
16	Lead in linear incandescent lamps with silicate coated tubes
17	Lead halide as radiant agent in high intensity discharge (HID) lamps used for professional

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Applications, which are exempted from the requirements of sub-rule (1) of rule 16	
	reprography applications.
18(a)	Lead as activator in the fluorescent powder (1% lead by weight or less) of discharge lamps when used as specialty lamps for diazoprinting reprography, lithography, insect traps, photochemical and curing processes containing phosphors such as SMS ($(Sr, Ba)_2Mg\ Si_2O_7$:Pb)
18(b)	Lead as activator in the fluorescent powder (1% lead by weight or less) of discharge lamps when used as sun tanning lamps containing phosphors such as BSP ($Ba\ Si_2O_5$:Pb)
19	Lead with PbBiSn-Hg and PblnSn-Hg in specific compositions as main amalgam and with PbSn-Hg as auxiliary amalgam in very compact energy saving lamps (ESL)
20	Lead oxide in glass used for bonding front and rear substrates of flat fluorescent lamps used for Liquid Crystal Displays (LCDs)
21	Lead and cadmium in printing inks for the application of enamels on glasses, such as borosilicate and soda lime glasses
23	Lead in finishes of fine pitch components other than connectors with a pitch of 0.65 mm and less
24	Lead in solders for the soldering to machined through hole discoidal and planar array ceramic multilayer capacitors
25	Lead oxide in surface conduction electron emitter displays (SED) used in structural elements, notably in the seal frit and frit ring.
26	Lead oxide in the glass envelope of black light blue lamps
27	Lead alloys as solder for transducers used in high-powered (designated to operate for several hours at acoustic power levels of 125 dB SPL and above) loudspeakers
29	Lead bound in crystal glass
30	Cadmium alloys as electrical/mechanical solder joints to electrical conductors located directly on the voice coil in transducers used in high-powered loudspeakers with sound pressure levels of 100 dB(A) and more
31	Lead in soldering materials in mercury free flat fluorescent lamps (which e.g. are used for liquid crystal displays, design or industrial lighting)
32	Lead oxide in seal frit used for making window assemblies for Argon and Krypton laser tubes
33	Lead in solders for the soldering of thin copper wires of 100 μm diameter and less in power transformers
34	Lead in cermet-based trimmer potentiometer elements
36	Mercury used as a cathode sputtering inhibitor in DC plasma displays with a content up to 30 mg per display
37	Lead in the plating layer of high voltage diodes on the basis of a zinc borate glass body
38	Cadmium and cadmium oxide in thick film pastes used on aluminium bonded beryllium oxide
39	Cadmium in colour converting II-VI LEDs (<10 μg Cd per mm^2 of light- emitting area) for use in solid state illumination or display systems.

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FORM-1

[See Rules 5(1) (g), 13(1) (i), 13(1) (vi)]

Applicable to producers seeking Extended Producer Responsibility - Authorisation

The application form should contain the following information:

1.	Name and full address along with telephone numbers, e-mail and other contact details of Producer (It should be the place from where sale in entire country is being managed)	:	
2.	Name of the Authorised Person and full address with e-mail, telephone and fax number	:	
3.	Name, address and contact details of Producer Responsibility Organisation, if any with full address, e-mail, telephone and fax number, if engaged for implementing the Extended Producer Responsibility	:	
4.	Details of electrical and electronic equipment placed on market year-wise during previous 10 years in the form of Table 1 as given below:	:	

Table 1: Details of Electrical and Electronic Equipment placed on the market in previous years - Code wise

Sr. No.	Electrical and Electronic Equipment Item	Electrical and Electronic Equipment Code	Quantity, number and weight placed on market (year-wise)									
A	**Information technology and telecommunication equipment:**											
1	Centralised data processing: Mainframes, Minicomputers	ITEW1										
2	Personal Computing: Personal Computers (Central Processing Unit with input and output devices)	ITEW2										
3	Personal Computing: Laptop Computers (Central Processing Unit with input and output devices)	ITEW3										
4	Personal Computing: Notebook Computers	ITEW4										
5	Personal Computing: Notepad Computers	ITEW5										
6	Printers including cartridges	ITEW6										
7	Copying equipment	ITEW7										
8	Electrical and electronic typewriters	ITEW8										

