INVENTORY OF HAZARDOUS WASTES GENERATING INDUSTRIES

IN

THIRUVANANTHAPURAM, KOLLAM, PATHANAMTHITTA &
ALAPPUZHA DISTRICTS

Prepared by
Kerala State Pollution Control Board
Regional Office, Thiruvananthapuram
2017

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Kerala State Pollution Control Board

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ACRONYMS

ABBREVIATIONS	DESCRIPTION
HW	Hazardous Waste
IRE	Indian Rare Earths Ltd
FACT	Fertilizers and Chemicals Travancore Limited
CPCB	Central Pollution Control Board
SPCB	State Pollution Control Board
KSPCB	Kerala State Pollution Control Board
PCC	Pollution Control Committee
MOEF	Ministry of Environment and Forestry
DGFT	Directorate General of Foreign Trade
UT	Union Territory
HWM	Hazardous Waste Management
TSDF	Treatment, Storage and Disposal Facilities
TCLP	Toxicity Characteristic Leaching Procedure

AAS	Atomic Absorption Spectrometer
KEIL	Kerala Enviro Infrastructure Ltd
MTA	Metric Ton per Annum
HCL	Hydrochloric Acid
HF	Hydrogen Fluoride
SO	Sulphur Oxide
CO	Carbon monoxide

CHAPTER 1

INTRODUCTION

Hazardous waste means any waste, which by reason of characteristics, such as physical, chemical, biological, reactive, toxic, flammable, explosive or corrosive, causes danger to health, or environment. It includes materials which are discarded after use from e-products, vehicles, clinical and medical products, fuel products (e.g. oil), gas exploration and extraction. Scientific research indicates that materials such as industrial solvents, waste oils, industrial sludges and chemical wastes are hazardous to nature. Households, small businesses, farms, healthcare and construction sectors also generate quantities of hazardous waste which includes batteries, electrical equipment, healthcare waste, solvent based paint, fluorescent lamps, etc.

Hon'ble Supreme Court of India by its order dated 14.10.2003 in the writ petition No. 657 / 95 has issued various directions for management and handling of the hazardous waste and one of those direction was to prepare an inventory of hazardous waste by every State Pollution Control Board. Following this in the year 2004, Central Pollution Control Board directed all the State Pollution Control Boards / Pollution Control Committees to prepare and submit the inventory of hazardous waste generating industries of their respective States / jurisdiction for preparation of national inventory.

“National Inventory of Hazardous Wastes Generating Industries & Hazardous Waste Management in India” published by Central Pollution Control Board, Hazardous Waste management Division, Delhi shows Kerala had generated about 82899 MTA of HW (includes other waste from IRE and FACT also), i.e. Kerala State

contributes about 1.33% of the total HW generated in India. **Ernakulam** is the top contributor of the amount of hazardous waste generated in the State.

In order to implement and enforce the Hazardous and Other Waste (Management & Trans boundary Movement) Rules, 2016 effectively, authentic and accurate data of hazardous waste generated in the state is necessary.

1.1 METHODOLOGY FOR PREPARATION OF HAZARDOUS WASTE INVENTORY

Following methodology was adopted for preparation of this Inventory-

- Standard formats were developed by Central Pollution Control Board and sent to all the SPCBs / PCCs for preparation of inventory of the hazardous wastes generating industries and status of hazardous waste management in the area of their jurisdiction.
- The information submitted by the KSPCB, Thiruvananthapuram, Kollam, Pathanamthitta and Alapuzha District offices were scrutinized.
- Based on the data submitted by 4 District Offices, this inventory is prepared.
- The information presented in this report corresponds to the year 2015-2016.

Figure1.1: Types of Hazardous Waste

CHAPTER 2

HAZARDOUS WASTE MANAGEMENT RULES, 2016

Hazardous Waste Management Rules are notified to ensure safe handling , generation, processing, treatment, package, storage, transportation, use reprocessing, collection, conversion, and offering for sale, destruction and disposal of Hazardous Waste. The Rules lay down corresponding duties of various authorities such as MoEF, CPCB, State/UT Govts., SPCBs/PCCs, DGFT, Port Authority and Custom Authority while State Pollution Control Boards/ Pollution Control Committees have been designated with wider responsibilities touching across almost every aspect of Hazardous wastes generation, handing and their disposal. As per the CPCB inventory in 2009 there are 524 units in Kerala which generate HW.

2.1 HISTORY

The Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008 ("HWM Rules") were framed for regulating generation, storage, reuse, recycling, import, transportation and treatment of hazardous wastes. India signed and ratified the **Basel Convention, 1992** dealing with transboundary movement and disposal of hazardous waste. The restrictions on cross-border transportation of hazardous waste for purposes of recycling as provided in the Basel Convention are incorporated in the HWM Rules.

These Rules came into effect in the year 1989(Hazardous Wastes Management and Handling Rules, 1989) to exercise the powers conferred by sections 6, 8 and 25 of the Environment Protection Act, 1986 (29 of 1986) by the Central Government and have been amended later in the years 2000, 2003, 2008

and with final notification of the Hazardous and Other Waste (Management & Trans boundary Movement) Rules, in 2016 supersession of former notification.

2.2 BASEL CONVENTION

Basel Convention is an international treaty, that was designed to reduce the movements of hazardous waste between nations, and specifically to prevent transfer of hazardous waste from developed to less developed countries. It entered into force on 5th May 1992. Now 183 UN member states including India, the European Union, and the State of Palestine are parties of the Convention. United States have signed the Convention but not ratified it. Basal Convention logo and details from Wikipedia shown in the Figure 2.1.

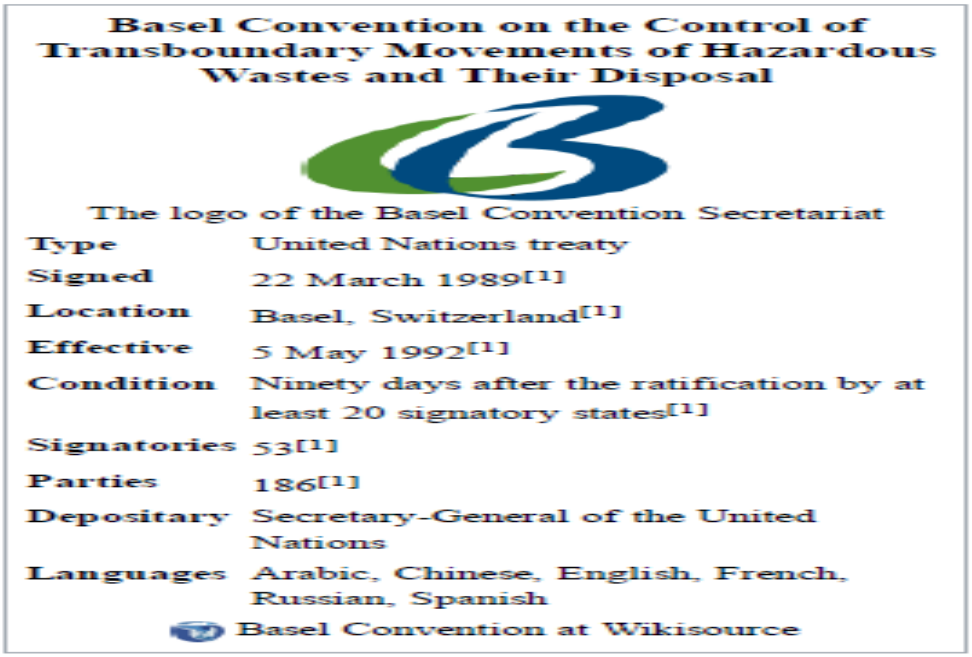


Figure 2.1: Basal Convention logo and details

2.3 HAZARDOUS WASTE MANAGEMENT RULES,2016

For the first time, in 2016 Rules have been made to distinguish between Hazardous Waste and other wastes. Other wastes include: Waste tyre, paper waste, metal scrap, used electronic items, etc. and are recognized as a resource for recycling and reuse. These resources supplement the industrial processes and reduce the load on the virgin resource of the country. Copy of the HWM Rules 2016 is given as **Annexure 1**.

The salient features of Hazardous and Other Wastes (Management & Trans boundary Movement) Rules, 2016 include the following:-

- The HW Rules has been expanded by including 'Other Waste'.
- Waste Management hierarchy in the sequence of priority of prevention, minimization, reuse, recycling, recovery, co-processing; and safe disposal has been incorporated.

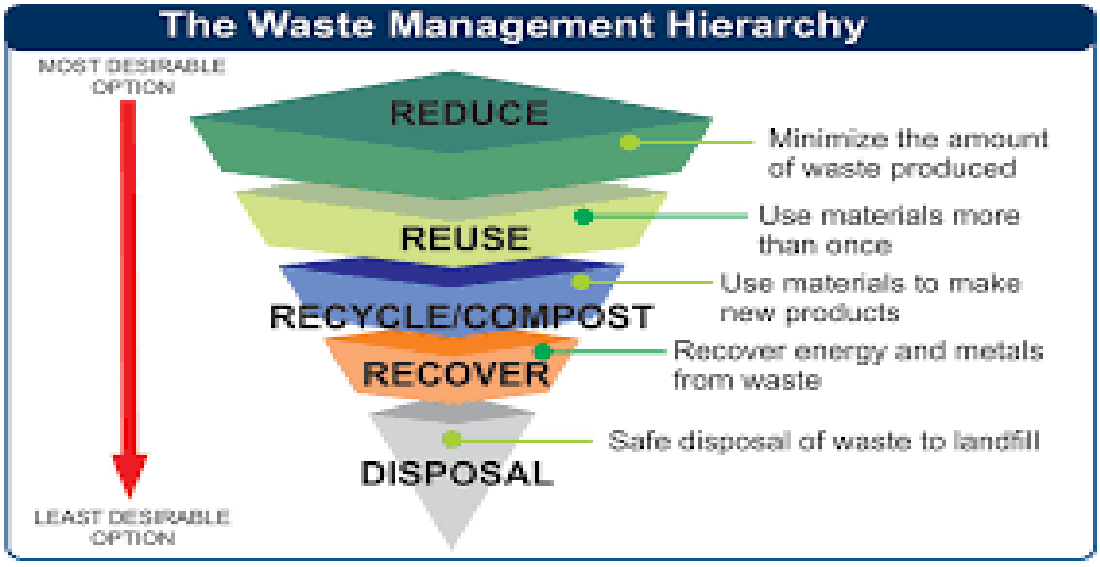


Figure 2.2: Waste Management Hierarchy

- All the forms under the rules for permission, import/export, filing of annual returns, transportation, etc. have been revised significantly, indicating more precise approach for management of such hazardous and other wastes with simultaneous simplification of procedure.
- The basic necessity of infrastructure to safeguard the health and environment from waste processing industry has been prescribed as Standard Operating Procedure (SOPs), specific to waste type, which has to be complied by the stakeholders and ensured by SPCB/PCC while granting such authorisation.
- Procedure has been simplified to merge all the approvals as a single window clearance for setting up of hazardous waste disposal facility and import of other wastes.
- Co-processing as preferential mechanism over disposal for use of waste as supplementary resource, or for recovery of energy has been provided.
- The approval process for co-processing of hazardous waste to recover energy has been streamlined and put on emission norms basis rather than on trial basis.
- The process of import/export of waste under the Rules has been streamlined by simplifying the document-based procedure and by revising the list of waste regulated for import/export.
- The import of metal scrap, paper waste and various categories of electrical and electronic equipments for re-use purpose has been exempted from the need of obtaining Ministry's permission.
- The basic necessity of infrastructure to safeguard the health and environment from waste processing industry has been prescribed as Standard Operating Procedure (SOPs) specific to waste type.

- Responsibilities of State Government for environmentally sound management of hazardous and other wastes have been introduced as follows:
    - To set up/ allot industrial space or sheds for recycling, pre-processing and other utilization of hazardous or other waste.
    - To register the workers involved in recycling, pre-processing and other utilization activities.
    - To form groups of workers to facilitate setting up such facilities.
    - To undertake industrial skill development activities and ensure safety and health of workers.
- List of processes generating hazardous wastes has been reviewed taking into account technological evolution in the industries.
- List of Waste Constituents with Concentration Limits has been revised as per international standard and drinking water standard.
- The following items have been prohibited for import:
    - Waste edible fats and oil of animals, or vegetable origin.
    - Household waste.
    - Critical Care Medical equipment.
    - Tyres for direct re-use purpose.
    - Solid Plastic wastes including Pet bottles.
    - Waste electrical and electronic assemblies scrap.
    - Other chemical wastes especially in solvent form.
- State Government is authorized to prepare integrated plan for effective implementation of these provisions, and have to submit annual report to Ministry of Environment, Forest and Climate Change.
- State Pollution Control Board (SPCB) is mandated to prepare an annual inventory of the waste generated; waste recycled, recovered, utilised

including co-processed; waste re-exported and waste disposed and submit to the Central Pollution Control Board by the 30th day of September every year.

These rules shall not apply to

- Waste-water and exhaust gases as covered under the provisions of the Water Prevention and Control of Pollution Act, 1974 and the Air Prevention and Control of Pollution Act, 1981 and the rules made thereunder and as amended from time to time.
- Wastes arising out of the operation from ships beyond five kilometres of the relevant baseline as covered under the provisions of the Merchant Shipping Act, 1958 and the rules made thereunder and as amended from time to time.
- Radio-active wastes as covered under the provisions of the Atomic Energy Act, 1962 and the rules made thereunder and as amended from time to time.
- Bio-medical wastes covered under the Bio-Medical Waste Management Rules, 2016 and the Municipal Solid Wastes (Management and Handling) Rules, 2000 as amended from time to time.

CHAPTER 3

HAZARDOUS WASTE

Hazardous wastes are wastes with properties that make them harmful to human health or the environment. Hazardous wastes can be liquids, solids or contained gases. They can be by products of manufacturing processes or commercial products, like cleaning fluids or pesticides. The board has classified the hazardous waste generally into three types i.e., land disposable hazardous waste, incinerable hazardous waste and recyclable hazardous waste. Types of HW listed in Table 3.1 with source of waste generation and health effect due to waste.

Table3.1: Types of hazardous waste

Hazardous Waste	Source	Health Effect
Asbestos	Old insulation	Health effects of the respiratory system include asbestosis, lung cancer, chronic bronchitis, fibrosis, emphysema, and decreased oxygen supply in blood .
Radon	The ground	
Cadmium	Old batteries	
Benzene	Degreasers	
Carbon monoxide	Car exhaust, unvented or faulty furnaces	
Soot	Furnaces, wood burning stoves	

Lead	Old paint, outdated plumbing	Health effects of the renal system include decreased formation of urine decreased blood flow to kidney, decreased ability to filter the blood prevented urine flow, kidney tissue damage, cancer.
Mercury	Thermostats, thermometers, some fish	
Uranium	Food & water, proximity to nuclear testing sites	
Chlorinated hydrocarbon solvents (TCE, PCE, PCT)	Degreasers, paint removers, dry cleaning solutions	
Methyl mercury	Some fish, coal-burning power	Health effects of the reproductive system include decreased ability to have a baby, increased baby deaths, increased birth defects, and infertility (the inability to have children)
Carbon monoxide	Car exhaust, unvented or faulty furnaces	
Lead	Old paint, outdated plumbing	
Arsenic	Pressure treated wood	Health effects of the nervous system include inability to move loss of feeling, confusion, and decreased speech, sight, memory, muscle strength, or coordination
Cadmium	Discarded batteries	
Carbon monoxide	Car exhaust, unvented or faulty furnaces	
Cyanide	Rat poison	

Polychlorinated biphenyls (PCBs)	Industrial waste, fish from contaminated water	Health effects of the immune system include overreaction to environmental substances (allergy), immune system slow down or failure, and autoimmunity (Auto immunity causes the body to attack it self - which makes it more likely to have an over -reaction or infection)
Polycyclic aromatic hydrocarbons (PAHs)	Cigarette smoke, vehicle exhaust, asphalt roads	
Pesticides	Unwashed fruits and vegetables	
Carbon disulfide	Industrial production	Health effects include heart failure and the inability of blood to carry the necessary oxygen to the body.
Nitrates	Fertilizers	
Methylene chloride	Auto part cleaners, paint removers	
Nickel	Cement	Health effects of the skin Include irritation, rash, redness or discoloration, dermatitis and health effect related to other systems and organs due to
Arsenic	Pressure treated wood	
chromium	Paints, industrial production	
VOC (volatile organic compounds)	Fumes from gasoline, paint, adhesives, building supplies	

		contamination through the skin
Carbon tetrachloride	Adhesives	Health effects of the hepatic system include liver damage, tumors, accumulation of fat (steatosis), and death of liver cells.
Methylene chloride	Auto part cleaners, paint Removers	
Vinyl chloride	Pipe sealer	

3.1 PROCESS GENERATING HAZARDOUS WASTE

Hazardous waste generating process mentioned in Hazardous Waste Management Rules 2016 are shown in the Table 3.2.

Table 3.2: Hazardous waste generating process

Sl.No	Processes
1	Petrochemical processes and pyrolytic operations
2	Crude oil and natural gas production
3	Cleaning, emptying and maintenance of petroleum oil storage tanks including ships
4	Petroleum refining or reprocessing of used oil or recycling of waste oil
5	Industrial operations using mineral or synthetic oil as lubricant in hydraulic systems or other applications
6	Secondary production and / or industrial use of zinc
7	Primary production of zinc or lead or copper and other non-ferrous metals

	except aluminium
8	Secondary production of copper
9	Secondary production of lead
10	Production and/or industrial use of cadmium and arsenic and their compounds
11	Production of primary and secondary aluminium
12	Metal surface treatment, such as etching, staining, polishing, galvanizing, cleaning, degreasing, plating, etc.
13	Production of iron and steel including other ferrous alloys (electric furnace; steel rolling and finishing mills; Coke oven and by products plant)
14	Hardening of steel
15	Production of asbestos or asbestos-containing materials
16	Production of caustic soda and chlorine
17	Production of mineral acids
18	Production of nitrogenous and complex fertilizers
19	Production of phenol
20	Production and/or industrial use of solvents
21	Production and/or industrial use of paints, pigments, lacquers, varnishes and inks
22	Production of plastics
23	Production and /or industrial use of glues, organic cements, adhesive and resins

24	Production of canvas and textiles
25	Industrial production and formulation of wood preservatives
26	Production or industrial use of synthetic dyes, dye-intermediates and pigments
27	Production of organic-silicone compound
28	Production/formulation of drugs/pharmaceutical and health care product
29	Production, and formulation of pesticides including stock-piles
30	Leather tanneries
31	Electronic Industry
32	Pulp and Paper Industry
33	Handling of hazardous chemicals and wastes
34	De -contamination of barrels / containers used for handling of hazardous wastes/chemicals
35	Purification and treatment of exhaust air/gases, water and waste water from the processes in this schedule and common industrial effluent treatment plants (CETP's)
36	Purification process for organic compounds/solvents
37	Hazardous waste treatment processes, e.g. pre-processing, incineration and concentration
38	Chemical processing of Ores containing heavy metals such as Chromium, Manganese, Nickel, Cadmium etc.

3.2 CHARACTERISTICS OF HAZARDOUS WASTE

In HW management Rules 2016, substances or wastes shall be classified as hazardous waste if it exhibits any of the following characteristics shown in the Figure 3.1 due to the presence of any hazardous constituents.

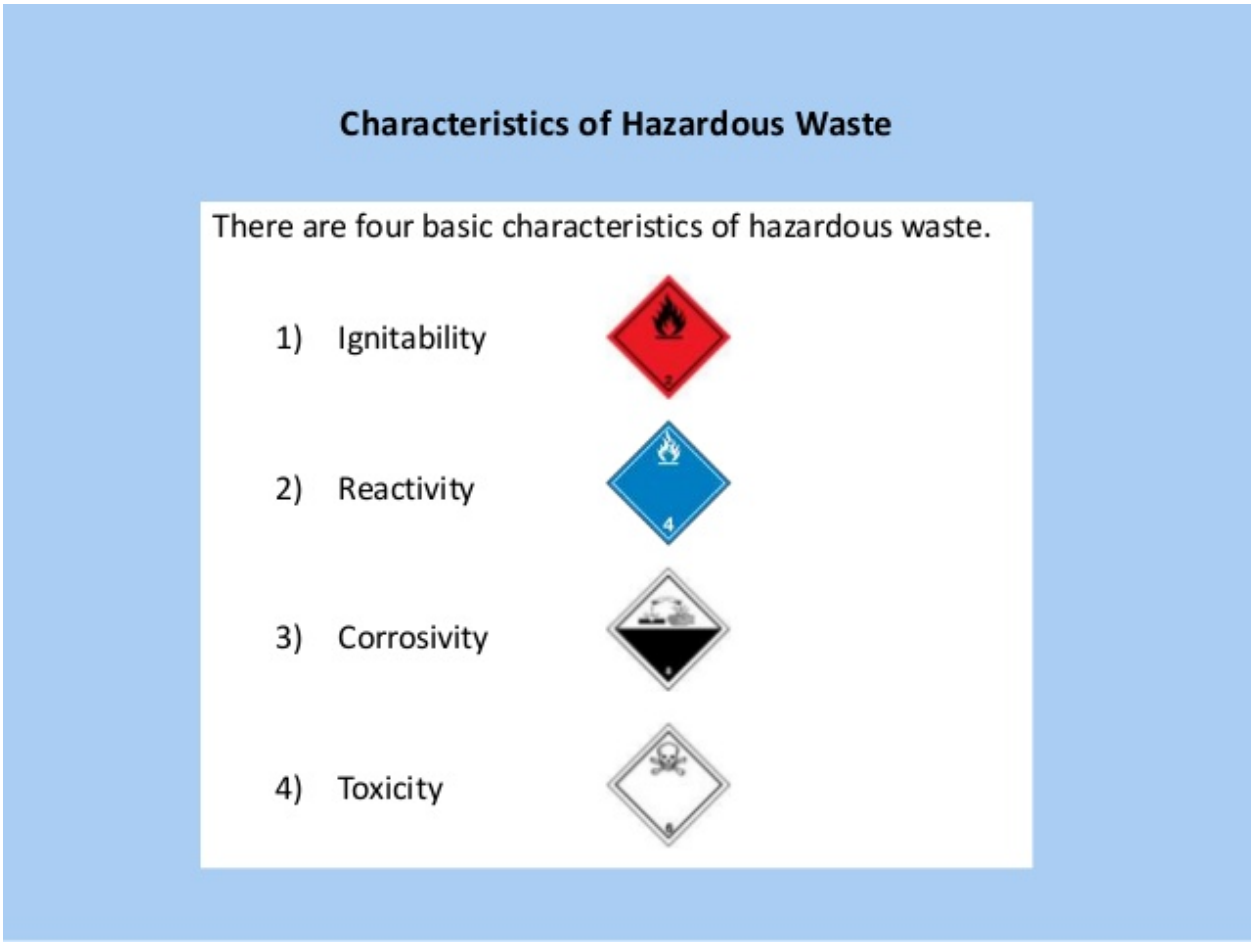


Figure 3.1: Four Basic characteristics of HW

CHAPTER 4

NATIONAL INVENTORY OF HAZARDOUS WASTES GENERATING INDUSTRIES

Based on information provided by 27 SPCBs and 3 PCCs pertaining to the period 2007-08, the report on 'National Inventory of Hazardous Wastes Generating Industries' has been prepared and posted on Central Pollution Control Board website on 2009. Figure 4.1 shows a bar diagram indicating the Relative Contribution by Different States/ UTs towards HW Generation.