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Sr. No.	Electrical and Electronic Equipment Item	Electrical and Electronic Equipment Code	Quantity, number and weight placed on market (year-wise)									
9	User terminals and systems	ITEW9										
10	Facsimile	ITEW10										
11	Telex	ITEW11										
12	Telephones	ITEW12										
13	Pay telephones	ITEW13										
14	Cordless telephones	ITEW14										
15	Cellular telephones	ITEW15										
16	Answering systems	ITEW16										
B	**Consumer electrical and electronics:**											
17	Television sets (including sets based on (Liquid Crystal Display and Light Emitting Diode technology)	CEEW1										
18	Refrigerator	CEEW2										
19	Washing Machine	CEEW3										
20	Air-conditioners excluding centralised air conditioning plants	CEEW4										
21	Fluorescent and other Mercury containing lamps	CEEW5										

5. Estimated generation of Electrical and Electronic Equipment waste item-wise and estimated collection target for the forthcoming year in the form of Table 2 including those being generated from their service centres, as given below:

Table 2: Estimated generation of Electrical and Electronic Equipment waste item-wise and estimated collection target for the forthcoming year

Sr. No.	Item	Estimated waste electrical and electronic equipment generation Number and weight	Targeted collection Number and weight

6. Extended Producer Responsibility Plans:

(a) Please provide details of your overall scheme to fulfil Extended Producer Responsibility obligations including targets. This should comprise of general scheme of collection of used/waste Electrical and Electronic Equipment from the Electrical and Electronic Equipment placed on the market earlier such as through dealers and collection centres, Producer Responsibility Organisation, through buy-back arrangement, exchange scheme, Deposit Refund Scheme, etc. whether directly or through any authorised agency and channelising the items so collected to authorised recyclers.

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(b) Provide the list with addresses along with agreement copies with dealers, collection centres, recyclers, Treatment, Storage and Disposal Facility, etc. under your scheme.

7. Estimated budget for Extended Producer Responsibility and allied initiatives to create consumer awareness.

8. Details of proposed awareness programmes.

9. Details for Reduction of Hazardous Substances compliance (to be filled if applicable):

(a) Whether the Electrical and Electronic Equipment placed on market complies with the rule 16 (1) limits with respect to lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls and polybrominateddiphenyl ethers;
(b) Provide the technical documents (Supplier declarations, Materials declarations/Analytical reports) as evidence that the Reduction of Hazardous Substances (RoHS) provisions are complied by the product based on standard EN 50581 of EU;
(c) Documents required:
   i. Extended Producer Responsibility plan;
   ii. Copy of the permission from the relevant Ministry/Department for selling their product;
   iii. Copies of agreement with dealers, collection centre, recyclers, Treatment, Storage and Disposal Facility, etc.;
   iv. Copy of Directorate General of Foreign Trade license/permission as pplicable;
   v. Self-declaration regarding Reduction of Hazardous Substances provision;
   vi. Any other document as required.

(Authorised signature)

Place: _____

Date: _____

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FORM 1(a)

[See rules 4(2), 8 (2), 13(2) (ii), 13(2) (vi) and 13(4) (i)]

APPLICATION FOR OBTAINING AUTHORISATION FOR GENERATION OR STORAGE OR TREATMENT OR DISPOSAL OF E-WASTE BY MANUFACTURER OR REFURBISHER*

From: .....
.....

To
The Member Secretary,
..... Pollution Control Board or…… Pollution Control Committee
.....
.....

Sir,

I / We hereby apply for authorisation/renewal of authorisation under rule 13(2) (i) to 13(2) (viii) and/or 13 (4) (i) of the E-Waste (Management) Rules, 2016 for collection/storage/ transportation/ treatment/ refurbishing/disposal of e-wastes.