The HW management at a glance:

- Land Fillable Hazardous Wastes - 49.55 %
- Incinerable Hazardous Wastes - 6.67 %
- Recyclable Hazardous Wastes - 43.78 %

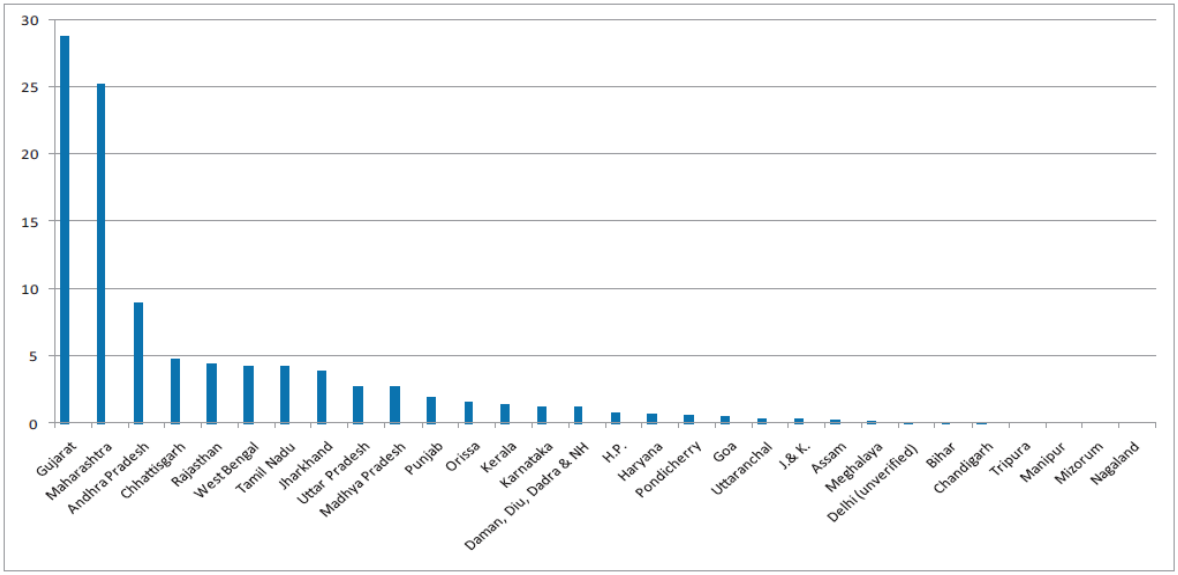


Figure 4.1: Relative Contribution by Different States/ UTs towards HW Generation

Status of Authorisation issued to the HW Generating Industries by the States as per the CPCB Inventory 2009 is shown in the Table 4.1

Table 4.1: State-wise Status of Industrial statistics

Sl. No.	**Name Of State/UTs**	**No. of HW Generating units**	**No. of HW units applied for Authorization**	**No. of HW units for which Authorization granted**	**No. of HW units for which Authorization is under process**
1	Andhra Pradesh	1739	INP	INP	INP
2	Assam	55	55	53	2
3	Bihar	41	INP	INP	INP
4	Chhattisgarh	174	174	174	nil
5	Delhi	1995	INP	INP	INP
6	Gujarat	7751	INP	INP	INP
7	Goa	630	INP	INP	INP
8	Haryana	1419	INP	INP	INP
9	H.P.	1331	1331	1331	164
10	J.&K.	291	INP	INP	INP
11	Jharkhand	435	435	435	nil
12	Karnataka	2076			
13	Kerala	524	524	503	21
14	Madhya Pradesh	1093	1093	1093	INP
15	Maharashtra	4909	INP	4909	INP
16	Manipur	264	INP	INP	INP
17	Meghalaya	43	INP	INP	INP

18	Mizoram	44	INP	INP	INP
19	Nagaland	3	3	3	nil
20	Orissa	335	INP	INP	INP
21	Punjab	3023	3023	2404	223
22	Rajasthan	442	INP	289	52
23	Tripura	135	116	115	1
24	Tamil Nadu	2532	INP	INP	INP
25	Uttar Pradesh	1915	1622	1339	283
26	Uttaranchal	70	63	33	30
27	West Bengal	609	705	477	132
U.T.					
1	Daman, Diu, Dadra & Nagar Haveli	1937	INP	INP	INP
2	Pondicherry	90	INP	86	INP
3.	Chandigarh	260	260	235	25
	TOTAL	**36165**	**INP**	**INP**	**INP**

Note: INP means 'Information is not provided by the SPCB/PCC.'

CHAPTER 5

ENVIRONMENTAL IMPACTS DUE TO HAZARDOUS WASTES

Impacts to environment is caused by hazardous waste through various ways such as dumping of hazardous waste in open land, inappropriate handling of hazardous wastes at operating facilities, spillage of hazardous wastes during handling or transportation, failures of various engineering systems containing hazardous waste (e.g. secure landfills, storage sumps/containers, etc). Contamination to soil, groundwater, surface water, air, sea/ oceans etc., are the serious environmental issues caused by HW. The long term effects on the natural resources themselves, which if affected by contamination, become unusable by the general public. Once contaminated, natural resources require an inordinately long time to recover to original status. In most cases, even after the remedial measures natural resources can't attain the original (pre-contaminated) state.

Figure 5.1, a conceptual site model, shows different pathways from hazardous waste dumping/leakages contaminant reaching soil, groundwater and surface water.

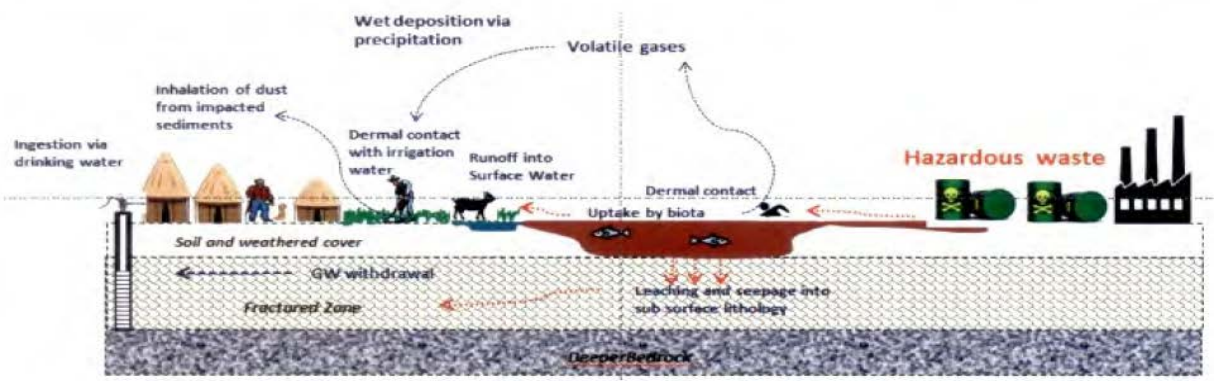


Figure 5.1: Conceptual site model of impact from hazardous waste dumping

5.1 IMPACTS ON SOIL

Soils are affected by hazardous wastes in the following ways:

- Illegal dumping of hazardous waste on open land.
- Discharge of liquid hazardous waste into open land.
- In landfill, hazardous wastes might either get spilled on open land or landfill leachate percolate into the subsoil which ultimately reaches the aquifer.
- Spills of hazardous solutions/ wastes during transportation, leakages from trucks, tanks, pipelines etc.

Impacted soils can lead to indirect impacts including reforming the land such that they become unusable for agricultural purposes, serving as a continuous source of contamination to groundwater and also serve as a direct exposure to humans who may come into contact with the contaminated soil media (most significantly children who are most susceptible to Health risks).

5.2 IMPACTS ON SURFACE WATER

Surface waters are common affected natural resource due to illegal disposal or improper handling of hazardous wastes. Surface water, are a highly sensitive receptor for the Indians (used for bathing purposes, washing purposes, irrigation purposes, in some cases drinking purposes etc). Therefore the risk of damage to the environment and human health is very high.

Typical examples of how surface water bodies are impacted with hazardous wastes include:

- Runoff from hazardous waste dumps entering surface water bodies.
- Discharge of liquid hazardous waste directly into nearby streams ultimately discharges into larger surface water bodies.

5.3 IMPACTS ON GROUNDWATER

Aquifers being the source of important element of life (drinking water), tend to be the most vulnerable and sensitive natural resources.

Aquifers are impacted with hazardous wastes in the following ways :

- Leaching of contaminants from hazardous wastes dumped into open land.
- Leaching of contaminants from hazardous waste storage tanks or leaking underground storage tanks.
- Leaching of contaminants from landfills that are leaking below ground.
- Leaching of contaminants from underground leaking pipelines carrying liquid hazardous waste.

5.4 IMPACTS ON HUMAN HEALTH

Hazardous waste spillage may cause direct effects that could potentially have a long term health impact on humans. Effects could include injury due to direct contact with hazardous waste or inhalation of noxious gases emitted from hazardous wastes. Loss of life may occur in rare cases due to improper handling or disposal of highly reactive wastes such as wastes containing reactive cyanide, reactive sulfide, long term exposure to wastes containing carcinogenic constituents, etc.

CHAPTER 6

SEGREGATION AND DISPOSAL OF HAZARDOUS WASTE

Hazardous waste such as lead acid battery scraps, used oil, waste oil, spent catalyst etc. and other waste such as waste tyres, paper waste, metal scrap etc. are used as raw material by the industries involved in recycling of such waste and as supplementary resource for material and energy recovery. Accordingly, it is always preferable to utilise such waste through recycling, or for resource recovery to avoid disposal through landfill or incineration.

Scientific disposal of hazardous waste through collection, storage, packaging, transportation and treatment, in an environmentally sound manner minimises the adverse impact on human health and on the environment. The hazardous waste can be disposed at captive treatment facility installed by the individual waste generators or at Common Hazardous Waste Treatment, Storage and Disposal Facilities (TSDFs).

HW mainly disposed in India through following three methods:

- By Landfill
- By incinerating it at a high temperature.
- By Recycling

6.1 DISPOSAL BY LANDFILL

The hazardous wastes generated by industries are required to be collected in secure landfill. But later these landfill sites generate leachate. These leachate, if not collected and treated properly, can contaminate the groundwater resources. In this

regard, CPCB has taken up a project on "Development of Standards for leachate from Hazardous Waste Disposal Site".

The following listed wastes should not be allowed to dispose off directly into the landfill facility:

- Waste, which is a fluid, slurry or paste
- Waste, which is delivered under pressure or under vacuum.
- Waste, which has an obnoxious odour.
- Waste, which reacts with moisture to produce considerable amount of heat or gases.
- Waste, which is highly inflammable.
- Waste, which contains shock sensitive substances.
- Waste, which contains very strong oxidizing agents.
- Waste, which contains volatile substances of significant toxicity.
- Waste, which falls below a pH value of 4 and exceeds the value of 13, if evaluated in distilled water in the ratio of 1: 10.
- Waste, which possesses a calorific value of more than 3200 Kcal/kg. These wastes have to go for authorised energy recovery or for incineration.

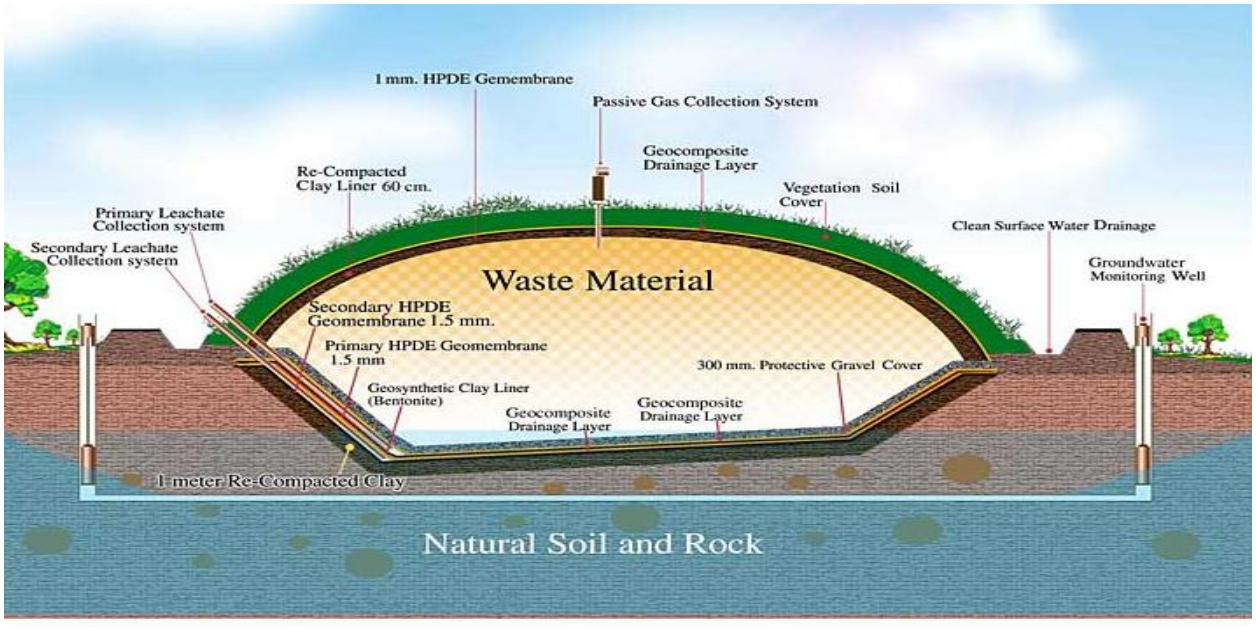


Figure 6.1: Secure hazardous Waste Land fill

6.2 DISPOSAL BY INCINERATOR

A hazardous waste incinerator consists of a rotary kiln, an afterburner and an air pollution control system. Both solid and liquid wastes are introduced into the rotary kiln, in which the temperature is usually higher than 1,800 degrees Fahrenheit. The kiln rotates slowly to ensure that the solid wastes are exposed on all sides to the high temperature in the kiln. A large fan draws the excess air into the system to increase its combustion efficiency. This method also minimizes the environmental impact, as it reduces waste from landfill and heat produced via the incineration process is used to power a steam turbine which generates electricity.

CPCB have published a document on "Guidelines for Common Hazardous Waste Incinerators in June 2005" (i.e. HAZWAMS/30/2005-2006), which cover transportation, storage, analytical facilities, feeding systems and combustion systems, pollution control devices and monitoring. Some of the details of the incinerator specified by the CPCB are noted below:

- Incineration plant shall be equipped with at least one auxiliary burner.
- Kiln and secondary combustion chamber of the incinerator may be made of mild steel conforming to IS: 2062 and of suitable thickness lined with high-grade refractory and insulation.
- Combustion chambers (Kiln & secondary combustion chamber) shall be supplied with excessive air to ensure complete burning of wastes. The blower shall have the capability to provide appropriate supply of combustion air.
- To maintain designed heat capacity of the rotary kiln, quantity of the solid waste injection package (kg/single injection) shall be adjusted w.r.t. calorific value of the waste feed.

- Minimum temperature requirement in the secondary combustion chamber is 1100^0C. This may be ensured by averaging the temperature measurement of three detectors (not exactly positioned in the burner flame) at the same time with in the combustion chamber.
- Pollution control devices are required to comply with prescribed standards for particulate matter, HCl, SO_2, CO, Total Organic Carbon, HF, NOx (NO and NO_2), Hydrocarbons, Dioxins/Furans.
- Stack height shall not be less than 30 meters, in any case.

Figure 6.2: Common Hazardous Waste Incinerator at Ankleshwar, Gujarat

6.3 DISPOSAL BY RECYCLING

Commonly recyclable hazardous wastes specified in the Hazardous and Other Waste (Management & Trans boundary Movement) Rules, in 2016 is listed in the Table 6.1

Table 6.1: Recyclable hazardous wastes specified in the HMW Rules, 2016

Sl. No.	**Wastes**
1	Brass Dross
2	Copper Dross
3	Copper Oxide mill scale
4	Copper reverts, cake and residue
5	Waste Copper and copper alloys in dispersible from
6	Slag from copper processing for further processing or refining
7	Insulated Copper Wire Scrap or copper with PVC sheathing including ISRI-code material
8	Jelly filled Copper cables
9	Spent cleared metal catalyst containing copper
10	Spent catalyst containing nickel, cadmium, Zinc, copper, arsenic, vanadium and cobalt
11	Zinc Dross-Hot dip Galvanizers Slab
12	Zinc Dross-Bottom Dross
13	Zinc ash/Skimming arising from galvanizing and die casting operations
14	Zinc ash/Skimming/other zinc bearing wastes arising from smelting and refining
15	Zinc ash and residues including zinc alloy residues in dispersible from
16	Spent cleared metal catalyst containing zinc
17	Used Lead acid battery including grid plates and other lead scrap/ashes/residues not covered under Batteries (Management and Handling) Rules, 2001. [Battery scrap, namely: Lead battery plates covered by ISRI, Code word "Rails" Battery lugs covered by ISRI, Code word "Rakes". Scrap drained/dry

	while intact, lead batteries covered by ISRI, Code word “rains”.
18	Components of waste electrical and electronic assembles comprising accumulators and other batteries included in Part A of Schedule III, mercury switches, activated glass culets from cathode-ray tubes and other activated glass and PCB-capacitors, or any other component contaminated with Schedule II constituents (e.g. cadmium, mercury, lead, polychlorinated biphenyl) to an extent that they exhibit hazard characteristics indicated in part C of Schedule III.
19	Paint and ink Sludge/residues
20	Used oil and waste oil

6.4 TREATMENT AND DISPOSAL FACILITIES IN INDIA

Common Treatment, Storage and Disposal Facilities (TSDF) are developed for the disposal of land disposable HW at 22 different places in 10 States only namely Gujarat, Maharashtra, Uttar Pradesh, Andhra Pradesh, Himachal Pradesh, Madhya Pradesh, West Bengal, Punjab, Rajasthan and Tamil Nadu. For incineration of the Incinerable HW there are 14 common incinerators in 7 States and about 127 of individual incinerators in 12 States are installed.

State-wise Nos. of TSDF / Individual facilities for Management of HW as per the 2009 Inventory of CPCB shown in the Table 6.2

Table 6.2: State-wise Nos. of TSDF / Individual facilities for Management of HW (Existing TSDF/Incineration)

Sl.No.	Name of the State / UT	Existing HW Management Facilities		
		Safe Land Disposal only	**Incineration only**	**Both (SLD and Incineration)**
1	Andhra Pradesh	----	Individual – 23 Nos	1.TSDF - 1 No. at Dundigal (Distt. Rangareddy) 2. TSDF - 1 No. at Parawada (Visac)
2	Assam	Individual – 06 Nos.	Nil	Nil (No TSDF)
3	Bihar	INP	INP	INP
4	Chhattisgarh	Individual – 02 NOs. (At BALCO and BSP)	Nil	Nil (No TSDF)
5	Delhi	INP	INP	INP
6	Gujarat	1.TSDF - 3 Nos. 2.Individual- 13 Nos.	Individual – 37 Nos.	1.TSDF - 4 Nos. 2.Individual – 1 No.
7	Goa	Nil	Nil	Nil (No TSDF)
8	Haryana	INP	INP	INP
9	H.P.	TSDF - 1 No.	Individual – 7 Nos	INP
10	J.&K.			