For Office Use Only

Code No. :
Whether the unit is situated in a critically polluted area as identified by Ministry of Environment and Forests (yes/no);

To be filled in by Applicant

1. Name and full address:

2. Contact Person with designation and contact details such as telephone Nos, Fax. No. and E-mail:

3. Authorisation required for (Please tick mark appropriate activity/ies*)

i. Generation during manufacturing or refurbishing* ☐

ii. Treatment, if any ☐

iii. Collection, Transportation, Storage ☐

iv. Refurbishing ☐

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4. E-waste details:

(a) Total quantity e-waste generated in MT/A
(b) Quantity refurbished (applicable to refurbisher)
(c) Quantity sent for recycling
(d) Quantity sent for disposal

5. Details of Facilities for storage/handling/treatment/refurbishing:

6. In case of renewal of authorisation previous authorisation no. and date and details of annual returns:

Place : _____ Signature _____

(Name_____)

Date : _____

Designation: _____

Note:-

(1) * The authorisation for e-waste may be obtained along with authorisation for hazardous waste under the Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008, if applicable.

(2) Wherever necessary, use additional sheets to give requisite and necessary details.

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FORM 1 (aa)

[See rules 5 (6) and 13(1)(ii)]

FORMAT OF EXTENDED PRODUCER RESPONSIBILITY - AUTHORISATION

[Extended Producer Responsibility Authorisation for Producer of the Electrical & Electronic Equipment]

Ref: Your application for Grant of Extended Producer Responsibility - Authorisation for following Electrical & Electronic Equipment under E-Waste (Management) Rules, 2016

1. Number of Authorisation:

Date:

2. **M/s. ----------** is hereby granted Extended Producer Responsibility - Authorisation based on:

(a) overall Extended Producer Responsibility plan
(b) proposed target for collection of e-waste

3. The Authorisation shall be valid for a period of ___ years from date of issue with following conditions:

(i) you shall strictly follow the approved Extended Producer Responsibility plan, a copy of which is enclosed herewith;

(ii) you shall ensure that collection mechanism or centre are set up or designated as per the details given in the Extended Producer Responsibility plan. Information on collection mechanism/centre including the state-wise setup should be provided;

(iii) you shall ensure that all the collected e-waste is channelised to authorized dismantler or recycler designated as per the details. Information on authorized dismantler or recycler designated state-wise should be provided;

(iv) you shall maintain records, in Form-2 of these Rules, of e-waste and make such records available for scrutiny by Central Pollution Control Board;

(v) you shall file annual returns in Form-3 to the Central Pollution Control Board on or before 30th day of June following the financial year to which that returns relates;

(vi) General Terms & Conditions of the Authorisation:

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a. The authorisation shall comply with provisions of the Environment (Protection) Act, 1986 and the Rules made there under;

b. The authorisation or its renewal shall be produced for inspection at the request of an officer authorised by the Central Pollution Control Board;

c. Any change in the approved Extended Producer Responsibility plan should be informed to Central Pollution Control Board on which decision shall be communicated by Central Pollution Control Board within sixty days;

d. It is the duty of the authorised person to take prior permission of the concerned State Pollution Control Boards and Central Pollution Control Board to close down the facility;

e. An application for the renewal of authorisation shall be made as laid down in sub-rule (vi) of rule of 13(1) the E-Waste (Management) Rules, 2016;

f. The Board reserves right to cancel/amend/revoke the authorisation at any time as per the Policy of the Board or Government.

Authorized signatory
(with designation)

To,
Concerned Producer

Copy to:
1. Member Secretary, Concerned State.
2. In-charge, concerned Zonal Office, Central Pollution Control Board.

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FORM 1(bb)

[See rules 4(2), 8(2)(a), 13(2) (iii) and 13(4)(ii)]

FORMAT FOR GRANTING AUTHORISATION FOR GENERATION OR STORAGE OR TREATMENT OR REFURBISHING OR DISPOSAL OF E-WASTE BY MANUFACTURER OR REFURBISHER

Ref: **Your application for Grant of Authorisation**

1. (a) Authorisation no. ..... and (b) date of issue …….

2. ……..…..……of……is hereby granted an authorisation for generation, storage, treatment, disposal of e-waste on the premises situated at…… for the following:

a. quantity of e-waste;
b. nature of e-waste.