		Nil	Nil	Nil (No TSDF)
11	Jharkhand	1. No TSDF. 2.Individual facilities	1.No common Incinerator. 2. Individual- 1 No.	Nil (No TSDF)
12	Karnataka	1 at Dabaspet	1. Common – 3 Nos. 2. Individual – 7 Nos.	Nil
13	Kerala	1. TSDF at Ernakulam under construction. 2. Individual – 17 Nos.	1. Individual – 1 No 2. Common – 1 No.	Nil
14	Madhya Pradesh	Individual – 10 Nos	Individual – 15 Nos	TSDF at Pithampur
15	Maharashtra	1 No. (TTWMA) at Navi Mumbai	----	1. TSDF at Taloja- 1 no 2. TSDF at Rajangaon (incinerator under development)- 1 no

				3. TSDF at Butiborui- 1 no
16	Manipur	INP	INP	INP
17	Meghalaya	Nil	Nil	Nil
18	Mizoram	INP	INP	INP
19	Nagaland	Nil	Nil	Nil
20	Orissa	Indv.storage	Nil	Nil
21	Punjab	TSDF at Nimbua, Derabassi	Individual – 17 nos	Nil
22	Rajasthan	1. TSDF at Gudli, Udaipur 2. Individual- 12 Nos.	1. No common Incinerator. 2. Individual – 05 Nos.	Nil
23	Tripura		Individual – 1No. Captive at Hapania Dumping Yard	Nil
24	Tamil Nadu	TSDF at Gummadipoondi		Nil
25	Uttar Pradesh	TSDF 3 Nos. at Rooma (Kanpur),	1. Common – 1 No.	Nil

		Kumbhi (KanpurDehat)and Banthar(Unnao)	2. Individual – 13 Nos.	
26	Uttaranchal	Nil	Nil	Nil
27	West Bengal	INP	Individual – 4 Nos.	TSDF at Haldia. (LF-120000 MTA, Incin-20,000 MTA, Stabliz/treat.- 60,000 MTA
U.Ts:				
28	Daman, Diu, Dadra & Nagar Haveli	Nil	Individual – 4 Nos. (180 MTA)	Nil
29	Pondicherry	Nil	Nil	Nil
30	Chandigarh	Nil	Nil	Nil

Note: INP means 'Information is not provided by the SPCB/PCC.'

CHAPTER 7

TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP)

This standard operating procedure (SOP) describes the method for performing the extraction portion of the Toxicity Characteristic Leaching Procedure (TCLP). This testing methodology is used to find out whether the waste is characteristically hazardous or not. It is mainly designed to determine the mobility of both organic and inorganic analytes present in liquid as well as in solid waste. The aim of this leachate procedure is to simulate the conditions that may be present in a landfill where water may pass through the land- filled waste and travel into the groundwater carrying the soluble materials with it. This procedure does not apply to volatile organic analytes.

For liquid wastes (i.e. those containing less than 0.5 % dry solid material), the waste after filtration through a 0.6 to 0.8 micron glass fibre filter, is defined as the TCLP extract. For wastes containing greater than or equal to 0.5% solids, the liquid, if any is separated from the solid phase and stored for later analysis. If necessary the particle size is then reduced. The solid phase is extracted with an extraction fluid of weight equal to 20 times the weight of the solid phase. The extraction fluid used, based on the alkalinity of the solid phase. Following extraction, the liquid extract is separated from the solid phase by filtration through a 0.6 to 0.8 μm glass fibre filter. Agitation tumbler shown in the Figure 7.1.

7.1 PROCEDURE

TCLP comprises four fundamental procedures:

- Sample preparation for leaching
- Sample leaching
- Preparation of leachate for analysis
- Leachate analysis

In the TCLP procedure the pH of the sample material is first established, and then leached with an acetic acid / sodium hydroxide solution at a 1:20 mix of sample to solvent. The leachate mixture is sealed in extraction vessel for general analytes, or possibly pressure sealed for volatile organic compounds and tumbled for 18 hours to simulate an extended leaching time in the ground. It is then filtered so that only the solution (not the sample) remains and this is then analyzed.

Figure 7.1: Device using for rotary agitation of TCLP sample

CHAPTER 8

KERALA ENVIRO INFRASTRUCTURE LIMITED

Kerala Enviro Infrastructure Ltd. (KEIL) is a public limited company formed as Special Purpose Vehicle and promoted by the Kerala State Industrial Development Corporation (KSIDC) in association with various industries in the State for establishing Common Treatment, Storage and Disposal Facility (CTSDF) for solid hazardous industrial waste in the State of Kerala. Kerala Enviro Infrastructure Limited also proposes to setup a Common Bio-medical Treatment Facility at Ambalamedu, within FACT CD Campus.

8.1 TSDF OPERATIONS

The hazardous waste is transported in special containers of mild steel with suitable corrosion resistance coating and roll on roll of covers. The transport vehicles were dedicated for transportation of hazardous waste & they will not be used for any other purpose. The picture of special purpose vehicle is shown in Figure 8.1.

Figure 8.1: Special purpose vehicle used in KEIL

The TSDF has two components

1. Temporary Storage facility and stabilization unit
2. Disposal facility-Secured Land Fill (SLF)

The material which requires stabilization is stored in Temporary Storage Facility. Stabilization is a process by which wastes are converted into an inert state using lime and cement. After addition of lime and cement in a pre determined quantity stabilization takes place and the material become very hard like slag and it is free from leaching. After stabilization it is transferred to SLF.

Hazardous waste landfill shall have the following seven essential components

- Liner system at the base and sides of landfill
- A leachate collection and treatment facility
- A gas collection and treatment facility (optional)
- A final cover system at the top of landfill
- A surface water drainage system
- Environmental monitoring system - analysis of air, surface water, soil, gas, groundwater
- Closure and post-closure plan

8.2 FACILITIES IN KEIL

- Waste storage shed of 1800 m2 (l=60 m, b=30 m) area having RCC flooring with HDPE lining.
- Stabilization of waste carried out using lime & Cement.
- Multiple effect evaporator for leachate treatment.
- DG sets of 100KVA capacity.
- Four tests bore wells provided for monitoring.

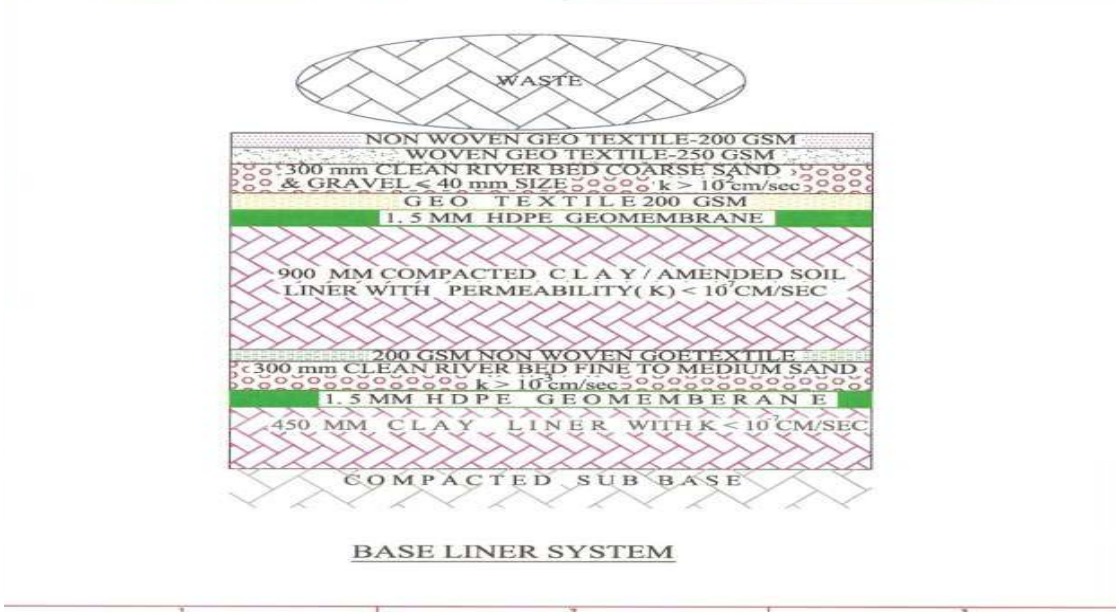
- The chimney height of boiler 30m with stack monitoring facility and DG set is adequate.
- Laboratory provided for the testing of parameters major machineries are pH meter, nephalometer, conductivity meter, AAS, UV spectro-photometer, TCLP instrument, bomb calorimeter etc.

No effluent is generated from the facility. Leachate from the landfill is evaporated in the multiple effect evaporator plant and the residue from multiple effect evaporators in the form of slurry sent back to land fill. The condensate from the multiple effect evaporator is used for irrigation and gardening.

The year-wise quantity of waste collected and disposed in KEIL landfill so far is shown in the Table 8.1 and liner system for the secured land fill at the base, sides and top cover are shown the Figures 8.2(a,b,c,d).

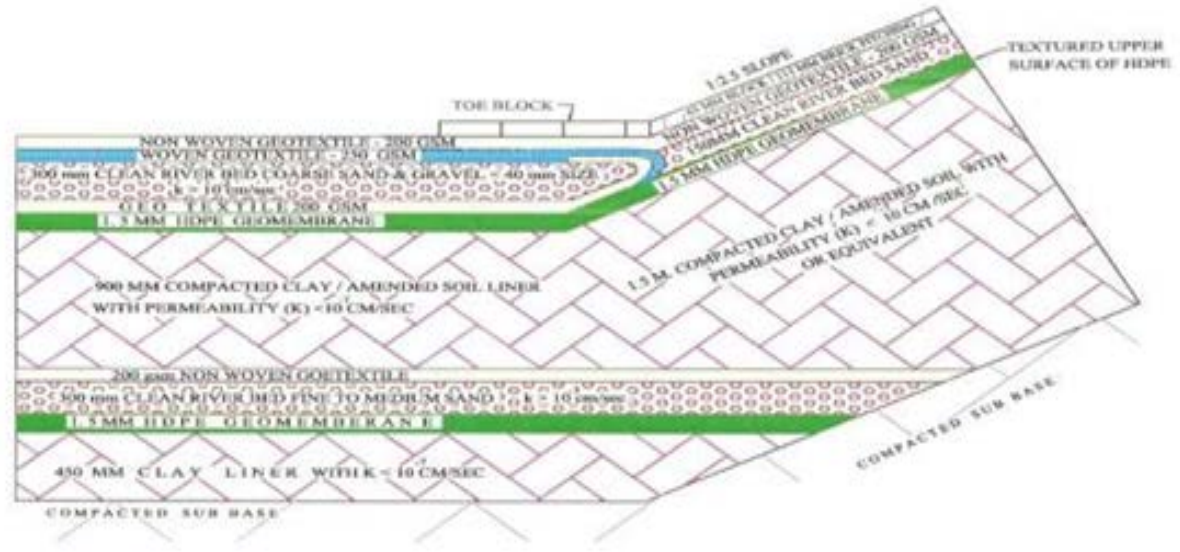
Table 8.1: Quantity of waste collected and disposed in KEIL

Year	**Quantity of waste collected (MTA)**
2008-09	3,642
2009-10	18,901
2010-11	38,454
2011-12	45,328
2012-13	44,284
2013-14	37,082
2014-2015	53,837
2016 - 2017	27,104



BASE LINER SYSTEM

Figure 8.2 (a)



JUNCTION OF BOTTOM LINERS WITH SIDE LINERS

Figure 8.2 (b)

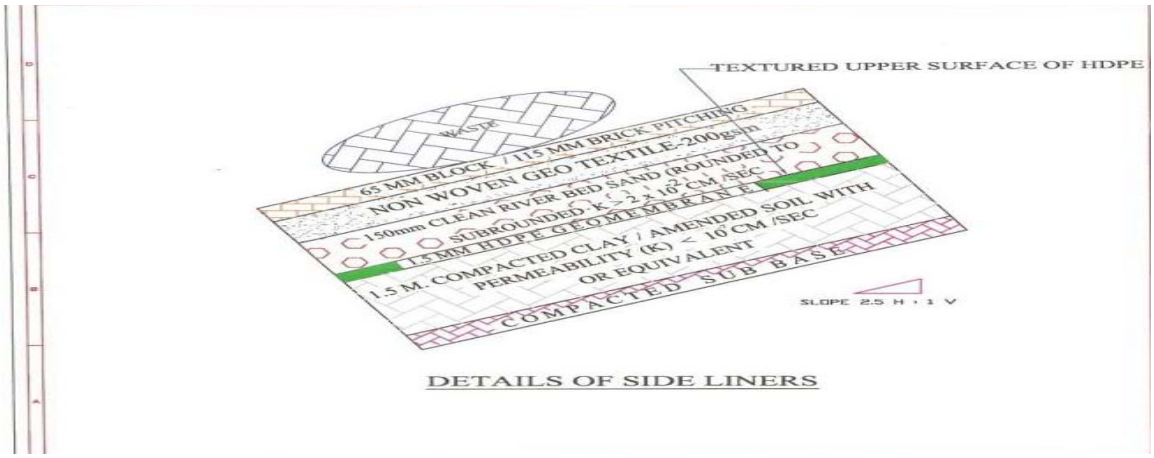


Figure 8.2 (c)

Figure 8.2 (d)

Figure 8.2 (a), (b), (c), (d): Liner system for the secured land fills

CHAPTER 9

HAZARDOUS WASTE INVENTORY

9.1 BACKGROUND

Industrialization of the Kerala state is associated with generation of large quantities of hazardous waste which need to be properly handled and disposed to avoid contamination of soil, mitigative measures and reviewing the politics relating to hazardous wastes, the existing management practices are required to be properly inventoried on regional level, state level. Effective management and handling of hazardous waste give prime importance for protection of human health and Environment.

The State Board has prime responsibility of preparing and submitting such Hazardous waste inventorisation data to Central Pollution Control Board.

9.2 OBJECTIVES

The main objectives of the project include the following:

- Inventorisation of hazardous waste generating institutions in Thiruvananthapuram, Kollam, Pathanamthitta, Alapuzha districts.
- Quantification of hazardous waste based on type.

9.3 QUANTIFICATION OF HAZARDOUS WASTE

Waste generation in HW generating industries depends generally on the following factors.

- Type of establishment
- Type of waste produced
- Waste management methods practised

9.4 HAZARDOUS WASTE INVENTORY OF THIRUVANANTHAPURAM DISTRICT

Thiruvananthapuram is the southernmost district of Kerala. The district has an area of about 2192Km^2, with population density of about 1500 inhabitants/Km^2 comprising six taluks. They are Thiruvananthapuram, Nedumangad, Neyyattinkara, Chirayinkeezhu, Varkala & Kattakkada.

Thiruvananthapuram district comprises of numerous hazardous waste generating industries such as Travancore Titanium Products Ltd, VSSC, Brahmos, HLL, K.S.R.T.C Central Workshop, Vehicle servicing centres etc. The above stated HW generating industries were taken under the scope of this inventory. In Thiruvananthapuram out of 39 HW generating industries identified, 10 are in Government sector and 29 in Private sector.

9.4.1 CATEGORY-WISE HW GENERATED IN THIRUVANANTHAPURAM DISTRICT

Quantity of HW generated as per the process defined in **Schedule I** in Thiruvananthapuram district is tabulated and shown in the Table 9.1. Its graphical representation shown in the Figure 9.1.

Table 9.1: Category-wise HW generated in Thiruvananthapuram district

HW as per Schedule I	**Quantity generated (in ton/year)**
Process No: 3	17.68
Process No: 4	300
Process No: 5	496.86
Process No: 17	69.085
Process No: 26	961.455
Process No: 35	1.815
Process No: 36	18.085
Total	**1864.98**

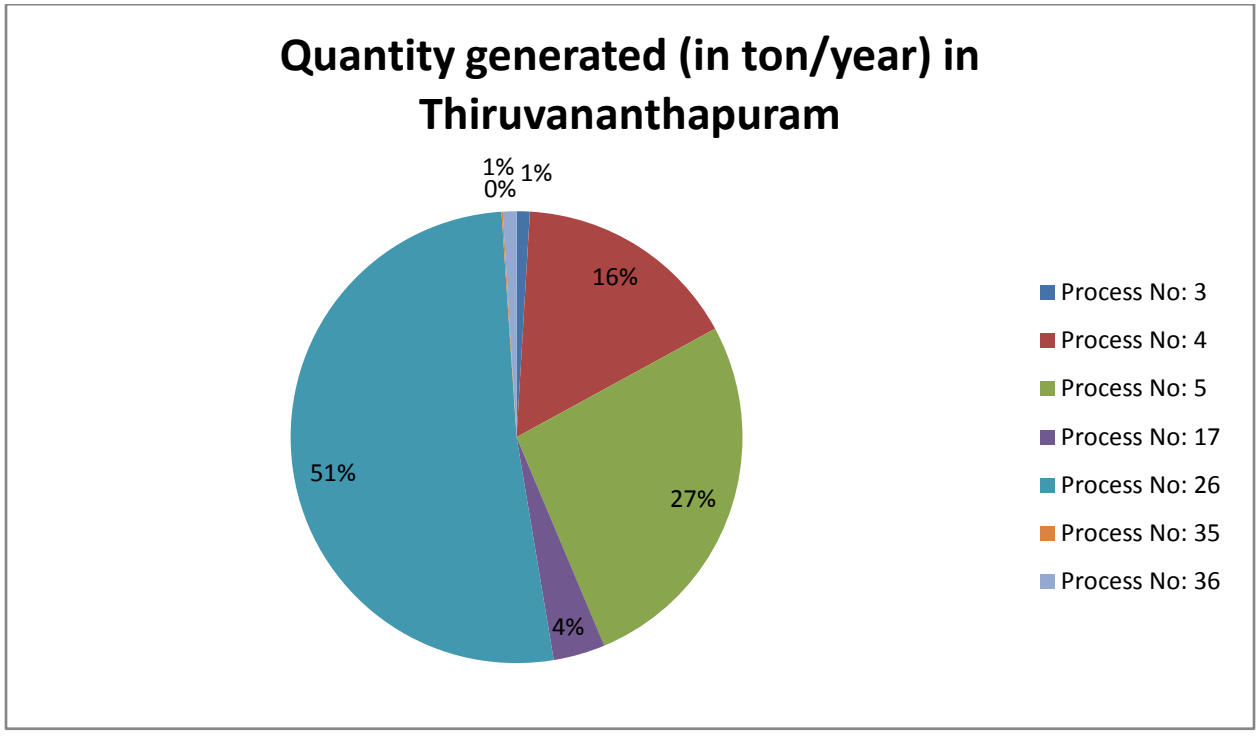


Figure 9.1: Category-wise HW generated in Thiruvananthapuram district

Quantity of HW generated in Thiruvananthapuram district on the basis of mode of disposal is tabulated in Table 9.2 and its graphical representation shown in the Figure 9.2.

Table 9.2: HW generated in Thiruvananthapuram district based on the disposal methods

	Quantity generated (in ton/year)
HW Disposal by landfill	1032.34
Incinerable HW	0
Recyclable HW	832.64

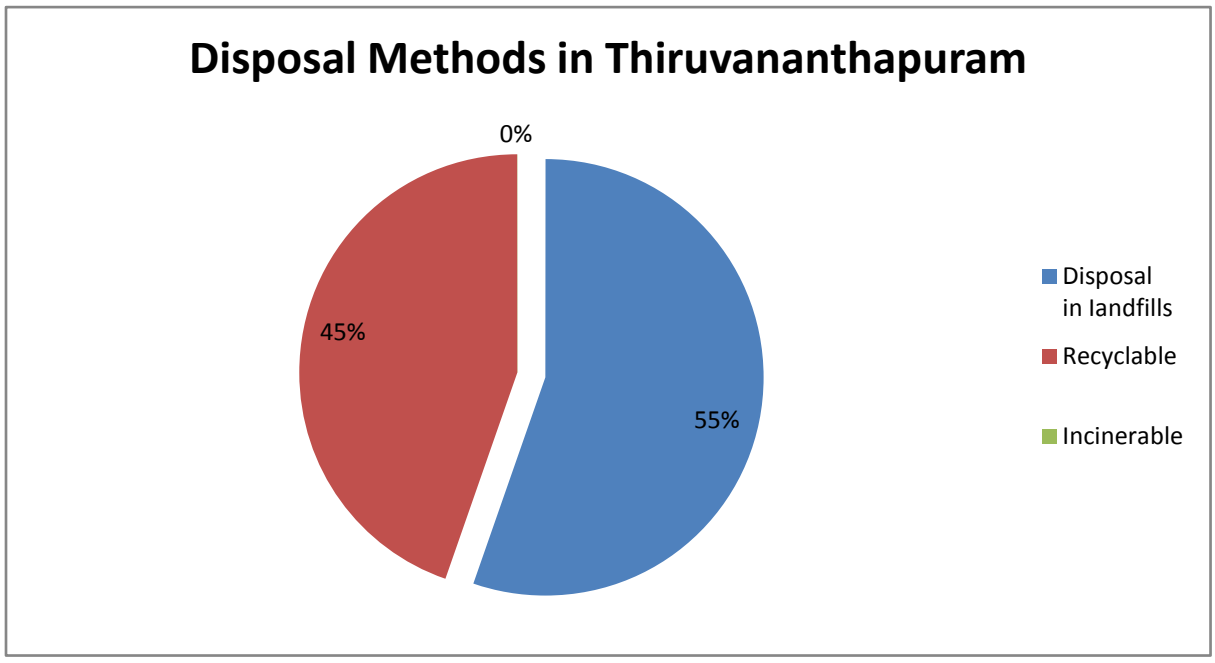


Figure 9.2: Graphical representation of HW generated in Thiruvananthapuram district on the mode of disposal

9.5 HAZARDOUS WASTE INVENTORY OF KOLLAM DISTRICT

Kollam district is a southern district of Kerala. The district has an area of about 2491 Km^2, with population density of about 1,061 inhabitants/Km^2. It is divided in 6 Taluks. They are Kollam, Kottarakkara, Pathanapuram, Karunagappaly, Kunnathur & Punalur.

Kollam district comprises mainly vehicle servicing centres as HW generating industries. In Kollam 13 HW generating industries identified and all are in Private sector.

9.5.1 CATEGORY-WISE HW GENERATED IN KOLLAM DISTRICT

Quantity of HW generated as per the process defined in **Schedule I** in Kollam district is tabulated and shown in the Table 9.3.

Table 9.3: Category-wise HW generated in Kollam district

HW as per Schedule I	**Quantity generated (in ton/year)**
Process No: 5	49.395
Process No: 21	18250
Total	**18299.4**

Quantity of HW generated in Kollam district on the basis of mode of disposal is tabulated in Table 9.4 and its graphical representation shown in the Figure 9.3.

Table 9.4: HW generated in Kollam district based on the disposal methods

HW as per the Disposal methods	**Quantity generated (in ton/year)**
HW Disposal by landfill	18250
Incinerable HW	Nil
Recyclable HW	49.395

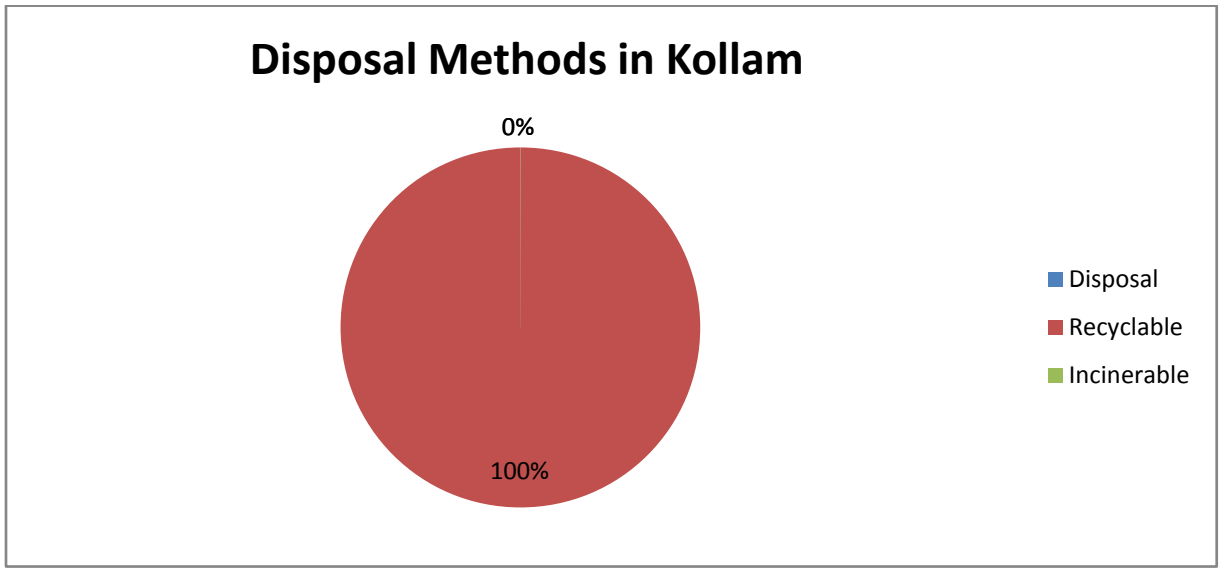


Figure 9.3: Graphical representation of HW generated Kollam district on the mode of disposal

9.6 HAZARDOUS WASTE INVENTORY OF PATHANAMTHITTA DISTRICT

Pathanamthitta district has an area of about 2652 Km^2, with population density of about 452 inhabitants/Km^2. It is divided in 5 Taluks. They are Adoor, Kozhenchery, Ranni, Mallappally, Thiruvalla.

In Pathanamthitta 18 HW generating industries identified and all are in Private sector.

9.6.1 CATEGORY-WISE HW GENERATED IN PATHANAMTHITTA DISTRICT

Quantity of HW generated as per the process defined in **Schedule I** in Pathanamthitta district is tabulated and shown in the Table 9.5. Its graphical representation shown in the Figure 9.4.

Table 9.5: Category-wise HW generated in Pathanamthitta district

HW as per Schedule I	Quantity generated (in ton/year)
Process No: 5	43.602
Process No: 9	108
Process No: 35	14.6
Total	**166.202**

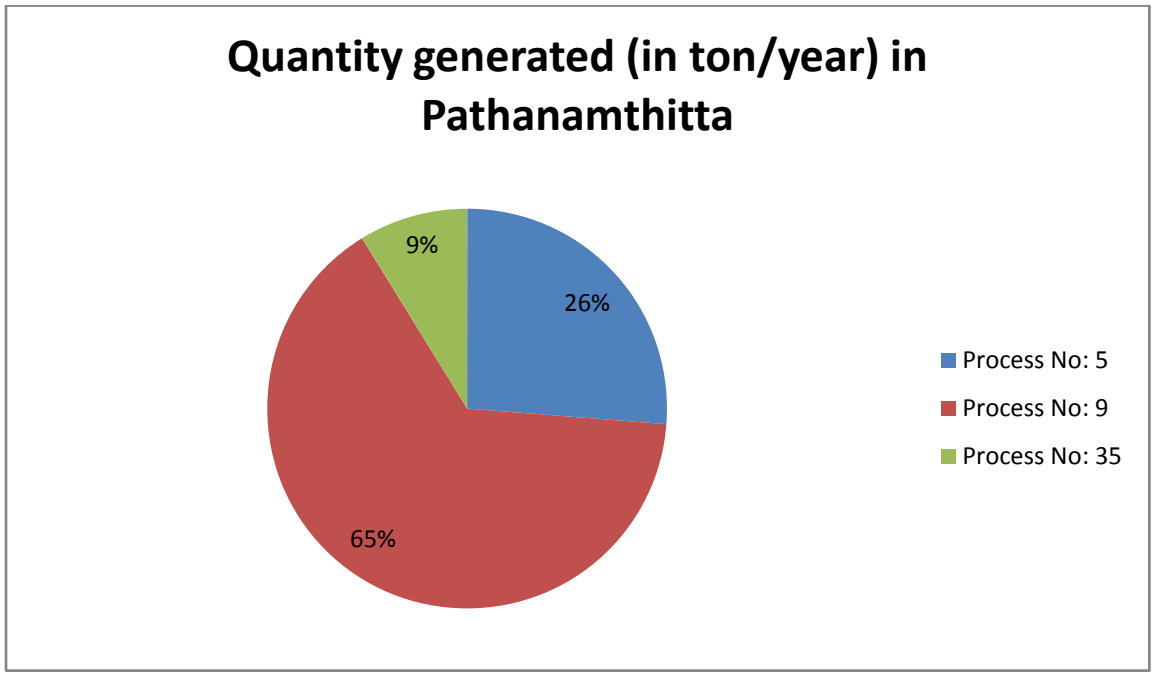


Figure 9.4: Category-wise HW generated in Pathanamthitta district.

Quantity of HW generated in Pathanamthitta district on the basis of mode of disposal is tabulated in Table 9.6 and its graphical representation shown in the Figure 9.5.

Table 9.6: HW generated in Pathanamthitta district based on the disposal methods

HW as per the Disposal methods	**Quantity generated (in ton/year)**
HW Disposal by landfill	14.6
Incinerable HW	Nil
Recyclable HW	151.602

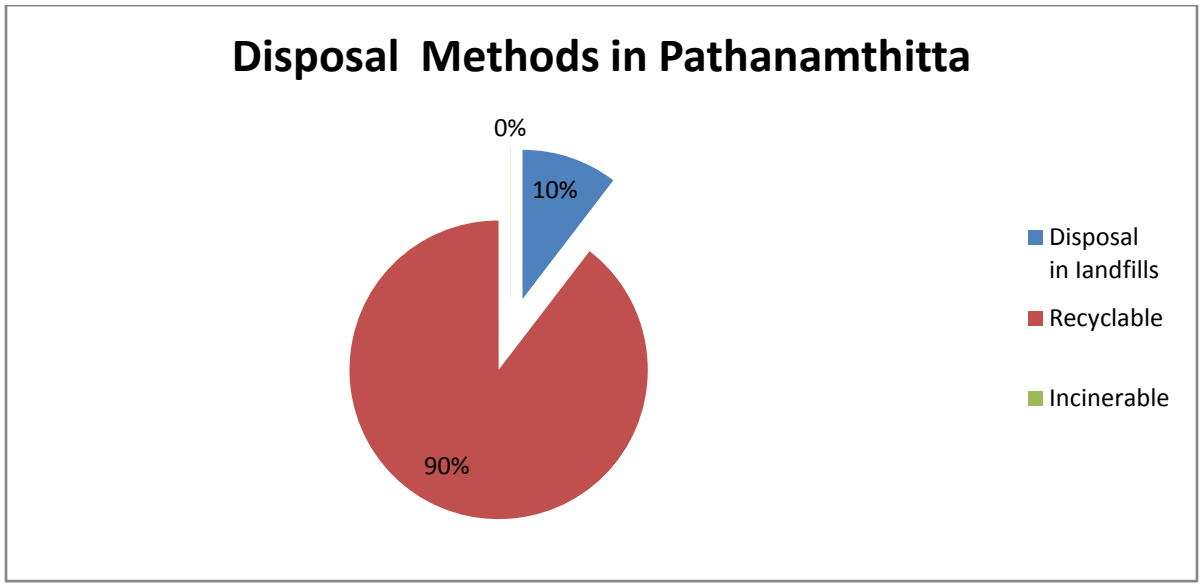


Figure 9.5: Graphical representation of HW generated in Pathanamthitta District on the mode of disposal.

9.7 HAZARDOUS WASTE INVENTORY OF ALAPPUZHA DISTRICT

Alappuzha district has an area of about 1415 Km^2, with population density of about 1504 inhabitants/Km^2. It is divided in 6 Taluks. They are Ambalappuzha, Kuttanad, Cherthala, Karthikappally, Chengannur, Mavelikkara.

Alappuzha district comprises of numerous hazardous waste generating industries such as Coir matting companies, Pharmaceuticals, Sea food exporters, KSRTC Regional Works, Kerala State Electronics Development Corporation, NTPC, Vehicle servicing centres etc. The above stated HW generating industries were taken under the scope of this inventory. In Alapuzha out of 82 HW generating industries identified, 13 are in Government sector and 71 in Private sector.

9.7.1 CATEGORY-WISE HW GENERATED IN ALAPPUZHA DISTRICT

Quantity of HW generated as per the process defined in **Schedule I** in Pathanamthitta district is tabulated and shown in the Table 9.7. Its graphical representation shown in the Figure 9.6.

Table 9.7: Category-wise HW generated in Alappuzha district

HW as per Schedule I	**Quantity generated (in ton/year)**
Process No:3	0.045
Process No: 5	83.634
Process No: 9	104.9
Process No: 12	2.582
Process No: 13	24
Process No: 20	1.9
Process No: 26	31.92
Process No: 28	29.61
Process No: 35	233.466
Total	**512.1**

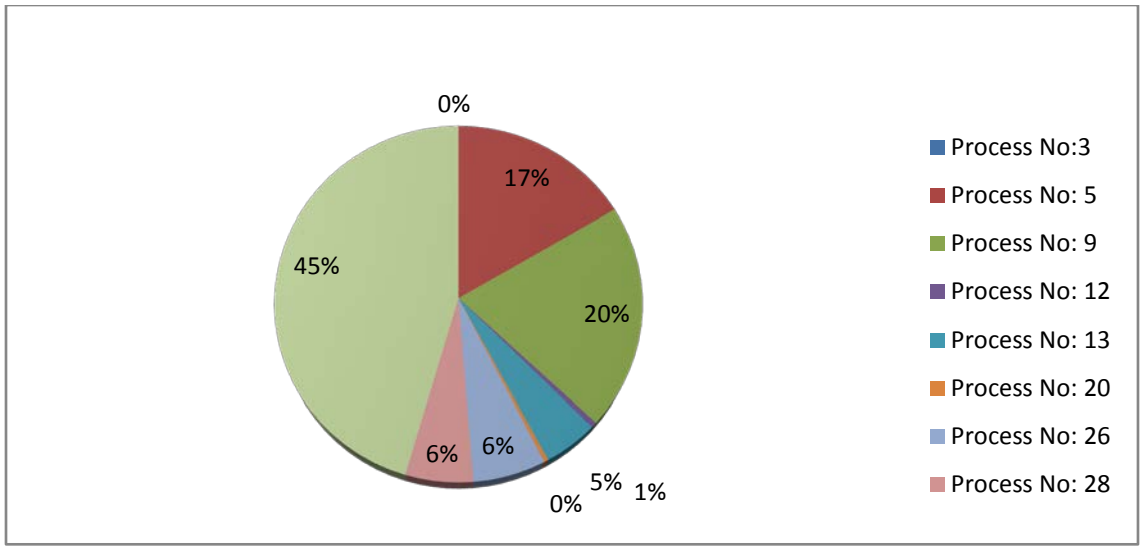


Figure 9.6: Category-wise HW generated in Alappuzha district.

Quantity of HW generated in Pathanamthitta district on the basis of mode of disposal is tabulated in Table 9.8 and its graphical representation shown in the Figure 9.7.

Table 9.8: HW generated in Alappuzha district based on the disposal methods

HW as per the Disposal methods	**Quantity generated (in ton/year)**
HW Disposal by landfill	303.692
Incinerable HW	29.66
Recyclable HW	176.061

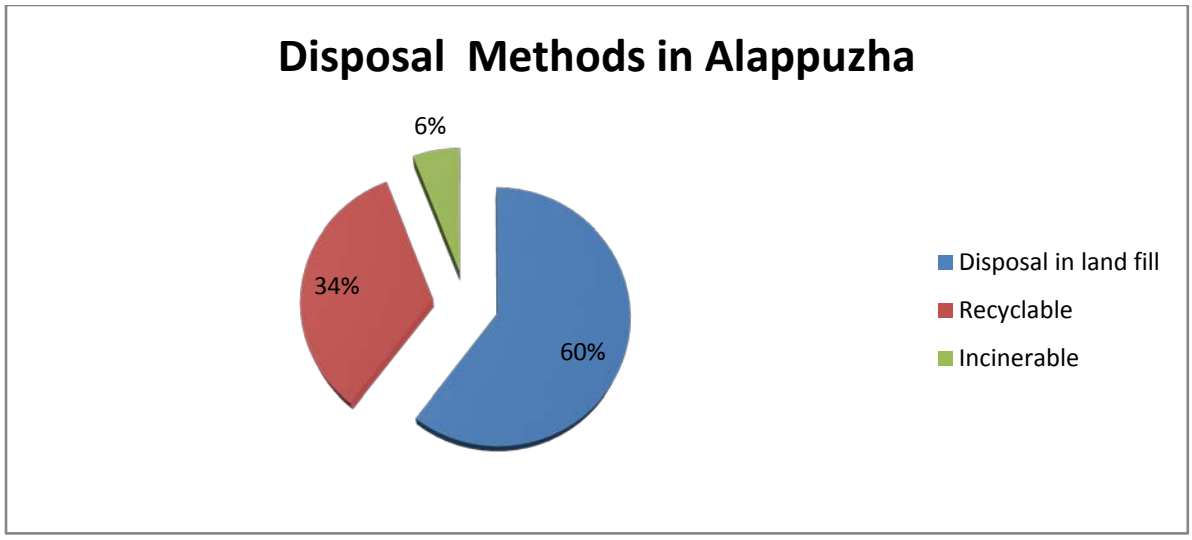


Figure 9.7: Graphical representation of HW generated in Alappuzha district on the mode of disposal

9.8 DISTRICTWISE QUANTITY OF HAZARDOUS WASTE GENERATED

Quantity of HW generated in each district is shown below in the Figure9.8 and quantity of HW generated as per the process defined in HWM Rules 2016 is shown in the Figure 9.9.

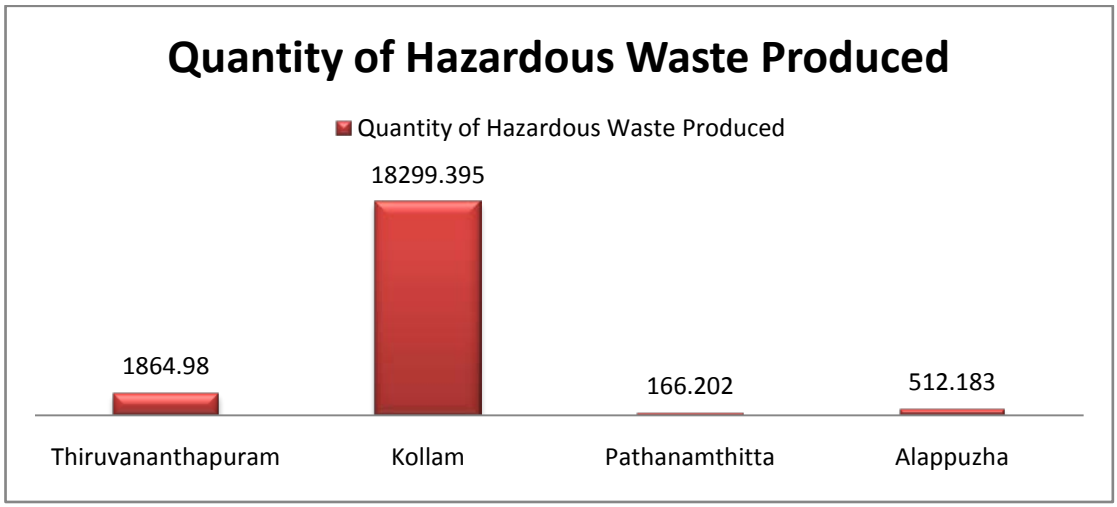


Figure 9.8: District wise hazardous waste generation

9.9 CONCLUSION

152 industries have been identified under the purview of Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016 as per the Inventorisation conducted in Trivandrum, Kollam, Pathanamthitta, and Alappuzha district. Most of the units identified in four districts are those which have come under the purview of the Board's consent. It is seen that units generating low quantity of hazardous waste (like Diesel Generators) are also to be included.

ANNEXURE 1

THE HAZARDOUS AND OTHER WASTES

(MANAGEMENT & TRANSBOUNDARY MOVEMENT)

RULES, 2016

[PUBLISHED IN THE GAZETTE OF INDIA, EXTRAORDINARY, PART II, SECTION 3, SUB-SECTION (i)]

GOVERNMENT OF INDIA
MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE

NOTIFICATION

New Delhi, the 04th April, 2016

G.S.R No. 395 (E). - Whereas the draft rules, namely the Hazardous And Other Wastes (Management and Transboundary Movement) Rules, 2015, were published by the Government of India in the Ministry of Environment, Forest and Climate Change *vide* number G.S.R. 582(E), dated the 24th July, 2015 in the Gazette of India, Extraordinary Part II, section 3, sub-section (ii) inviting objections and suggestions from all persons likely to be affected thereby, before the expiry of the period of sixty days from the date on which copies of the Gazette containing the said notification were made available to the public;

AND WHEREAS the copies of the said Gazette containing the said notification were made available to the public on the 24th day of July, 2015;

AND WHEREAS the objections and suggestions received within the specified period from the public in respect of the said draft rules have been duly considered by the Central Government;

NOW, THEREFORE, in exercise of the powers conferred by sections 6, 8 and 25 of the Environment (Protection) Act, 1986 (29 of 1986), and in supersession of the Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008, except as respects things done or omitted to be done before such supersession, the Central Government hereby makes the following rules, namely:-

CHAPTER I

PRELIMINARY

1. Short title and commencement. - (1) These rules may be called the Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016.

(2) They shall come into force on the date of their publication in the Official Gazette.

2. Application. - These rules shall apply to the management of hazardous and other wastes as specified in the Schedules to these rules but shall not apply to -

(a) waste-water and exhaust gases as covered under the provisions of the Water (Prevention and Control of Pollution) Act, 1974 (6 of 1974) and the Air (Prevention and Control of Pollution) Act, 1981 (14 of 1981) and the rules made thereunder and as amended from time to time;

(b) wastes arising out of the operation from ships beyond five kilometres of the relevant baseline as covered under the provisions of the Merchant Shipping Act, 1958 (44 of 1958) and the rules made thereunder and as amended from time to time;

(c) radio-active wastes as covered under the provisions of the Atomic Energy Act, 1962 (33 of 1962) and the rules made thereunder and as amended from time to time;

(d) bio-medical wastes covered under the Bio-Medical Wastes (Management and Handling) Rules, 1998 made under the Act and as amended from time to time; and

(e) wastes covered under the Municipal Solid Wastes (Management and Handling) Rules, 2000 made under the Act and as amended from time to time.