3. The authorisation shall be valid for a period from …… to ……

4. The e-waste mentioned above shall be treated/ disposed off in a manner ..... at .....

5. The authorisation is subject to the conditions stated below and such conditions as may be specified in the rules for the time being in force under the Environment (Protection) Act, 1986.

Signature ----------

Designation ---------- Date: ----------

Terms and conditions of authorisation

1. The authorisation shall comply with the provisions of the Environment (Protection) Act, 1986, and the rules made thereunder.
2. The authorisation or its renewal shall be produced for inspection at the request of an officer authorized by the concerned State Pollution Control Board.
3. Any unauthorised change in personnel, equipment as working conditions as mentioned in the application by the person authorized shall constitute a breach of his authorisation.
4. It is the duty of the authorised person to take prior permission of the concerned tate Pollution Control Board to close down the operations.
5. An application for the renewal of an authorisation shall be made as laid down in sub-rule (vi) of rule 13(2).

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FORM-2

[See rules 4(4), 5(4), 6(5), 8(7), 9(2), 10(7), 11(8), 13 (1) (xi), 13(2)(v), 13(3)(vii) and 13 (4)(v)]

FORM FOR MAINTAINING RECORDS OF E-WASTE HANDLED OR GENERATED

Generated Quantity in Metric Tonnes (MT) per year

1.	Name & Address: Producer or Manufacturer or Refurbisher or Dismantler or Recycler or Bulk Consumer*		
2.	Date of Issue of Extended Producer Responsibility Authorisation*/ Authorisation*		
3.	Validity of Extended Producer Responsibility Authorisation*/ Authorisation*		
4.	Types & Quantity of e- waste handled or generated**	Category	Quantity
		Item Description	
5.	Types & Quantity of e-waste stored	Category	Quantity
		Item Description	
6.	Types & Quantity of e-waste sent to collection centre authorised by producer/ dismantler/recycler / refurbisher or authorised dismantler/recycler or refurbisher**	Category	Quantity
		Item Description	
7.	Types & Quantity of e-waste transported*	Category	Quantity
		Quantity	
	Name, address and contact details of the destination		
8.	Types & Quantity of e-waste refurbished*	Category	Quantity
		Item Description	
	Name, address and contact details of the destination of refurbished materials		
9.	Types & Quantity of e-waste dismantled*	Category	Quantity
		Item Description	
	Name, address and contact details of the destination		
10.	Types & Quantity of e-waste recycled*	Category	Quantity
	Types & Quantity of materials recovered	Item Description	
		Quantity	
	Name, address and contact details of the destination		
11.	Types & Quantity of e- waste sent to recyclers by dismantlers	Category	Quantity
		Item Description	
	Name, address and contact details of the destination		
12.	Types & Quantity of other waste sent to respective recyclers by dismantlers/recyclers of e-waste	Category	Quantity
		Item Description	
	Name, address and contact details of the destination		
13.	Types & Quantity of e-waste treated & disposed	Category	Quantity
		Item Description	
	Name, address and contact details of the destination		

Note:-

(1) * Strike off whichever is not applicable

(2) Provide any other information as stipulated in the conditions to the authoriser

(3) ** For producers this information has to be provided state-wise

FORM-3

[See rules 4(5), 5(5), 8(6), 9(4), 10(8), 11(9), 13 (1) (xi), 13(2)(v), 13(3)(vii) and 13(4)(v)]

FORM FOR FILING ANNUAL RETURNS

[To be submitted by producer or manufacturer or refurbisher or dismantler or recycler by 30th day of June following the financial year to which that return relates].

Quantity in Metric Tonnes (MT) and numbers

1	Name and address of the producer or manufacturer or refurbisher or dismantler or recycler			
2	Name of the authorised person and complete address with telephone and fax numbers and e-mail address			
3	Total quantity of e-waste collected or channelised to recyclers or dismantlers for processing during the year for each category of electrical and electronic equipment listed in the Schedule I (Attach list) by PRODUCERS			
	Details of the above	TYPE	QUANTITY	No.
3(A)*	BULK CONSUMERS: Quantity of e- waste			
3(B)*	REFURBISHERS: Quantity of e-waste:			
3(C)*	DISMANTLERS: i Quantity of e-waste processed (Code wise); xviii. . Details of materials or components recovered and sold; xix. . Quantity of e-waste sent to recycler; xx. . Residual quantity of e-waste sent to Treatment, Storage and Disposal Facility.			
3(D)*	RECYCLERS: ix. Quantity of e-waste processed (Code wise); x. Details of materials recovered and sold in the market; xi. Details of residue sent to Treatment, Storage and Disposal Facility.			
4	Name and full address of the destination with respect to 3(A)-3(D) above			
5	Type and quantity of materials segregated or recovered from e-waste of different codes as applicable to 3(A)-3(D)	Type	Quantity	