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

1. "Act" means the Environment (Protection) Act, 1986 (29 of 1986);

2. "actual user" means an occupier who procures and processes hazardous and other waste for reuse, recycling, recovery, pre-processing, utilisation including co-processing;

3. "authorisation" means permission for generation, handling, collection, reception, treatment, transport, storage, reuse, recycling, recovery, pre-processing, utilisation including co-processing and disposal of hazardous wastes granted under sub-rule (2) of rule 6;

4. "Basel Convention" means the United Nations Environment Programme Convention on the Control of Transboundary Movement of Hazardous Wastes and their Disposal;

5. "captive treatment, storage and disposal facility" means a facility developed within the premises of an occupier for treatment, storage and disposal of wastes generated during manufacture, processing, treatment, package, storage, transportation, use, collection, destruction, conversion, offering for sale, transfer or the like of hazardous and other wastes;

6. "Central Pollution Control Board" means the Central Pollution Control Board constituted under sub-section (1) of section 3 of the Water (Prevention and Control of Pollution) Act, 1974 (6 of 1974);

7. "common treatment, storage and disposal facility" means a common facility identified and established individually or jointly or severally by the State Government, occupier, operator of a facility or any association of occupiers that shall be used as common facility by multiple occupiers or actual users for treatment, storage and disposal of the hazardous and other wastes;

8. "co-processing" means the use of waste materials in manufacturing processes for the purpose of energy or resource recovery or both and resultant reduction in the use of conventional fuels or raw materials or both through substitution;

9. "critical care medical equipment" means life saving equipment and includes such equipment as specified by the Ministry of Health and Family Welfare from time to time;

10. "disposal" means any operation which does not lead to reuse, recycling, recovery, utilisation including co-processing and includes physico-chemical treatment, biological treatment, incineration and disposal in secured landfill;

11. “export”, with its grammatical variations and cognate expressions, means taking out of India to a place outside India;

12. “exporter” means any person or occupier under the jurisdiction of the exporting country who exports hazardous or other wastes, including the country which exports hazardous or other waste;

13. “environmentally sound management of hazardous and other wastes” means taking all steps required to ensure that the hazardous and other wastes are managed in a manner which shall protect health and the environment against the adverse effects which may result from such waste;

14. “environmentally sound technologies” means any technology approved by the Central Government from time to time;

15. “facility” means any establishment wherein the processes incidental to the generation, handling, collection, reception, treatment, storage, reuse, recycling, recovery, pre-processing, co-processing, utilisation and disposal of hazardous and, or, other wastes are carried out;

16. “Form” means a form appended to these rules;

17. “hazardous waste” means any waste which by reason of characteristics such as physical, chemical, biological, reactive, toxic, flammable, explosive or corrosive, causes danger or is likely to cause danger to health or environment, whether alone or in contact with other wastes or substances, and shall include -
    (i) waste specified under column (3) of Schedule I;
    (ii) waste having equal to or more than the concentration limits specified for the constituents in class A and class B of Schedule II or any of the characteristics as specified in class C of Schedule II; and
    (iii) wastes specified in Part A of Schedule III in respect of import or export of such wastes or the wastes not specified in Part A but exhibit hazardous characteristics specified in Part C of Schedule III;

18. “import”, with its grammatical variations and cognate expressions, means bringing into India from a place outside India;

19. “importer” mean any person or occupier who imports hazardous or other waste;

20. “manifest” means transporting document prepared and signed by the sender authorised in accordance with the provisions of these rules;

21. “occupier” in relation to any factory or premises, means a person who has, control over the affairs of the factory or the premises and includes in relation to any hazardous and other wastes, the person in possession of the hazardous or other waste;

22. “operator of disposal facility” means a person who owns or operates a facility for collection, reception, treatment, storage and disposal of hazardous and other wastes;

23. “other wastes**”** means wastes specified in Part B and Part D of Schedule III for import or export and includes all such waste generated indigenously within the country;

24. “pre-processing” means the treatment of waste to make it suitable for co-processing or recycling or for any further processing;

25. “recycling” means reclamation and processing of hazardous or other wastes in an environmentally sound manner for the originally intended purpose or for other purposes;

26. “reuse” means use of hazardous or other waste for the purpose of its original use or other use;

27. “recovery” means any operation or activity wherein specific materials are recovered;

28. “Schedule” means a Schedule appended to these rules;

29. “State Government” in relation to a Union territory means, the Administrator thereof appointed under article 239 of the Constitution;

30. “State Pollution Control Board” means the State Pollution Control Board constituted under section 4 of the Water (Prevention and Control of Pollution) Act, 1974 (6 of 1974) and includes, in relation to a Union territory, the Pollution Control Committee;

31. “storage” mean storing any hazardous or other waste for a temporary period, at the end of which such waste is processed or disposed of;

32. “transboundary movement” means any movement of hazardous or other wastes from an area under the jurisdiction of one country to or through an area under the jurisdiction of another country or to or through an area not under the jurisdiction of any country, provided that at least two countries are involved in the movement;

33. “transport” means off-site movement of hazardous or other wastes by air, rail, road or water;

34. “transporter” means a person engaged in the off-site transportation of hazardous or other waste by air, rail, road or water;

35. “treatment” means a method, technique or process, designed to modify the physical, chemical or biological characteristics or composition of any hazardous or other waste so as to reduce its potential to cause harm;

36. “used oil” means any oil-

(i) derived from crude oil or mixtures containing synthetic oil including spent oil, used engine oil, gear oil, hydraulic oil, turbine oil, compressor oil, industrial gear oil, heat transfer oil, transformer oil and their tank bottom sludges; and

(ii) suitable for reprocessing, if it meets the specification laid down in Part A of Schedule V but does not include waste oil;

37. “utilisation” means use of hazardous or other waste as a resource;

38. "waste" means materials that are not products or by-products, for which the generator has no further use for the purposes of production, transformation or consumption.

Explanation.- for the purposes of this clause,

(i) waste includes the materials that may be generated during, the extraction of raw materials, the processing of raw materials into intermediates and final products, the consumption of final products, and through other human activities and excludes residuals recycled or reused at the place of generation; and

(ii) by-product means a material that is not intended to be produced but gets produced in the production process of intended product and is used as such;

39. "waste oil" means any oil which includes spills of crude oil, emulsions, tank bottom sludge and slop oil generated from petroleum refineries, installations or ships and can be used as fuel in furnaces for energy recovery, if it meets the specifications laid down in Part-B of Schedule V either as such or after reprocessing.

(2) Words and expressions used in these rules and not defined but defined in the Act shall have the meanings respectively assigned to them in the Act.

CHAPTER II

PROCEDURE FOR MANAGEMENT OF HAZARDOUS AND OTHER WASTES

4. Responsibilities of the occupier for management of hazardous and other wastes.-

(1) For the management of hazardous and other wastes, an occupier shall follow the following steps, namely:-

(a) prevention;
(b) minimization;
(c) reuse,
(d) recycling;
(e) recovery, utilisation including co-processing;
(f) safe disposal.

(2) The occupier shall be responsible for safe and environmentally sound management of hazardous and other wastes.

(3) The hazardous and other wastes generated in the establishment of an occupier shall be sent or sold to an authorised actual user or shall be disposed of in an authorised disposal facility.

(4) The hazardous and other wastes shall be transported from an occupier's establishment to an authorised actual user or to an authorised disposal facility in accordance with the provisions of these rules.

(5) The occupier who intends to get its hazardous and other wastes treated and disposed of by the operator of a treatment, storage and disposal facility shall give to the operator of that facility, such specific information as may be needed for safe storage and disposal.

(6) The occupier shall take all the steps while managing hazardous and other wastes to-

(a) contain contaminants and prevent accidents and limit their consequences on human beings and the environment; and

(b) provide persons working in the site with appropriate training, equipment and the information necessary to ensure their safety.

5. Responsibilities of State Government for environmentally sound management of hazardous and other wastes. – (1) Department of Industry in the State or any other government agency authorised in this regard by the State Government, to ensure earmarking or allocation of industrial space or shed for recycling, pre-processing and other utilisation of hazardous or other waste in the existing and upcoming industrial park, estate and industrial clusters;

(2) Department of Labour in the State or any other government agency authorised in this regard by the State Government shall,-

(a) ensure recognition and registration of workers involved in recycling, pre-processing and other utilisation activities;
(b) assist formation of groups of such workers to facilitate setting up such facilities;
(c) undertake industrial skill development activities for the workers involved in recycling, pre-processing and other utilisation;
(d) undertake annual monitoring and to ensure safety and health of workers involved in recycling, pre-processing and other utilisation.

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

6. Grant of authorisation for managing hazardous and other wastes.- (1) Every occupier of the facility who is engaged in handling, generation, collection, storage, packaging, transportation, use, treatment, processing, recycling, recovery, pre-processing, co-processing, utilisation, offering for sale, transfer or disposal of the hazardous and other wastes shall be required to make an application in **Form 1** to the State Pollution Control Board and obtain an authorisation from the State Pollution Control Board within a period of sixty days from the date of publication of these rules. Such application for authorisation shall be accompanied with a copy each of the following documents, namely:-

(a) consent to establish granted by the State Pollution Control Board under the Water (Prevention and Control of Pollution) Act, 1974 (25 of 1974) and the Air (Prevention and Control of Pollution) Act, 1981 (21 of 1981);
(b) Consent to operate granted by the State Pollution Control Board under the Water (Prevention and Control of Pollution) Act, 1974 (25 of 1974) and/or Air (Prevention and Control of Pollution) Act, 1981, (21 of 1981);
(c) in case of renewal of authorisation, a self-certified compliance report in respect of effluent, emission standards and the conditions specified in the authorisation for hazardous and other wastes:

Provided that an application for renewal of authorisation may be made three months before the expiry of such authorisation:

Provided further that-

(i) any person authorised under the provisions of the Hazardous Waste (Management, Handling and Transboundary Movement) Rules, 2008, prior to the date of commencement

of these rules, shall not be required to make an application for authorisation till the period of expiry of such authorisation;

(ii) any person engaged in recycling or reprocessing of the hazardous waste specified in Schedule IV and having registration under the provisions of the Hazardous Waste (Management, Handling and Transboundary Movement) Rules, 2008, shall not be required to make an application for authorisation till the period of expiry of such registration.

(2) On receipt of an application complete in all respects for the authorisation, the State Pollution Control Board may, after such inquiry as it considers necessary, and on being satisfied that the applicant possesses appropriate facilities for collection, storage, packaging, transportation, treatment, processing, use, destruction, recycling, recovery, pre-processing, co-processing, utilisation, offering for sale, transfer or disposal of the hazardous and other waste, as the case may be, and after ensuring technical capabilities and equipment complying with the standard operating procedure or other guidelines specified by the Central Pollution Control Board from time to time and through site inspection, grant within a period of one hundred and twenty days, an authorisation in **Form 2** to the applicant, which shall be valid for a period of five years subject to such conditions as may be laid down therein. For commonly recyclable hazardous waste as given in Schedule IV, the guidelines already prepared by the Central Pollution Control Board shall be followed:

Provided that in the case of an application for renewal of authorisation, the State Pollution Control Board may, before granting such authorisation, satisfy itself that there has been no violation of the conditions specified in the authorisation earlier granted by it and same shall be recorded in the inspection report.

(3) The authorisation granted by the State Pollution Control Board under sub-rule (2) shall be accompanied by a copy of the field inspection report signed by that Board indicating the adequacy of facilities for collection, storage, packaging, transportation, treatment, processing, use, destruction, recycling, recovery, pre-processing, co-processing, utilisation, offering for sale, transfer or disposal of the hazardous and other wastes and compliance to the guidelines or standard operating procedures specified by the Central Pollution Control Board from time to time.

(4) The State Pollution Control Board may, for the reasons to be recorded in writing and after giving reasonable opportunity of being heard to the applicant, refuse to grant any authorisation under these rules.

(5) Every occupier authorised under these rules, shall maintain a record of hazardous and other wastes managed by him in **Form 3** and prepare and submit to the State Pollution Control Board, an annual return containing the details specified in **Form 4** on or before the 30th day of June following the financial year to which that return relates.

(6) The State Pollution Control Board shall maintain a register containing particulars of the conditions imposed under these rules for management of hazardous and other wastes and it shall be open for inspection during office hours to any interested or affected person.

(7) The authorised actual user of hazardous and other wastes shall maintain records of hazardous and other wastes purchased in a passbook issued by the State Pollution Control Board along with the authorisation.

(8) Handing over of the hazardous and other wastes to the authorised actual user shall be only after making the entry into the passbook of the actual user.

7. Power to suspend or cancel an authorisation.- (1) The State Pollution Control Board, may, if in its opinion the holder of the authorisation has failed to comply with any of the conditions of the authorisation or with any provisions of the Act or these rules and after giving him a reasonable opportunity of being heard and after recording reasons thereof in writing cancel or suspend the authorisation issued under rule 6 for such period as it considers necessary in the public interest.

(2) Upon suspension or cancellation of the authorisation, the State Pollution Control Board may give directions to the person whose authorisation has been suspended or cancelled for the safe storage and management of the hazardous and other wastes, and such occupier shall comply with such directions.

8. Storage of hazardous and other wastes.- (1) The occupiers of facilities may store the hazardous and other wastes for a period not exceeding ninety days and shall maintain a record of sale, transfer, storage, recycling, recovery, pre-processing, co-processing and utilisation of such wastes and make these records available for inspection:

Provided that the State Pollution Control Board may extend the said period of ninety days in following cases, namely:-

(i) small generators (up to ten tonnes per annum) up to one hundred and eighty days of their annual capacity;

(ii) actual users and disposal facility operators up to one hundred and eighty days of their annual capacity,

(iii) occupiers who do not have access to any treatment, storage, disposal facility in the concerned State; or

(iv) the waste which needs to be specifically stored for development of a process for its recycling, recovery, pre-processing, co-processing or utilisation;

(v) in any other case, on justifiable grounds up to one hundred and eighty days.

9. Utilisation of hazardous and other wastes.- (1) The utilisation of hazardous and other wastes as a resource or after pre-processing either for co-processing or for any other use, including within the premises of the generator (if it is not part of process), shall be carried out only after obtaining authorisation from the State Pollution Control Board in respect of waste on the basis of standard operating procedures or guidelines provided by the Central Pollution Control Board.

(2) Where standard operating procedures or guidelines are not available for specific utilisation, the approval has to be sought from Central Pollution Control Board which shall be granting approval on the basis of trial runs and thereafter, standard operating procedures or guidelines shall be prepared by Central Pollution Control Board:

Provided, if trial run has been conducted for particular waste with respect to particular utilisation and compliance to the environmental standards has been demonstrated, authorisation may be granted by the State Pollution Control Board with respect to the same waste and utilisation, without need of separate trial run by Central Pollution Control Board and such cases of successful trial run, Central Pollution Control Board shall intimate all the State Pollution Control Board regarding the same.

(3) No trial runs shall be required for co-processing of waste in cement plants for which guidelines by the Central Pollution Control Board are already available; however, the actual users shall

ensure compliance to the standards notified under the Environment (Protection) Act,1986 (29 of 1986), for cement plant with respect to co-processing of waste:

Provided that till the time the standards are notified, the procedure as applicable to other kind of utilisation of hazardous and other waste, as enumerated above shall be followed.

10. Standard Operating Procedure or guidelines for actual users.- The Ministry of Environment, Forest and Climate Change or the Central Pollution Control Board may issue guidelines or standard operating procedures for environmentally sound management of hazardous and other wastes from time to time.

CHAPTER III

IMPORT AND EXPORT OF HAZARDOUS AND OTHER WASTES

11. Import and export (transboundary movement) of hazardous and other wastes.- The Ministry of Environment, Forest and Climate Change shall be the nodal Ministry to deal with the transboundary movement of the hazardous and other wastes in accordance with the provisions of these rules.

12. Strategy for Import and export of hazardous and other wastes.- (1) No import of the hazardous and other wastes from any country to India for disposal shall be permitted.

(2) The import of hazardous and other wastes from any country shall be permitted only for recycling, recovery, reuse and utilisation including co-processing.

(3) The import of hazardous waste in Part A of Schedule III may be allowed to actual users with the prior informed consent of the exporting country and shall require the permission of the Ministry of Environment, Forest and Climate Change.

(4) The import of other wastes in Part B of Schedule III may be allowed to actual users with the permission of the Ministry of Environment, Forest and Climate Change.

(5) The import of other wastes in Part D of Schedule III will be allowed as per procedure given in rule 13 and as per the note below the said Schedule.

(6) No import of the hazardous and other wastes specified in Schedule VI shall be permitted.

(7) The export of hazardous and other wastes from India listed in Part A and Part B of Schedule III and Schedule VI shall be with the permission of Ministry of Environment, Forest and Climate Change. In case of applications for export of hazardous and other waste listed in Part A of Schedule III and Schedule VI, they shall be considered on the basis of prior informed consent of the importing country.

(8) The import and export of hazardous and other wastes not specified in Schedule III, but exhibiting the hazardous characteristics outlined in Part C of Schedule III shall require prior written permission of the Ministry of Environment, Forest and Climate Change before it is imported to or exported from India, as the case may be.

13. Procedure for import of hazardous and other wastes.- (1) Actual users intending to import or transit for transboundary movement of hazardous and other wastes specified in Part A and Part B of Schedule III shall apply in **Form 5** along with the documents listed therein, to the Ministry of Environment, Forest and Climate Change for the proposed import together with the prior informed consent of the exporting country in respect of Part A of Schedule III waste, and shall send a copy of the application, simultaneously, to the concerned State Pollution Control Board for information and the acknowledgement in this respect from the concerned State Pollution Control Board shall be submitted to the Ministry of Environment, Forest and Climate Change along with the application.

(2) For the import of other wastes listed in Part D of Schedule III, the importer shall not require the permission of the Ministry of Environment, Forest and Climate Change. However, the importer shall furnish the required information as per **Form 6** to the Customs authorities, accompanied with the following documents in addition to those listed in Schedule VIII, wherever applicable. For used electrical and electronic assemblies listed at serial numbers 4 (e) to 4(i) of Schedule VIII (Basel No. B1110), there is no specific requirement of documentation under these rules:

(a) the import license from Directorate General of Foreign Trade, if applicable;
(b) the valid consents under the Water (Prevention and Control of Pollution) Act, 1974 (25 of 1974) and the Air (Prevention and Control of Pollution) Act, 1981 (21 of 1981)and the authorisation under these rules as well as the authorisation under the E-Waste (Management and Handling) Rules, 2011, as amended from time to time, whichever applicable;
(c) importer who is a trader, importing waste on behalf of actual users, shall obtain one time authorisation in **Form 7** and copy of this authorisation shall be appended to **Form 6**.

(3) For Part B of Schedule III, in case of import of any used electrical and electronic assemblies or spares or part or component or consumables as listed under Schedule I of the E-Waste (Management and Handling) Rules, 2011, as amended from time to time, the importer need to obtain extended producer responsibility-authorisation as producer under the said E-Waste (Management and Handling) Rules, 2011.

(4) Prior to clearing of consignment of wastes listed in Part D of Schedule III, the Custom authorities shall verify the documents as given in column (3) of Schedule VIII.

(5) On receipt of the complete application with respect to Part A and Part B of Schedule III, the Ministry of Environment, Forest and Climate Change shall examine the application considering the comments and observations, if any, received from the State Pollution Control Boards, and may grant the permission for import within a period of sixty days subject to the condition that the importer has -

(i) the environmentally sound facilities;
(ii) adequate arrangements for treatment and disposal of wastes generated;
(iii)a valid authorisation and consents from the State Pollution Control Board;
(iv) prior informed consent from the exporting country in case of Part A of Schedule III wastes.

(6) The Ministry of Environment, Forest and Climate Change shall forward a copy of the permission to the concerned Port and Customs authorities, Central Pollution Control Board and the concerned State Pollution Control Board for ensuring compliance with respect to their respective functions given in Schedule VII.

(7) The importer of the hazardous and other wastes shall maintain records of the hazardous and other waste imported by him in **Form 3** and the record so maintained shall be made available for inspection.

(8) The importer of the hazardous and other wastes shall file an annual return in **Form 4** to the State Pollution Control Board on or before the 30th day of June following the financial year to which that return relates.

(9) Samples of hazardous and other wastes being imported for testing or research and development purposes up to 1000 gm or 1000 ml shall be exempted from need of taking permission for import under these rules.

(10) The Port and Customs authorities shall ensure that shipment is accompanied with the movement document as given in **Form 6** and the test report of analysis of the waste, consignment, wherever applicable, from a laboratory accredited or recognised by the exporting country. In case of any doubt, the customs may verify the analysis.

14. Procedure for Export of hazardous and other wastes from India.- (1) Any occupier intending to export waste specified in Part A of Schedule III, Part B of Schedule III and Schedule VI, shall make an application in **Form 5** along with insurance cover to the Ministry of Environment, Forest and Climate Change for the proposed transboundary movement of the hazardous and other wastes together with the prior informed consent in writing from the importing country in respect of wastes specified in Part A of Schedule III and Schedule VI.

(2) On receipt of an application under sub-rule (1), the Ministry of Environment, Forest and Climate Change may give permission for the proposed export within a period of sixty days from the date of submission of complete application and may impose such conditions as it may consider necessary.

(3) The Ministry of Environment, Forest and Climate Change shall forward a copy of the permission granted under sub-rule (2) to the State Pollution Control Board of the State where the waste is generated and the Pollution Control Board of the State where the port of export is located and the concerned Port and Customs authorities for ensuring compliance of the conditions of the export permission.

(4) The exporter shall ensure that no consignment is shipped before the prior informed consent is received from the importing country, wherever applicable.

(5) The exporter shall also ensure that the shipment is accompanied with movement document in **Form 6.**

(6) The exporter of the hazardous and other wastes shall maintain the records of the hazardous or other waste exported by him in **Form 3** and the record so maintained shall be available for inspection.

15. Illegal traffic.- (1) The export and import of hazardous or other wastes from and into India, respectively shall be deemed illegal, if,-

(i) it is without permission of the Central Government in accordance with these rules; or
(ii) the permission has been obtained through falsification, mis-representation or fraud; or
(iii) it does not conform to the shipping details provided in the movement documents; or

(iv) it results in deliberate disposal (i.e., dumping) of hazardous or other waste in contravention of the Basel Convention and of general principles of international or domestic law.

(2) In case of illegal import of the hazardous or other waste, the importer shall re-export the waste in question at his cost within a period of ninety days from the date of its arrival into India and its implementation will be ensured by the concerned Port and the Custom authority. In case of disposal of such waste by the Port and Custom authorities, they shall do so in accordance with these rules with the permission of the Pollution Control Board of the State where the Port exists.

(3) In case of illegal import of hazardous or other waste, where the importer is not traceable then the waste either can be sold by the Customs authority to any user having authorisation under these rules from the concerned State Pollution Control Board or can be sent to authorised treatment, storage and disposal facility.

CHAPTER - IV

TREATMENT, STORAGE AND DISPOSAL FACILITY FOR HAZARDOUS AND OTHER WASTES

16. Treatment, storage and disposal facility for hazardous and other wastes.- (1) The State Government, occupier, operator of a facility or any association of occupiers shall individually or jointly or severally be responsible for identification of sites for establishing the facility for treatment, storage and disposal of the hazardous and other waste in the State.

(2) The operator of common facility or occupier of a captive facility, shall design and set up the treatment, storage and disposal facility as per technical guidelines issued by the Central Pollution Control Board in this regard from time to time and shall obtain approval from the State Pollution Control Board for design and layout in this regard.

(3) The State Pollution Control Board shall monitor the setting up and operation of the common or captive treatment, storage and disposal facility, regularly.

(4) The operator of common facility or occupier of a captive facility shall be responsible for safe and environmentally sound operation of the facility and its closure and post closure phase, as per guidelines or standard operating procedures issued by the Central Pollution Control Board from time to time.

(5) The operator of common facility or occupier of a captive facility shall maintain records of hazardous and other wastes handled by him in **Form 3.**

(6) The operator of common facility or occupier of a captive facility shall file an annual return in **Form 4** to the State Pollution Control Board on or before the 30th day of June following the financial year to which that return relates.

CHAPTER - V

PACKAGING, LABELLING, AND TRANSPORT OF HAZARDOUS AND OTHER WASTES.

17. Packaging and Labelling.- (1) Any occupier handling hazardous or other wastes and operator of the treatment, storage and disposal facility shall ensure that the hazardous and other wastes are packaged in a manner suitable for safe handling, storage and transport as per the guidelines issued by the Central Pollution Control Board from time to time. The labelling shall be done as per **Form 8.**

(2) The label shall be of non-washable material, weather proof and easily visible.

18. Transportation of hazardous and other wastes.- (1) The transport of the hazardous and other waste shall be in accordance with the provisions of these rules and the rules made by the Central Government under the Motor Vehicles Act, 1988 and the guidelines issued by the Central Pollution Control Board from time to time in this regard.

(2) The occupier shall provide the transporter with the relevant information in **Form 9,** regarding the hazardous nature of the wastes and measures to be taken in case of an emergency and shall label the hazardous and other wastes containers as per **Form 8**.

(3) In case of transportation of hazardous and other waste for final disposal to a facility existing in a State other than the State where the waste is generated, the sender shall obtain 'No Objection Certificate' from the State Pollution Control Board of both the States.

(4) In case of transportation of hazardous and other waste for recycling or utilisation including co-processing, the sender shall intimate both the State Pollution Control Boards before handing over the waste to the transporter.

(5) In case of transit of hazardous and other waste for recycling, utilisation including co-processing or disposal through a State other than the States of origin and destination, the sender shall give prior intimation to the concerned State Pollution Control Board of the States of transit before handing over the wastes to the transporter.

(6) In case of transportation of hazardous and other waste, the responsibility of safe transport shall be either of the sender or the receiver whosoever arranges the transport and has the necessary authorisation for transport from the concerned State Pollution Control Board. This responsibility should be clearly indicated in the manifest.

(7) The authorisation for transport shall be obtained either by the sender or the receiver on whose behalf the transport is being arranged.

19. Manifest system (Movement Document) for hazardous and other waste to be used within the country only.- (1) The sender of the waste shall prepare seven copies of the manifest in **Form 10** comprising of colour code indicated below and all seven copies shall be signed by the sender:

Copy number with colour code	Purpose
(1)	(2)
Copy 1 (White)	To be forwarded by the sender to the State Pollution Control Board after signing all the seven copies.
Copy 2 (Yellow)	To be retained by the sender after taking signature on it from the transporter and the rest of the five signed copies to be carried by the transporter.
Copy 3 (Pink)	To be retained by the receiver (actual user or treatment storage and disposal facility operator) after receiving the waste and the remaining four copies are to be duly signed by the receiver.
Copy 4 (Orange)	To be handed over to the transporter by the receiver after accepting waste.
Copy 5 (Green)	To be sent by the receiver to the State Pollution Control Board.
Copy 6 (Blue)	To be sent by the receiver to the sender.
Copy 7 (Grey)	To be sent by the receiver to the State Pollution Control Board of the sender in case the sender is in another State.

(2) The sender shall forward copy 1 (white) to the State Pollution Control Board, and in case the hazardous or other wastes is likely to be transported through any transit State, the sender shall intimate State Pollution Control Boards of transit States about the movement of the waste.

(3) No transporter shall accept waste from the sender for transport unless it is accompanied by signed copies 3 to 7 of the manifest.

(4) The transporter shall submit copies 3 to 7 of the manifest duly signed with date to the receiver along with the waste consignment.

(5) The receiver after acceptance of the waste shall hand over copy 4 (orange) to the transporter and send copy 5 (green) to his State Pollution Control Board and send copy 6 (blue) to the sender and the copy 3 (pink) shall be retained by the reciever.

(6) The copy 7 (grey) shall only be sent to the State Pollution Control Board of the sender, if the sender is in another State.

CHAPTER VI
MISCELLANIOUS

20. Records and returns.- (1) The occupier handling hazardous or other wastes and operator of disposal facility shall maintain records of such operations in **Form 3.**

(2) The occupier handling hazardous and other wastes and operator of disposal facility shall send annual returns to the State Pollution Control Board in **Form 4.**

(3) The State Pollution Control Board based on the annual returns received from the occupiers and the operators of the facilities for disposal of hazardous and other wastes shall prepare an annual inventory of the waste generated; waste recycled, recovered, utilised including co-processed; waste re-exported and waste disposed and submit to the Central Pollution Control Board by the 30th day of September every year. The State Pollution Control Board shall also prepare the inventory of hazardous waste generators, actual users, and common and captive

disposal facilities and shall submit the information to Central Pollution Control Board every two years.

(4) The Central Pollution Control Board shall prepare the consolidated review report on management of hazardous and other wastes and forward it to the Ministry of Environment, Forest and Climate Change, along with its recommendations before the 30th day of December once in every year.

21. Responsibility of authorities. - The authority specified in column (2) of Schedule VII shall perform the duties as specified in column (3) of the said Schedule subject to the provisions of these rules.

22. Accident reporting. - Where an accident occurs at the facility of the occupier handling hazardous or other wastes and operator of the disposal facility or during transportation, the occupier or the operator or the transporter shall immediately intimate the State Pollution Control Board through telephone, e-mail about the accident and subsequently send a report in **Form 11.**

23. Liability of occupier, importer or exporter and operator of a disposal facility.-

(1) The occupier, importer or exporter and operator of the disposal facility shall be liable for all damages caused to the environment or third party due to improper handling and management of the hazardous and other waste.

(2) The occupier and the operator of the disposal facility shall be liable to pay financial penalties as levied for any violation of the provisions under these rules by the State Pollution Control Board with the prior approval of the Central Pollution Control Board.

24. Appeal.- (1) Any person aggrieved by an order of suspension or cancellation or refusal of authorisation or its renewal passed by the State Pollution Control Board may, within a period of thirty days from the date on which the order is communicated to him, prefer an appeal in **Form 12** to the Appellate Authority, namely, the Environment Secretary of the State.

(2) The Appellate Authority may entertain the appeal after expiry of the said period of thirty days, if it is satisfied that the appellant was prevented by sufficient cause from filing the appeal in time.

(3) Every appeal filed under this rule shall be disposed of within a period of sixty days from the date of its filing.

SCHEDULE I

[See rule 3 (1) (17) (i)]

List of processes generating hazardous wastes

S.No.	Processes	Hazardous Waste*
(1)	(2)	(3)
1.	Petrochemical processes and pyrolytic operations	1.1 Furnace or reactor residue and debris 1.2 Tarry residues and still bottoms from distillation 1.3 Oily sludge emulsion 1.4 Organic residues 1.5 Residues from alkali wash of fuels

(1)	(2)	(3)
		1.6 Spent catalyst and molecular sieves 1.7 Oil from wastewater treatment
2.	Crude oil and natural gas production	2.1 Drill cuttings excluding those from water based mud 2.2 Sludge containing oil 2.3 Drilling mud containing oil
3.	Cleaning, emptying and maintenance of petroleum oil storage tanks including ships	3.1 cargo residue, washing water and sludge containing oil 3.2 cargo residue and sludge containing chemicals 3.3 Sludge and filters contaminated with oil 3.4 Ballast water containing oil from ships
4.	Petroleum refining or re-processing of used oil or recycling of waste oil	4.1 Oil sludge or emulsion 4.2 Spent catalyst 4.3 Slop oil 4.4 Organic residue from processes 4.5 Spent clay containing oil
5.	Industrial operations using mineral or synthetic oil as lubricant in hydraulic systems or other applications	5.1 Used or spent oil 5.2 Wastes or residues containing oil 5.3 Waste cutting oils
6.	Secondary production and / or industrial use of zinc	6.1 Sludge and filter press cake arising out of production of Zinc Sulphate and other Zinc Compounds. 6.2 Zinc fines or dust or ash or skimmings in dispersible form 6.3 Other residues from processing of zinc ash or skimmings 6.4 Flue gas dust and other particulates
7.	Primary production of zinc or lead or copper and other non-ferrous metals except aluminium	7.1 Flue gas dust from roasting 7.2 Process residues 7.3 Arsenic-bearing sludge 7.4 Non-ferrous metal bearing sludge and residue. 7.5 Sludge from scrubbers
8.	Secondary production of copper	8.1 Spent electrolytic solutions 8.2 Sludge and filter cakes 8.3 Flue gas dust and other particulates
9.	Secondary production of lead	9.1 Lead bearing residues 9.2 Lead ash or particulate from flue gas 9.3 Acid from used batteries
10.	Production and/or industrial use of cadmium and arsenic and their compounds	10.1 Residues containing cadmium and arsenic
11.	Production of primary and secondary aluminum	11.1 Sludges from off-gas treatment 11.2 Cathode residues including pot lining wastes 11.3 Tar containing wastes 11.4 Flue gas dust and other particulates 11.5 Drosses and waste from treatment of salt sludge

(1)	(2)	(3)
		11.6 Used anode butts 11.7 Vanadium sludge from alumina refineries
12.	Metal surface treatment, such as etching, staining, polishing, galvanizing, cleaning, degreasing, plating, etc.	12.1 Acidic and alkaline residues 12.2 Spent acid and alkali 12.3 Spent bath and sludge containing sulphide, cyanide and toxic metals 12.4 Sludge from bath containing organic solvents 12.5 Phosphate sludge 12.6 Sludge from staining bath 12.7 Copper etching residues 12.8 Plating metal sludge
13.	Production of iron and steel including other ferrous alloys (electric furnace; steel rolling and finishing mills; Coke oven and by products plant)	13.1 Spent pickling liquor 13.2 Sludge from acid recovery unit 13.3 Benzol acid sludge 13.4 Decanter tank tar sludge 13.5 Tar storage tank residue 13.6 Residues from coke oven by product plant.
14.	Hardening of steel	14.1 Cyanide-, nitrate-, or nitrite -containing sludge 14.2 Spent hardening salt
15.	Production of asbestos or asbestos-containing materials	15.1 Asbestos-containing residues 15.2 Discarded asbestos 15.3 Dust or particulates from exhaust gas treatment.
16.	Production of caustic soda and chlorine	16.1 Mercury bearing sludge generated from mercury cell process 16.2 Residue or sludges and filter cakes 16.3 Brine sludge
17.	Production of mineral acids	17.1 Process acidic residue, filter cake, dust 17.2 Spent catalyst
18.	Production of nitrogenous and complex fertilizers	18.1 Spent catalyst 18.2 Carbon residue 18.3 Sludge or residue containing arsenic 18.4 Chromium sludge from water cooling tower
19.	Production of phenol	19.1 Residue or sludge containing phenol 19.2 Spent catalyst
20.	Production and/or industrial use of solvents	20.1 Contaminated aromatic, aliphatic or napthenic solvents may or may not be fit for reuse. 20.2 Spent solvents 20.3 Distillation residues 20.4 Process Sludge
21.	Production and/or industrial use of paints, pigments, lacquers, varnishes and inks	21.1 Process wastes, residues and sludges 21.2 Spent solvent
22.	Production of plastics	22.1 Spent catalysts 22.2 Process residues
23.	Production and /or industrial use of glues, organic cements,	23.1 Wastes or residues (not made with vegetable or animal materials)

(1)	(2)	(3)
	adhesive and resins	23.2 Spent solvents
24.	Production of canvas and textiles	24.1 Chemical residues
25.	Industrial production and formulation of wood preservatives	25.1 Chemical residues 25.2 Residues from wood alkali bath
26.	Production or industrial use of synthetic dyes, dye-intermediates and pigments	26.1 Process waste sludge/residues containing acid, toxic metals, organic compounds 26.2 Dust from air filtration system 26.3 Spent acid 26.4 Spent solvent 26.5 Spent catalyst
27.	Production of organic-silicone compound	27.1 Process residues
28.	Production/formulation of drugs/pharmaceutical and health care product	28.1 Process Residue and wastes 28.2 Spent catalyst 28.3 Spent carbon 28.4 Off specification products 28.5 Date-expired products 28.6 Spent solvents
29.	Production, and formulation of pesticides including stock-piles	29.1 Process wastes or residues 29.2 Sludge containing residual pesticides 29.3 Date-expired and off-specification pesticides 29.4 Spent solvents 29.5 Spent catalysts 29.6 Spent acids
30.	Leather tanneries	30.1 Chromium bearing residue and sludge
31.	Electronic Industry	31.1 Process residue and wastes 31.2 Spent etching chemicals and solvents
32.	Pulp and Paper Industry	32.1 Spent chemicals 32.2 Corrosive wastes arising from use of strong acid and bases 32.3 Process sludge containing adsorbable organic halides(AO_X)
33.	Handling of hazardous chemicals and wastes	33.1 Empty barrels/containers/liners contaminated with hazardous chemicals /wastes 33.2 Contaminated cotton rags or other cleaning materials
34.	De-contamination of barrels / containers used for handling of hazardous wastes/chemicals	34.1 Chemical-containing residue arising from decontamination. 34.2 Sludge from treatment of waste water arising out of cleaning / disposal of barrels / containers
35.	Purification and treatment of exhaust air/gases, water and waste water from the processes in this schedule and common industrial effluent treatment plants (CETP's)	35.1 Exhaust Air or Gas cleaning residue 35.2 Spent ion exchange resin containing toxic metals 35.3 Chemical sludge from waste water treatment 35.4 Oil and grease skimming 35.5 Chromium sludge from cooling water
36.	Purification process for organic	36.1 Any process or distillation residue

(1)	(2)	(3)
	compounds/solvents	36.2 Spent carbon or filter medium
37.	Hazardous waste treatment processes, e.g. pre-processing, incineration and concentration	37.1 Sludge from wet scrubbers 37.2 Ash from incinerator and flue gas cleaning residue 37.3 Concentration or evaporation residues
38.	Chemical processing of Ores containing heavy metals such as Chromium, Manganese, Nickel, Cadmium etc.	38.1 Process residues 38.2 Spent acid

*** The inclusion of wastes contained in this Schedule does not preclude the use of Schedule II to demonstrate that the waste is not hazardous. In case of dispute, the matter would be referred to the Technical Review Committee constituted by Ministry of Environment, Forest and Climate Change.**

Note: *The high volume low effect wastes such as fly ash, Phosphogypsum, red mud, jarosite, Slags from pyrometallurgical operations, mine tailings and ore beneficiation rejects are excluded from the category of hazardous wastes. Separate guidelines on the management of these wastes shall be issued by Central Pollution Control Board.*

SCHEDULE II

[See rule 3 (1) (17) (ii)]

List of waste constituents with concentration limits

Class A: Based on leachable concentration limits [Toxicity Characteristic Leaching Procedure (TCLP) or Soluble Threshold Limit Concentration (STLC)]

Class	Constituents	Concentration in mg/l
(1)	**(2)**	**(3)**
A1	Arsenic	5.0
A2	Barium	100.0
A3	Cadmium	1.0
A4	Chromium and/or Chromium (III) compounds	5.0
A5	Lead	5.0
A6	Manganese	10.0
A7	Mercury	0.2
A8	Selenium	1.0
A9	Silver	5.0
A10	Ammonia	50*
A11	Cyanide	20*
A12	Nitrate (as nitrate-nitrogen)	1000.0
A13	Sulphide (as H_2S)	5.0
A14	1,1-Dichloroethylene	0.7
A15	1,2-Dichloroethane	0.5
A16	1,4-Dichlorobenzene	7.5
A17	2,4,5-Trichlorophenol	400.0
A18	2,4,6-Trichlorophenol	2.0
A19	2,4-Dinitrotoluene	0.13
A20	Benzene	0.5
A21	Benzo (a) Pyrene	0.001
A22	Bromodicholromethane	6.0
A23	Bromoform	10.0
A24	Carbon tetrachloride	0.5
A25	Chlorobenzene	100.0
A26	Chloroform	6.0
A27	Cresol (ortho+ meta+ para)	200.0
A28	Dibromochloromethane	10.0
A29	Hexachlorobenzene	0.13
A30	Hexachlorobutadiene	0.5
A31	Hexachloroethane	3.0
A32	Methyl ethyl ketone	200.0
A33	Naphthalene	5.0
A34	Nitrobenzene	2.0
A35	Pentachlorophenol	100.0
A36	Pyridine	5.0
A37	Tetrachloroethylene	0.7
A38	Trichloroethylene	0.5

(1)	(2)	(3)
A39	Vinyl chloride	0.2
A40	2,4,5-TP (Silvex)	1.0
A41	2,4-Dichlorophenoxyacetic acid	10.0
A42	Alachlor	2.0
A43	Alpha HCH	0.001
A44	Atrazine	0.2
A45	Beta HCH	0.004
A46	Butachlor	12.5
A47	Chlordane	0.03
A48	Chlorpyriphos	9.0
A49	Delta HCH	0.004
A50	Endosulfan (alpha+ beta+ sulphate)	0.04
A51	Endrin	0.02
A52	Ethion	0.3
A53	Heptachlor (& its Epoxide)	0.008
A54	Isoproturon	0.9
A55	Lindane	0.4
A56	Malathion	19
A57	Methoxychlor	10
A58	Methyl parathion	0.7
A59	Monocrotophos	0.1
A60	Phorate	0.2
A61	Toxaphene	0.5
A62	Antimony	15
A63	Beryllium	0.75
A64	Chromium (VI)	5.0
A65	Cobalt	80.0
A66	Copper	25.0
A67	Molybdenum	350
A68	Nickel	20.0
A69	Thallium	7.0
A70	Vanadium	24.0
A71	Zinc	250
A72	Fluoride	180.0
A73	Aldrin	0.14
A74	Dichlorodiphenyltrichloroethane (DDT), Dichlorodiphenyldichloroethylene (DDE), Dichlorodiphenyldichloroethane (DDD)	0.1
A75	Dieldrin	0.8
A76	Kepone	2.1
A77	Mirex	2.1
A78	Polychlorinated biphenyls	5.0
A79	Dioxin (2,3,7,8-TCDD)	0.001

Class B: Based on Total Threshold Limit Concentration (TTLC)

Class	Constituent	Concentration in mg/kg
(1)	**(2)**	**(3)**
B1	Asbestos	10000
B2	Total Petroleum Hydrocarbons (TPH) (C5 - C36)	5,000

Note:

(1) The testing method for list of constituents at A1 to A61 in Class-A, shall be based on Toxicity Characteristic Leaching Procedure (TCLP) and for extraction of leachable constituents, USEPA Test Method 1311 shall be used.
(2) The testing method for list of constituents at A62 to A79 in Class- A, shall be based on Soluble Threshold Limit Concentration (STLC) and Waste Extraction Test (WET) Procedure given in Appendix II of section 66261 of Title 22 of California Code regulation (CCR) shall be used.
(3) In case of ammonia (A10), cyanide (A11) and chromium VI (A64), extractions shall be conducted using distilled water in place of the leaching media specified in the TCLP/STLC procedures.
(4) A summary of above specified leaching/extraction procedures is included in manual for characterization and analysis of hazardous waste published by Central Pollution Control Board and in case the method is not covered in the said manual, suitable reference method may be adopted for the measurement.
(5) In case of asbestos, the specified concentration limits apply only if the substances are in a friable, powdered or finely divided state.
(6) The hazardous constituents to be analyzed in the waste shall be relevant to the nature of the industry and the materials used in the process.
(7) Wastes which contain any of the constituents listed below shall be considered as hazardous, provided they exhibit the characteristics listed in Class-C of this Schedule :

1.	Acid Amides
2.	Acid anhydrides
3.	Amines
4.	Anthracene
5.	Aromatic compounds other than those listed in Class A
6.	Bromates, (hypo-bromites)
7.	Chlorates (hypo-chlorites)
8.	Carbonyls
9.	Ferro-silicate and alloys
10.	Halogen- containing compounds which produce acidic vapours on contact with humid air or water e.g. silicon tetrachloride, aluminum chloride, titanium tetrachloride
11.	Halogen- silanes
12.	Halogenated Aliphatic Compounds
13.	Hydrazine (s)

14.	Hydrides
15.	Inorganic Acids
16.	Inorganic Peroxides
17.	Inorganic Tin Compounds
18.	Iodates
19.	(Iso- and thio-) Cyanates
20.	Manganese-silicate
21.	Mercaptans
22.	Metal Carbonyls
23.	Metal hydrogen sulphates
24.	Nitrides
25.	Nitriles
26.	Organic azo and azooxy Compounds
27.	Organic Peroxides
28.	Organic Oxygen Compounds
29.	Organic Sulphur Compounds
30.	Organo- Tin Compounds
31.	Organo nitro- and nitroso compounds
32.	Oxides and hydroxides except those of hydrogen, carbon, silicon, iron, aluminum, titanium, manganese, magnesium, calcium
33.	Phenanthrene
34.	Phenolic Compounds
35.	Phosphate compounds except phosphates of aluminum, calcium and iron
36.	Salts of pre-acids
37.	Total Sulphur
38.	Tungsten Compounds
39.	Tellurium and tellurium compounds
40.	White and Red Phosphorus
41.	2-Acetylaminofluorene
42.	4-Aminodiphenyl
43.	Benzidine and its salts
44.	Bis (Chloromethyl) ether
45.	Methyl chloromethyl ether
46.	1,2-Dibromo-3-chloropropane
47.	3,3'-Dichlorobenzidine and its salts
48.	4-Dimethylaminoazobenzene
49.	4-Nitrobiphenyl
50.	Beta-Propiolactone

CLASS C : Based on hazardous Characteristics

Apart from the concentration limit given above, the substances or wastes shall be classified as hazardous waste if it exhibits any of the following characteristics due to the presence of any hazardous constituents:

Class C1: Flammable- A waste exhibits the characteristic of flammability or ignitability if a representative sample of the waste has any of the following properties, namely:-

(i) flammable liquids, or mixture of liquids, or liquids containing solids in solution or suspension (for example, paints, varnishes, lacquers, etc; but not including substances or wastes otherwise classified on account of their dangerous characteristics), which give off a flammable vapour at temperature less than 60°C. This flash point shall be measured as per ASTM D 93-79 closed-cup test method or as determined by an equivalent test method published by Central Pollution Control Board;

(ii) it is not a liquid and is capable, under standard temperature and pressure, of causing fire through friction, absorption of moisture or spontaneous chemical changes and, when ignited, burns vigorously and persistently creating a hazard;

(iii) it is an ignitable compressed gas;

(iv) It is an oxidizer and for the purposes of characterisation is a substance such as a chlorate, permanganate, inorganic peroxide, or a nitrate, that yields oxygen readily to stimulate the combustion of organic matter.