✔Enclose the list of recyclers to whom e-waste have been sent for recycling.

Place_____

Date_____ **Signature of the authorised person**

Note:-

(1) * Strike off whichever is not applicable

(2) Provide any other information as stipulated in the conditions to the authoriser

(3) In case filing on behalf of multiple regional offices, Bulk Consumers and Producers need to add extra rows to 1 & 3(A) with respect to each office.

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FORM-4

[See rules 13(3)(i) and 13(3)(vi)]

APPLICATION FORM FOR AUTHORISATION OF FACILITIES POSSESSING ENVIRONMENTALLY SOUND MANAGEMENT PRACTICE FOR DISMANTLING OR RECYCLING OF E-WASTE

(To be submitted in triplicate)

1.	Name and Address of the unit			
2.	Contact person with designation, Tel./Fax			
3.	Date of Commissioning			
4.	No.of workers (including contract labour)			
5.	Consents Validity	Water (Prevention and Control of Pollution) Act, 1974; Valid up to Air (Prevention and Control of Pollution) Act, 1981; Valid up to		
6.	Validity of current authorisation if any	e-waste (Management & Handling) Rules, 2011; Valid up to		
7.	Dismantling or Recycling Process	Please attach complete details		
8.	Installed capacity in MT/year	Products	Installed capacity (MTA)	
9.	E-waste processed during last three years	Year	Product	Quantity
10.	Waste Management:			
	a. Waste generation in processing e-waste	Please provide details material wise		
	b. Provide details of disposal of residue.	Please provide details		
	c. Name of Treatment Storage and Disposal Facility utilized for			
11.	Details of e-waste proposed to be procured from re-processing	Please provide details		
12.	Occupational safety and health aspects	Please provide details		
13.	Details of Facilities for dismantling both manual as well as mechanised:			
14.	Copy of agreement with Collection Centre			
15.	Copy agreement with Producer			
16.	Details of storage for dismantled e-waste			
17.	Copy of agreement with Recycler			
18.	Details of Facilities for Recycling			
19.	Copy of agreement with Collection Centre			
20.	Copy agreement with Producer			
21.	Details of storage for raw materials and recovered materials			

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II. In case of renewal of **authorisation, previous registration or authorisation no. and date**

I hereby declare that the above statements or information are true and correct to the best of my knowledge and belief.

Signature

Place:_____ Name:_____

Date:_____ Designation:_____

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Form-5

[See rule 18 (1)]

FORM FOR ANNUAL REPORT TO BE SUBMITTED BY THE STATE POLLUTION CONTROL BOARD TO THE CENTRAL POLLUTION CONTROL BOARD

To,
The Chairman,
Central Pollution Control Board,
(Ministry of Environment And Forests)
Government Of India, 'Parivesh Bhawan', East Arjun Nagar,
Delhi- 110 0032

1.	Number of authorised manufacturer, refurbisher, collection centre, dismantler and recycler for management of e-waste in the State or Union territory under these rules	:	
2.	Categories of waste collected along with their quantities on a monthly average basis:	:	Please attach as Annexure-I
3.	A Summary Statement code-wise of e-waste collected	:	Please attach as Annexure-II
4.	Details of material recovered from recycling of e-waste	:	
5.	Quantity of CFL received at Treatment, Storage and Disposal Facility	:	
6.	The above report is for the period from ……to .....……		

Place: _____

Date: _____

Chairman or the Member Secretary
State Pollution Control Board

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Form-6

[See rule 19]