Class C2: Corrosive- A waste exhibits the characteristic of corrosivity if a representative sample of the waste has either of the following properties, namely:-

(i) it is aqueous and has a pH less than or equal to 2 or greater than or equal to 12.5;

(ii) it is a liquid and corrodes steel (SAE 1020) at a rate greater than 6.35 mm per year at a test temperature of 55 °C;

(iii) it is not aqueous and, when mixed with an equivalent weight of water, produces a solution having a pH less than or equal to 2 or greater than or equal to 12.5;

(iv) it is not a liquid and, when mixed with an equivalent weight of water, produces a liquid that corrodes steel (SAE1020) at a rate greater than 6.35 mm per year at a test temperature of 55 °C.

Note:

For the purpose of determining the corrosivity, the Bureau of Indian Standard 9040 C method for pH determination, NACE TM 01 69 : Laboratory Corrosion Testing of Metals and EPA 1110A method for corrosivity towards steel (SAE1020) to establish the corrosivity characteristics shall be adopted.

Class C3: Reactive or explosive- A waste exhibits the characteristic of reactivity if a representative sample of the waste it has any of the following properties, namely:-

(i) it is normally unstable and readily undergoes violent change without detonating;

(ii) it reacts violently with water or forms potentially explosive mixtures with water;

(iii) when mixed with water, it generates toxic gases, vapours or fumes in a quantity sufficient to present a danger to human health or the environment;

(iv) it is a cyanide or sulphide bearing waste which, when exposed to pH conditions between 2 and 12.5, can generate toxic gases, vapours or fumes in a quantity sufficient to present a danger to human health or the environmental;

(v) it is capable of detonation or explosive reaction if it is subjected to a strong initiating source or if heated under confinement;

(vi) it is readily capable of detonation or explosive decomposition or reaction at standard temperature and pressure;

(vii) it is a forbidden explosive.

Class C4: Toxic- A waste exhibits the characteristic of toxicity, if, :-

(i) the concentration of the waste constituents listed in Class A and B (of this schedule) are equal to or more than the permissible limits prescribed therein;
(ii) it has an acute oral LD50 less than 2,500 milligrams per kilogram;
(iii) it has an acute dermal LD50 less than 4,300 milligrams per kilogram;
(iv) it has an acute inhalation LC50 less than 10,000 parts per million as a gas or vapour;
(v) it has acute aquatic toxicity with 50% mortality within 96 hours for zebra fish (*Brachidanio rerio*) at a concentration of 500 milligrams per litre in dilution water and test conditions as specified in BIS test method 6582 – 2001.
(vi) it has been shown through experience or by any standard reference test- method to pose a hazard to human health or environment because of its carcinogenicity, mutagenecity, endocrine disruptivity, acute toxicity, chronic toxicity, bio-accumulative properties or persistence in the environment.

Class C5: Substances or Wastes liable to spontaneous combustion - Substances or Wastes which are liable to spontaneous heating under normal conditions encountered in transport, or to heating up on contact with air, and being then liable to catch fire.

Class C6: Substances or Wastes which, in contact with water emit flammable gases- Substances or Wastes which, by interaction with water, are liable to become spontaneously flammable or to give off flammable gases in dangerous quantities.

Class C5: Oxidizing - Substances or Wastes which, while in themselves not necessarily combustible, may, generally by yielding oxygen cause, or contribute to, the combustion of other materials.

Class C8: Organic Peroxides - Organic substances or Wastes which contain the bivalent O−O structure, which may undergo exothermic self-accelerating decomposition.

Class C9: Poisons (acute) - Substances or Wastes liable either to cause death or serious injury or to harm human health if swallowed or inhaled or by skin contact.

Class C10: Infectious ~~substances~~ - Substances or Wastes containing viable micro-organisms or their toxins which are known or suspected to cause disease in animals or humans.

Class C11: Liberation of toxic gases in contact with air or water - Substances or Wastes which, by interaction with air or water, are liable to give off toxic gases in dangerous quantities.

Class C12: Eco-toxic- Substances or Wastes which if released, present or may present immediate or delayed adverse impacts to the environment by means of bioaccumulation or toxic effects upon biotic systems or both.

Class C13: Capable, by any means, after disposal, of yielding another material, e.g., leachate, which possesses any of the characteristics listed above.

SCHEDULE III

[See rules 3 (1) (17) (iii), 3 (23), 12, 13 and 14]

Part A

List of hazardous wastes applicable for import and export with Prior Informed Consent [Annexure VIII of the Basel Convention*]

Basel No.	Description of Hazardous Wastes
(1)	**(2)**
A1	**Metal and Metal bearing wastes**
A1010	Metal wastes and waste consisting of alloys of any of the following but excluding such wastes specifically listed in Part B and Part D
	- Antimony
	- Cadmium
	- Lead
	- Tellurium
A1020	Waste having as constituents or contaminants, excluding metal wastes in massive form, any or the following:
	- Antimony, antimony compounds
	- Cadmium, cadmium compounds
	- Lead, lead compounds
	- Tellurium, tellurium compounds
A1040	Waste having metal carbonyls as constituents
A1050	Galvanic sludges
A1070	Leaching residues from zinc processing, dust and sludges such as jarosite, hematite, etc.
A1080	Waste zinc residues not included in Part B, containing lead and cadmium in concentrations sufficient to exhibit hazard characteristics indicated in Part C
A1090	Ashes from the incineration of insulated copper wire
A1100	Dusts and residues from gas cleaning systems of copper smelters
A1120	Waste sludges, excluding anode slimes, from electrolyte purification systems in copper electrorefining and electrowinning operations
A1140	Waste cupric chloride and copper cyanide catalysts not in liquid form note the related entry in Schedule VI
A1150	Precious metal ash from incineration of printed circuit boards not included in Part B
A1160	Waste lead acid batteries, whole or crushed
A1170	Unsorted waste batteries excluding mixtures of only Part B batteries. Waste batteries not specified in Part B containing constituents mentioned in Schedule II to an extent to render them hazardous
A2	**Wastes containing principally inorganic constituents, which may contain metals and organic materials**
A2010	Glass waste from cathode-ray tubes and other activated glasses
A2030	Waste catalysts but excluding such wastes specified in Part B
A3	**Wastes containing principally organic constituents, which may contain metals and inorganic materials**
A3010	Waste from the production or processing of petroleum coke and bitumen
A3020	Waste mineral oils unfit for their originally intended use
A3050	Wastes from production, formulation and use of resins, latex, plasticizers, glues or adhesives excluding such wastes specified in Part B (B4020)
A3120	Fluff-light fraction from shredding

(1)	(2)
A3130	Waste organic phosphorus compounds
A4	**Wastes which may contain either inorganic or organic constituents**
A4010	Wastes from the production, preparation and use of pharmaceutical products but excluding such waste specified in Part B
A4040	Wastes from the manufacture, formulation and use of wood-preserving chemicals (does not include wood treated with wood preserving chemicals)
A4070	Waste from the production, formulation and use of inks, dyes, pigments, paints, lacquers, varnish excluding those specified in Part B (B4010)
A4100	Wastes from industrial pollution control devices for cleaning of industrial off-gases but excluding such wastes specified in Part B
A4120	Wastes that contain, consist of or are contaminated with peroxides.
A4130	Wastes packages and containers containing Schedule II constituents in concentration sufficient to exhibit Part C of Schedule III hazard characteristics.
A4140	Waste consisting of or containing off specification or outdated chemicals (unused within the period recommended by the manufacturer) corresponding to constituents mentioned in Schedule II and exhibiting Part C of Schedule III hazard characteristics.
A4160	Spent activated carbon not included in Part B, B2060

*This List is based on Annexure VIII of the Basel Convention on Transboundary Movement of Hazardous Wastes and comprises of wastes characterized as hazardous under Article I, paragraph 1(a) of the Convention. Inclusion of wastes on this list does not preclude the use of hazard.

Characteristics given in Annexure VIII of the Basel Convention (Part C of this Schedule) to demonstrate that the wastes are not hazardous. **Hazardous wastes in Part-A are restricted and cannot be allowed to be imported without permission from the Ministry of Environment, Forest and Climate Change and the Directorate General of Foreign Trade license, if applicable.**

Part B

List of other wastes applicable for import and export and not requiring Prior Informed Consent [Annex IX of the Basel Convention*]

Basel No.	Description of wastes
(1)	**(2)**
B1	**Metal and metal-bearing wastes**
B1010	Metal and metal-alloy wastes in metallic, non-dispersible form:
	- Thorium scrap
	- Rare earths scrap
B1020	Clean, uncontaminated metal scrap, including alloys, in bulk finished form (sheet, plates, beams, rods, etc.), of:
	- Antimony scrap
	- Beryllium scrap
	- Cadmium scrap
	- Lead scrap (excluding lead acid batteries)
	- Selenium scrap
	- Tellurium scrap
B1030	Refractory metals containing residues

(1)	(2)
B1031	Molybdenum, tungsten, titanium, tantalum, niobium and rhenium metal and metal alloy wastes in metallic dispersible form (metal powder), excluding such wastes as specified in Part A under entry A1050, Galvanic sludges
B1040	Scrap assemblies from electrical power generation not contaminated with lubricating oil, PCB or PCT to an extent to render them hazardous
B1050	Mixed non-ferrous metal, heavy fraction scrap, containing cadmium, antimony, lead & tellurium mentioned in Schedule II in concentrations sufficient to exhibit Part C characteristics
B1060	Waste selenium and tellurium in metallic elemental form including powder
B1070	Waste of copper and copper alloys in dispersible form, unless they contain any of the constituents mentioned in Schedule II to an extent that they exhibit Part C characteristics
B1080	Zinc ash and residues including zinc alloys residues in dispersible form unless they contain any of the constituents mentioned in Schedule II in concentration such as to exhibit Part C characteristics
B1090	Waste batteries conforming to a standard battery specification, excluding those made with lead, cadmium or mercury
B1100	Metal bearing wastes arising from melting, smelting and refining of metals:
	- Slags from copper processing for further processing or refining containing arsenic, lead or cadmium
	- Slags from precious metals processing for further refining
	- Wastes of refractory linings, including crucibles, originating from copper smelting
	- Tantalum-bearing tin slags with less than 0.5% tin
B1110	Used Electrical and electronic assemblies other than those listed in Part D of Schedule III
	Electronic assemblies consisting only of metals or alloys Waste electrical and electronic assemblies or scrap (including printed circuit boards) not containing components such as accumulators and other batteries included in Part A of Schedule III, mercury-switches, glass from cathode-ray tubes and other activated glass and PCB-capacitors, or not contaminated with Schedule II constituents such as cadmium, mercury, lead, polychlorinated biphenyl) or from which these have been removed, to an extent that they do not possess any of the characteristics contained in Part C of Schedule III (note the related entry in Schedule VI, A1180)
B1120	Spent catalysts excluding liquids used as catalysts, containing any of: Transition metals, excluding waste catalysts (spent catalysts, liquid used catalysts or other catalysts) in Part A and Schedule VI: - Scandium - Titanium - Vanadium - Chromium - Manganese - Iron - Cobalt - Nickel - Copper - Zinc - Yttrium - Zirconium - Niobium - Molybdenum - Hafnium - Tantalum

(1)	(2)
	- Tungsten - Rhenium Lanthanides (rare earth metals): - Lanthanum - Cerium
	- Praseodymium - Neodymium - Samarium - Europium - Gadolinium - Terbium - Dysprosium - Holmium - Erbium - Thulium - Ytterbium - Lutetium
B1130	Cleaned spent precious metal bearing catalysts
B1140	Precious metal bearing residues in solid form which contain traces of inorganic cyanides
B1150	Precious metals and alloy wastes (gold , silver, the platinum group but not mercury) in a dispersible form, non-liquid form with appropriate packaging and labelling
B1160	Precious metal ash from the incineration of printed circuit boards (note the related entry in Part A A1150)
B1170	Precious metal ash from the incineration of photographic film
B1180	Waste photographic film containing silver halides and metallic silver
B1190	Waste photographic paper containing silver halides and metallic silver
B1200	Granulated slag arising from the manufacture of iron and steel
B1210	Slag arising from the manufacture of iron and steel including slags as a source of Titanium dioxide and Vanadium
B1220	Slag from zinc production, chemically stabilised, having a high iron content (above 20%) and processed according to industrial specifications mainly for construction
B1230	Mill scale arising from the manufacture of iron and steel
B1240	Copper Oxide mill-scale
B2	**Wastes containing principally inorganic constituents, which may contain metals and organic materials**
B2010	Wastes from mining operations in non-dispersible form:
	- Natural graphite waste
	- Slate wastes
	- Mica wastes
	- Leucite, nepheline and nepheline syenite waste
	- Feldspar waste
	- Fluorspar waste
	- Silica wastes in solid form excluding those used in foundry operations
B2020	Glass wastes in non-dispersible form: - Cullet and other waste and scrap of glass except for glass from cathode-ray tubes and other activated glasses
B2030	Ceramic wastes in non-dispersible form: - Cermet wastes and scrap (metal ceramic composites) - Ceramic based fibres
B2040	Other wastes containing principally inorganic constituents: - Partially refined calcium sulphate produced from flue gas desulphurization (FGD) - Waste gypsum wallboard or plasterboard arising from the demolition of buildings

(1)	(2)
	- Slag from copper production, chemically stabilized, having a high iron content (above 20%) and processed according to industrial specifications mainly for construction and abrasive applications - Sulphur in solid form - Limestone from production of calcium cyanamide (pH<9) - Sodium, potassium, calcium chlorides - Carborundum (silicon carbide) - Broken concrete - Lithium-tantalum and lithium-niobium containing glass scraps
B2060	Spent activated carbon not containing any of Schedule II constituents to the extent they exhibit Part C characteristics, for example, carbon resulting from the treatment of potable water and processes of the food industry and vitamin production (note the related entry in Part A A4160)
B2070	Calcium fluoride sludge
B2080	Waste gypsum arising from chemical industry processes not included in Schedule VI (note the related entry in A2040)
B2090	Waste anode butts from steel or aluminium production made of petroleum coke or bitumen and cleaned to normal industry specifications (excluding anode butts from chlor alkali electrolyses and from metallurgical industry)
B2100	Waste hydrates of aluminium and waste alumina and residues from alumina production, excluding such materials used for gas cleaning, flocculation or filtration processes
B2130	Bituminous material (asphalt waste) from road construction and maintenance, not containing tar (note the related entry in Schedule VI, A3200)
B3	**Wastes containing principally organic constituents, which may contain metals and inorganic materials**
B3027	Self-adhesive label laminate waste containing raw materials used in label material production
B3030	Textile wastes The following materials, provided they are not mixed with other wastes and are prepared to a specification: - Silk waste (including cocoons unsuitable for reeling, yarn waste and garnetted stock) • not carded or combed • other - Waste of wool or of fine or coarse animal hair, including yarn waste but excluding garnetted stock • noils of wool or of fine animal hair • other waste of wool or of fine animal hair • waste of coarse animal hair - Cotton waste (including yarn waste and garnetted stock) • yarn waste (including thread waste) • garnetted stock • other - Flax tow and waste - Tow and waste (including yarn waste and garnetted stock) of true hemp (Cannabis sativa L.) - Tow and waste (including yarn waste and garnetted stock) of jute and other textile bast fibres (excluding flax, true hemp and ramie) - Tow and waste (including yarn waste and garnetted stock) of sisal

(1)	(2)
	and other textile fibres of the genus Agave - Tow, noils and waste (including yarn waste and garneted stock) of coconut - Tow, noils and waste (including yarn waste and garneted stock) of abaca (Manila hemp or Musa textilis Nee) - Tow, noils and waste (including yarn waste and garneted stock) of ramie and other vegetable textile fibres, not elsewhere specified or included - Waste (including noils, yarn waste and garnetted stock) of man-made fibres • of synthetic fibres • of artificial fibres - Worn clothing and other worn textile articles - Used rags, scrap twine, cordage, rope and cables and worn out articles of twine, cordage, rope or cables of textile materials • sorted • other
B3035	Waste textile floor coverings, carpets
B3040	Rubber Wastes The following materials, provided they are not mixed with other wastes: - Waste and scrap of hard rubber (e.g., ebonite) - Other rubber wastes (excluding such wastes specified elsewhere)
B3050	Untreated cork and wood waste: - Wood waste and scrap, whether or not agglomerated in logs, briquettes, pellets or similar forms - Cork waste: crushed, granulated or ground cork
B3060	Wastes arising from agro-food industries provided it is not infectious: - Wine lees - Dried and sterilized vegetable waste, residues and by-products, whether or not in the form of pellets, of a kind used in animal feeding, not elsewhere specified or included - Degras: residues resulting from the treatment of fatty substances or animal or vegetable waxes - Waste of bones and horn-cores, unworked, defatted, simply prepared (but not cut to shape), treated with acid or degelatinised - Fish waste - Cocoa shells, husks, skins and other cocoa waste - Other wastes from the agro-food industry excluding by-products which meet national and international requirements and standards for human or animal consumption
B3070	The following wastes: - Waste of human hair - Waste straw - Deactivated fungus mycelium from penicillin production to be used as animal feed
B3080	Waste parings and scrap of rubber
B3090	Paring and other wastes of leather or of composition leather not suitable for the manufacture of leather articles, excluding leather sludges, not containing hexavalent chromium compounds and biocides (note the related entry in Schedule VI, A3100)

(1)	(2)
B3100	Leather dust, ash, sludges or flours not containing hexavalent chromium compounds or biocides (note the related entry in Schedule VI, A3090)
B3110	Fellmongery wastes not containing hexavalent chromium compounds or biocides or infectious substances (note the related entry in Schedule VI, A3110)
B3120	Wastes consisting of food dyes
B3130	Waste polymer ethers and waste non-hazardous monomer ethers incapable of forming peroxides
B3140	Waste pneumatic and other tyres, excluding those which do not lead to resource recovery, recycling, reclamation but not for direct reuse
B4	**Wastes which may contain either inorganic or organic constituents**
B4010	Wastes consisting mainly of water-based or latex paints, inks and hardened varnishes not containing organic solvents, heavy metals or biocides to an extent to render them hazardous (note the related entry in Part A, A4070)
B4020	Wastes from production, formulation and use of resins, latex, plasticizers, glues or adhesives, not listed in Part A, free of solvents and other contaminants to an extent that they do not exhibit Part C characteristics (note the related entry in Part A, A3050)
B4030	Used single-use cameras, with batteries not included in Part A

* This list is based on Annexure IX of the Basel Convention on Transboundary Movement of Hazardous Wastes and comprises of wastes not characterized as hazardous under Article-I of the Basel Convention. **The wastes in Part- B are restricted and cannot be allowed to be imported without permission from the Ministry of Environment, Forest and Climate Change and the Directorate General of Foreign Trade license, if applicable.**

Note:

(1) Copper dross containing copper greater than 65% and lead and Cadmium equal to or less than 1.25% and 0.1% respectively; spent cleaned metal catalyst containing copper; and copper reverts, cake and residues containing lead and cadmium equal to or less than 1.25% and 0.1% respectively are allowed for import without Director General of Foreign Trade license to units (actual users) authorised by State Pollution Control Board and with the Ministry of Environment, Forest and Climate Change's permission. Copper reverts, cake and residues containing lead and cadmium greater than 1.25% and 0.1% respectively are under restricted category for which import is permitted only against Director General of Foreign Trade license for the purpose of processing or reuse by units permitted with the Ministry of Environment, Forest and Climate Change (actual users).

(2) Zinc ash or skimmings in dispersible form containing zinc more than 65% and lead and cadmium equal to or less than 1.25% and 0.1% respectively and spent cleaned metal catalyst containing zinc are allowed for import without Director General of Foreign Trade license to units authorised by State Pollution control Board, Ministry of Environment, Forest and Climate Change's permission (actual users) upto an annual quantity limit indicated in registration letter. Zinc ash and skimmings containing less than 65% zinc and lead and cadmium equal to or more than 1.25% and 0.1% respectively and hard zinc spelter and brass dross containing lead greater than 1.25% are under restricted category for which import is permitted against Director General of Foreign Trade license and only for purpose of processing or reuse by units registered with the Ministry of Environment Forest and Climate Change (actual users).