E-WASTE MANIFEST

1.	Sender's name and mailing address (including Phone No.):					
2.	Sender's authorisation No, if applicable.:					
3.	Manifest Document No.:					
4.	Transporter's name and address: (including Phone No.)					
5.	Type of vehicle:	(Truck Vehicle)	or	Tanker	or	Special
6.	Transporter/s registration No.:					
7.	Vehicle registration No.:					
8.	Receiver's name & address:					
9.	Receiver's authorisation No, if applicable:					
10.	Description of E-Waste (Item, Weight/ Numbers):					
11.	Name and stamp of Sender* (Manufacturer or Producer or Bulk Consumer or Collection Centre or Refurbisher or Dismantler): Signature: Month Day Year					
12.	Transporter acknowledgement of receipt of E-Wastes					
	Name and Year	stamp:	Signature:	Month	Day	
13.	Receiver* (Collection Centre or Refurbisher or Dismantler or Recycler) certification of receipt of E-waste					
	Name and Year	stamp:	Signature:	Month	Day	

* As applicable

Note:-

Copy number with colour code (1)	**Purpose (2)**
Copy 1 (Yellow)	To be retained by the sender after taking signature on it from the transporter and other three copies will be carried by transporter.
Copy 2 (Pink)	To be retained by the receiver after signature of the transporter.
Copy 3 (Orange)	To be retained by the transporter after taking signature of the receiver.
Copy 4 (Green)	To be returned by the receiver with his/her signature to the sender

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FORM 7

[See rule 22]

APPLICATION FOR FILING APPEAL AGAINST THE ORDER PASSED BY CENTRAL POLLUTION CONTROL BOARD/STATE POLLUTION CONTROL BOARD

1. Name and address of the person making the appeal :

2. Number, date of order and address of the authority : (certified copy of the to which passed the order, against which appeal is order be attached)

3. Ground on which the appeal is being made :

4. Relief sought for :

5. List of enclosures other than the order referred in point 2 against which the appeal is being filed. :

Signature……

Name and address…….

Place:

Date:

Bishwanath Sinha
Joint Secretary to Government of India
(F No. 12-6/2013-HSMD)

****

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Date:

Self-Declaration Form
(As per E-Waste (Management) Rules, 2016)

Producer Details:

S.No.	Required Information	Details
1.	Company Name with Complete Address from where business/sale in the entire country is being managed:	
2.	Name of Authorised Person Email: Telephone: Fax: Mobile Number: Complete Postal Address:	
3.	Brand name (if any):	

Self-Declaration for Compliance of
Reduction in the use of Hazardous Substances (RoHS)
(As per E-Waste (Management) Rules, 2016)

We being the Producer as per E-Waste (Management) Rules, 2016, hereby declare that all the EEE, being offered for sale in the country by our company and covered in the Schedule – I of the E-Waste (Management) Rules, 2016 and listed at enclosure – A comply with the sub rule (1) of the Rule16 of the above said Rule.

Authorizing Signatory
(Name/Signature/Seal)

Date:

Enclosed: Enclosure A

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Enclosure – A

S. No.	Product Category & Code* (as per Schedule I of E-Waste (M) Rules, 2016	Product name**	Model No.**	Weight of Product (kgs) or Numbers	Date of placing on market (In case of import, date of entry in the country)	Compliance with RoHS Yes/No/ Partial	RoHS Information provided on product information booklet Yes/No	In case Product is imported from other country, name of the country where product is manufactured

**Add additional rows for products and models

Authorizing Signatory
(Name/Signature/Seal)

Date:

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1. General description of the product

2. Documents for materials, parts and/or sub-assemblies

3. Supplier declarations (covering specific material, part and/or sub-assembly, or a specific range of materials, part and/or sub-assemblies) and/or contractual agreement, such as:

(i) Supplier declarations, confirming that the restricted substance content of the material, part, or sub-assembly is within the permitted levels and identifying any exemptions that have been applied (ii) Signed contracts confirming that the producer's specification for the maximum content of restricted substances in a material, part, or sub-assembly is fulfilled.

4. Material Declarations:

(i) Material declarations providing information on specific substance content and identifying any exemptions that have been applied.

and/or

5. Analytical test results:

(i) Analytical test results using the methods described or referenced in EN 62321

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