Part C
List of Hazardous Characteristics

Code	Characteristic
H 1	**Explosive**

An explosive substance or waste is a solid or liquid substance or waste (or mixture of substances or wastes) which is in itself capable by chemical reaction of producing gas at such a temperature and pressure and at such a speed as to cause damage to the surrounding.

H 3 Flammable liquids

The word “flammable” has the same meaning as “inflammable”. Flammable liquids are liquids, or mixtures of liquids, or liquids containing solids in solution or suspension (for example, paints, varnishes, lacquers, etc. but not including substances or wastes otherwise classified on account of their dangerous characteristics) which give off a flammable vapour at temperatures of not more than 60.5ºC, closed-cup test, or not more than 65.6ºC, open-cup test. (Since the results of open-cups tests and of closed-cup tests are not strictly comparable and even individual results by the same test are often variable, regulations varying from the above figures to make allowance for such differences would be within the spirit of this definition).

H 4.1 Flammable solids

Solids, or waste solids, other than those classed as explosives, which under conditions encountered in transport are readily combustible, or may cause or contribute to fire through friction.

H 4.2 Substances or wastes liable to spontaneous combustion

Substances or wastes which are liable to spontaneous heating under normal conditions encountered in transport, or to heating up on contact with air, and being then liable to catch fire.

H 4.3 Substances or wastes which, in contact with water emit flammable gases

Substances or wastes which, by interaction with water, are liable to become spontaneously flammable or to give off flammable gases in dangerous quantities.

H 5.1 Oxidizing

Substances or wastes which, while in themselves not necessarily combustible, may, generally by yielding oxygen cause, or contribute to, the combustion or other materials.

H 5.2 Organic Peroxides

Organic substances or wastes which contain the bivalent-o-o-structure are thermally unstable substances which may undergo exothermic self-accelerating decomposition.

H 6.1 **Poisons (acute)**

Substances or wastes liable either to cause death or serious injury or to harm human health if swallowed or inhaled or by skin contact.

H 6.2 **Infectious substances**

Substances or wastes containing viable micro-organisms or their toxins which are known or suspected to cause disease in animals or humans.

H 8 **Corrosives**

Substances or wastes which, by chemical action, will cause severe damage when in contact with living tissue, or, in the case of leakage, will materially damage, or even destroy, other goods or the means of transport; they may also cause other hazards.

H 10 **Liberation of toxic gases in contact with air or water**

Substances or wastes which, by interaction with air or water, are liable to give off toxic gases in dangerous quantities.

H 11 **Toxic (delayed or chronic)**

Substances or wastes which, if they are inhaled or ingested or if they penetrate the skin, may involve delayed or chronic effects, including carcinogenicity).

H 12 **Eco-toxic**

Substances or wastes which if released, present or may present immediate or delayed adverse impacts to the environment by means of bioaccumulation or toxic effects upon biotic systems or both.

H 13 **Capable,** by any means, after disposal, of yielding another material, e.g., leachate, which possesses any of the characteristics listed above.

Part D

List of other wastes applicable for import and export without permission from Ministry of Environment, Forest and Climate Change [Annex IX of the Basel Convention*]

Basel No.	Description of wastes
(1)	**(2)**
B1	**Metal and metal-bearing wastes**
B1010	Metal and metal-alloy wastes in metallic, non-dispersible form :
	- Precious metals (gold, silver, platinum but not mercury) * *
	- Iron and steel scrap * *
	- Nickel scrap * *
	- Aluminium scrap* *
	- Zinc scrap * *
	- Tin scrap * *
	- Tungsten scrap * *
	- Molybdenum scrap * *
	- Tantalum scrap * *
	- Cobalt scrap * *
	- Bismuth scrap * *
	- Titanium scrap * *
	- Zirconium scrap * *
	- Manganese scrap * *
	- Germanium scrap * *
	- Vanadium scrap * *
	- Hafnium scrap * *
	- Indium scrap * *
	- Niobium scrap * *
	- Rhenium scrap * *
	- Gallium scrap * *
	- Magnesium scrap * *
	- Copper scrap * *
	- Chromium scrap * *
B1050	Mixed non-ferrous metal, heavy fraction scrap, containing metals other than specified in Part B1050 and not containing constituents mentioned in Schedule II in concentrations sufficient to exhibit Part C characteristics* *
B1100	Metal bearing wastes arising from melting, smelting and refining of metals:
	- Hard Zinc spelter * *
	- Zinc-containing drosses * *: ~ Galvanizing slab zinc top dross (>90% Zn) ~ Galvanizing slab zinc bottom dross (>92% Zn) ~ Zinc die casting dross (>85% Zn) ~ Hot dip galvanizers slab zinc dross (batch) (>92% Zn) ~ Zinc skimmings
	– Aluminium skimmings (or skims) excluding salt slag

(1)	(2)
B1110	Electrical and electronic assemblies (including printed circuit boards, electronic components and wires) destined for direct reuse and not for recycling or final disposal
	- Used electrical and electronic assemblies imported for repair and to be re-exported back after repair within one year of import * * *
	- Used electrical and electronic assemblies imported for rental purpose and re-exported back within one year of import * * *
	- Used electrical and electronic assemblies exported for repair and to be re-import after repair
	- Used electrical and electronic assemblies imported for testing, research and development, project work purposes and to be re-exported back within a period of three years from the date of import * * *
	- Spares imported for warranty replacements provided equal number of defective or non-functional parts are exported back within one year of the import * * *
	- Used electrical and electronic assemblies imported by Ministry of Defence, Department of Space and Department of Atomic Energy * * *
	- Used electrical and electronic assemblies (not in bulk; quantity less than or equal to three) imported by the individuals for their personal uses
	- Used Laptop, Personal Computers, Mobile, Tablet up to 01 number each imported by organisations in a year
	- Used electrical and electronic assemblies owned by individuals and imported on transfer of residence
	- Used multifunction print and copying machines (MFDs)* * * *
	- Used electrical and electronic assemblies imported by airlines for aircraft maintenance and remaining either on board or under the custodianship of the respective airlines warehouses located on the airside of the custom bonded areas.
B3	**Wastes containing principally organic constituents, which may contain metals and inorganic materials**
B3020	Paper, paperboard and paper product wastes * * The following materials, provided they are not mixed with hazardous wastes: Waste and scrap of paper or paperboard of: - unbleached paper or paperboard or of corrugated paper or paperboard - other paper or paperboard, made mainly of bleached chemical pulp, not coloured in the mass - paper or paperboard made mainly of mechanical pulp (for example newspapers, journals and similar printed matter) - other, including but not limited to (1) laminated paperboard (2) unsorted scrap
B3140	Aircraft Tyres exported to Original Equipment Manufacturers for re-treading and re-imported after re-treading by airlines for aircraft maintenance and remaining either on board or under the custodianship of the respective airlines warehouses located on the airside of the custom bonded areas

Note:

* This list is based on Annexure IX of the Basel Convention on Transboundary Movement of Hazardous Wastes and comprises of wastes not characterized as hazardous under Article-I of the Basel Convention.

* * Import permitted in the country to the actual user or to the trader on behalf of the actual users authorised by SPCB on one time basis and subject to verification of documents specified in Schedule VIII of these rules by the Custom Authority.

* * * Import permitted in the country only to the actual users from Original Equipment Manufacturers (OEM) and subject to verification of documents specified in Schedule VIII of these rules by the Custom Authority.

* * * * Import permitted in the country to the actual users or trader on behalf of the actual user in accordance with the documents required and verified by the Custom Authority as specified under Schedule VIII of these rules. The policy for free trade for multifunction print and copying machine to be reviewed once the MFDs are domestically manufactured.

All other wastes listed in Part D of Schedule III having no "Stars" are permitted without any documents from MoEF&CC subject to compliance of the conditions of the Customs Authority, if any.

SCHEDULE IV

[*See rules 6 (1) (ii) and 6 (2)*]

List of commonly recyclable hazardous wastes

S.No.	Wastes
(1)	**(2)**
1.	Brass Dross
2.	Copper Dross
3.	Copper Oxide mill scale
4.	Copper reverts, cake and residue
5.	Waste Copper and copper alloys in dispersible from
6.	Slags from copper processing for further processing or refining
7.	Insulated Copper Wire Scrap or copper with PVC sheathing including ISRI-code material namely "Druid"
8.	Jelly filled Copper cables
9.	Spent cleared metal catalyst containing copper
10.	Spent catalyst containing nickel, cadmium, Zinc, copper, arsenic, vanadium and cobalt
11.	Zinc Dross-Hot dip Galvanizers SLAB
12.	Zinc Dross-Bottom Dross
13.	Zinc ash/Skimmings arising from galvanizing and die casting operations
14.	Zinc ash/Skimming/other zinc bearing wastes arising from smelting and refining
15.	Zinc ash and residues including zinc alloy residues in dispersible from
16.	Spent cleared metal catalyst containing zinc
17.	Used Lead acid battery including grid plates and other lead scrap/ashes/residues not covered under Batteries (Management and Handling) Rules, 2001. [Battery scrap, namely: Lead battery plates covered by ISRI, Code word "Rails" Battery lugs covered by ISRI, Code word "Rakes". Scrap drained/dry while intact, lead batteries covered by ISRI, Code word "rains".

(1)	(2)
18.	Components of waste electrical and electronic assembles comprising accumulators and other batteries included in Part A of Schedule III, mercury-switches, activated glass cullets from cathode-ray tubes and other activated glass and PCB-capacitors, or any other component contaminated with Schedule II constituents (e.g. cadmium, mercury, lead, polychlorinated biphenyl) to an extent that they exhibit hazard characteristics indicated in part C of Schedule III.
19.	Paint and ink Sludge/residues
20.	Used oil and waste oil

SCHEDULE V

[See rules 3 (36) and 3 (39)]

PART A
Specifications of Used Oil Suitable for recycling

S.No.	Parameter	Maximum permissible Limits
(1)	(2)	(3)
1.	Polychlorinated biphenyls (PCBs)	< 2ppm *
2.	Lead	100 ppm
3.	Arsenic	5 ppm
4.	Cadmium+Chromium+Nickel	500 ppm
5.	Polyaromatic hydrocarbons (PAH)	6%

Part B
Specification of fuel derived from waste oil

S.No.	Parameter	Maximum permissible limits
(1)	(2)	(3)
1.	Sediment	0.25%
2.	Lead	100 ppm
3.	Arsenic	5 ppm
4.	Cadmium+Chromium+Nickel	500 ppm
5.	Polyaromatic hydrocarbons (PAH)	6%
6.	Total halogents	4000 ppm
7.	Polychlorinated biphenyls (PCBs)	<2 ppm *
8.	Sulfur	4.5%
9.	Water Content	1%

***The detection limit is 2 ppm by gas Liquid Chromatography (GLC) using Electron Capture detector (ECD)**

SCHEDULE VI

[See rules 12 (6), 12 (7) and 14(1)]

Hazardous and Other wastes prohibited for import

Basel No	Description of hazardous and other wastes
(1)	**(2)**
A1	**Metal and Metal bearing wastes**
A1010	Metal wastes and waste consisting of alloys of any of the following but excluding such wastes specifically listed in Part B and Part D of Schedule III
	- Arsenic
	- Beryllium
	- Mercury
	- Selenium
	- Thallium
A1020	Wastes having as constituents or contaminants, excluding metal wastes in massive form, any of the following:
	- Beryllium; beryllium compounds
	- Selenium; selenium compounds
A1030	Wastes having as constituents or contaminants any of the following:
	- Arsenic; arsenic compounds
	- Mercury; mercury compounds
	- Thallium; thallium compounds
A1040	Waste having hexavalent chromium compounds as constituents
A1140	Waste cupric chloride and copper cyanide catalysts in liquid form (note the related entry in Part A of Schedule III)
A1060	Wastes liquors from the pickling of metals
A1110	Spent electrolytic solutions from copper electrorefining and electrowinning operations
A1130	Spent etching solutions containing dissolved copper
A1180	Waste electrical and electronic assembles or scrap (does not include scrap assemblies from electric power generation) containing components such as accumulators and other batteries included in Part A of Schedule III, mercury-switches, glass from cathode-ray tubes and other activated glass and PCB-capacitors, or contaminated with Schedule II constituents (e.g. cadmium, mercury, lead, polychlorinated biphenyl) to an extent that they exhibit hazard characteristics indicated in Part C of Schedule III (note the related entry in Part B B1110)
A1190	Waste metal cables coated or insulated with plastics containing or contaminated with coal tar, PCB, lead, cadmium, other organohalogen compounds or other constituents as mentioned in Schedule II to the extent that they exhibit hazard characteristics indicated in Part C of Schedule III
A2	**Wastes containing principally inorganic constituents, which may contain metals and organic materials**
A2020	Waste inorganic fluorine compounds in the form of liquids or sludges but excluding such wastes specified in Part B

(1)	(2)
A2040	Waste gypsum arising from chemical industry processes, if it contains any of the constituents mentioned in Schedule 2 to the extent that they exhibit hazard characteristics indicated in Part C of Schedule III (note the related entry in Part B B2080)
A2050	Waste asbestos (dusts and fibres)
A2060	Coal-fired power plant fly-ash containing Schedule II constituents in concentrations sufficient to exhibit Part C characteristics
A3	**Wastes containing principally organic constituents, which may contain metals and inorganic materials**
A3030	Wastes that contain, consist of or are contaminated with leaded anti-knock compounds sludges.
A3040	Waste thermal (heat transfer) fluids
A3060	Waste nitrocellulose
A3070	Waste phenols, phenol compounds including chlorophenol in the form of liquids or sludges
A3080	Waste ethers not including those specified in Part B
A3090	Waste leather dust, ash, sludges and flours when containing hexavalent chromium compounds or biocides (note the related entry in Part B B3100)
A3100	Waste paring and other waste of leather or of composition leather not suitable for the manufacture of leather articles, containing hexavalent chromium compound and biocides (note the related entry in Part B B3090)
A3110	Fellmongery wastes containing hexavalent chromium compounds or biocides or infectious substances (note the related entry in Part B B3110)
A3140	Waste non-halogenated organic solvents but excluding such wastes specified in Part B
A3150	Waste halogenated organic solvents
A3160	Waste halogenated or unhalogenated non-aqueous distillation residues arising from organic solvent recovery operations
A3170	Waste arising from the production of aliphatic halogenated hydrocarbons (such as chloromethane, dichloro-ethane, vinyl chloride, vinylidene chloride, allyl chloride and epichlorhydrin)
A3180	Wastes, substances and articles containing, consisting of or contaminated with polychlorinated biphenyl (PCB), polychlorinated terphenyl (PCT), polychlorinated naphthalene (PCN) or polybrominated biphenyl (PBB) or any other polybrominated analogues of these compounds
A3190	Waste tarry residues (excluding asphalt cements) arising from refining, distillation and any pyrolytic treatment of organic materials
A3200	Bituminous material (asphalt waste) from road construction and maintenance, containing tar (note the related entry in Part B, B2130)
A4	**Wastes which may contain either inorganic or organic constituents**
A4020	Clinical and related wastes; that is wastes arising from medical, nursing, dental, veterinary, or similar practices, and wastes generated in hospitals or other facilities during the investigation or treatment of patients, or research projects.
A4030	Waste from the production, formulation and use of biocide and phyto-pharmaceuticals, including waste pesticides and herbicides which are off-specification, out-dated (unused within the period recommended by the manufacturer), or unfit for their originally intended use,

(1)	(2)
A4050	Wastes that contain, consist of, or are contaminated with any of the following: - Inorganic cyanides, excepting precious-metal-bearing residues in solid form containing traces of inorganic cyanides. - Organic cyanides
A4060	Waste oils/water, hydrocarbons/water mixtures, emulsions
A4080	Wastes of an explosive nature (but excluding such wastes specified in Part B)
A4090	Waste acidic or basic solutions, other than those specified at B2120 of this Schedule
A4110	Wastes that contain, consist of or are contaminated with any of the following: - Any congenor of polychlorinated dibenzo-furan. - Any congenor of polychlorinated dibenzo-P-dioxin.
A4150	Waste chemical substances arising from research and development or teaching activities which are not identified and /or are new and whose effects on human health and /or the environment are not known
B1	**Metal and Metal bearing wastes**
B 1110	Used critical care medical equipment for re-use
B1115	Waste metal cables coated or insulated with plastics, not included in A1190 of this schedule, excluding those destined for operations which do not lead to resource recovery, recycling, reclamation, direct re-use or alternative uses or any other disposal operations involving, at any stage, uncontrolled thermal processes, such as open-burning.
B1250	Waste end-of-life motor vehicles, containing neither liquids nor other hazardous components
B2	**Wastes containing principally inorganic constituents, which may contain metals and organic materials**
B2050	Coal-fired power plant fly-ash, note the related entry at A2060 of this Schedule
B2110	Bauxite residue (red mud) (pH moderated to less than 11.5)
B2120	Waste acidic or basic solutions with a pH greater than 2 and less than 11.5, which are not corrosive or otherwise hazardous (note the related entry at A4090 of this schedule)
B3	**Wastes containing principally organic constituents, which may contain metals and inorganic materials**
B3010	Solid plastic waste The following plastic or mixed plastic waste, prepared to a specification: - Scrap plastic of non-halogenated polymers and co-polymers, including but not limited to the following: Ethylene, Styrene, Polypropylene, polyethylene terephthalate, Acrylonitrile, Butadiene, Polyacetals, Polyamides, polybutylene tere-phthalate, Polycarbonates, Polyethers, polyphenylene sulphides, acrylic polymers, alkanes C10-C13 (plasticiser), polyurethane (not containing CFC's), Polysiloxanes, polymethyl methacrylate, polyvinyl alcohol, polyvinyl butyral, Polyvinyl acetate - Cured waste resins or condensation products including the following: urea formaldehyde resins, phenol formaldehyde resins, melamine formaldehyde resins, epoxy resins, alkyd resins, polyamides - The following fluorinated polymer wastes (excluding post-consumer wastes):

(1)	(2)
	perfluoroethylene/ propylene, perfluoro alkoxy alkane, tetrafluoroethylene/per fluoro vinyl ether (PFA), tetrafluoroethylene/per fluoro methylvinyl ether (MFA), polyvinylfluoride , polyvinylidenefluoride
B3026	The following waste from the pre-treatment of composite packaging for liquids, not containing constituents mentioned in Schedule II in concentrations sufficient to exhibit Part C characteristics: - Non-separable plastic fraction - Non-separable plastic-aluminium fraction -
B3065	Waste edible fats and oils of animal or vegetable origin (e.g. frying oil)
B3140	Waste pneumatic tyres for direct reuse
Y 46	Wastes collected from household/municipal waste
Y 47	Residues arising from the incineration of household wastes

SCHEDULE VII

[*See rules 13 (6) and 21*]

List of authorities and corresponding duties

S. No.	Authority	Corresponding Duties
(1)	(2)	(3)
1.	Ministry of Environment, Forests and Climate Change under the Environment (Protection)Act, 1986	(i) Identification of hazardous and other wastes (ii) Permission to exporters of hazardous and other wastes (iii) Permission to importer of hazardous and other wastes (iv) Permission for transit of hazardous and other wastes through India. (v) Promote environmentally sound management of hazardous and other waste. (vi) Sponsoring of training and awareness programme on Hazardous and Other Waste Management related activities.
2.	Central Pollution Control Board constituted under the Water (Prevention and Control of Pollution) Act, 1974	(i) Co-ordination of activities of State Pollution Control Boards (ii) Conduct training courses for authorities dealing with management of hazardous and other wastes (iii) Recommend standards and specifications for treatment and disposal of wastes and leachates, recommend procedures for characterisation of hazardous wastes.

(1)	(2)	(3)
		(iv) Inspection of facilities handling hazardous waste as and when necessary. (v) Sector specific documentation to identify waste for inclusion in these rules. (vi) Prepare and update guidelines to prevent or minimise the generation and handling of hazardous and other wastes. (vii) Prepare and update guidelines/ Standard Operating Procedures (SoPs) for recycling, utilization, pre-processing, co-processing of hazardous and other wastes. (viii) To prepare annual review report on management of hazardous waste. (ix) Any other function assigned by the Ministry of Environment, Forest and Climate Change, from time to time.
3.	State Government/Union Territory Government/Administration	(i) Identification of site (s) for common Hazardous and Other Waste Treatment Storage and Disposal Facility (TSDF) (ii) Asses Environment Impact Assessment (EIA) reports and convey the decision of approval of site or otherwise Acquire the site or inform operator of facility or occupier or association of occupiers to acquire the site (iii) Notification of sites. (iv) Publish periodically an inventory of all potential or existing disposal sites in the State or Union Territory
4.	State Pollution Control Boards or Pollution Control Committees constituted under the Water (Prevention and Control of Pollution) Act, 1974	(i) Inventorisation of hazardous and other wastes (ii) Grant and renewal of authorisation (iii) Monitoring of compliance of various provisions and conditions of permission including conditions of permission for issued by Ministry of Environment, Forest and Climate Change for exports and imports (iv) Examining the applications for imports submitted by the importers and forwarding the same to Ministry of Environment, Forest and Climate Change (v) Implementation of programmes to prevent or reduce or minimise the generation of hazardous and other wastes. (vi) Action against violations of these rules. (vii) Any other function under these Rules assigned by Ministry of Environment, Forest and Climate Change from time to time.
5.	Directorate General of Foreign	(i) Grant of licence for import of hazardous

(1)	(2)	(3)
	Trade constituted under the Foreign Trade (Development and Regulation) Act, 1992	and other wastes (ii) Refusal of licence for hazardous and other wastes prohibited for imports and export
6.	Port authority under Indian Ports Act, 1908 (15 of 1908) and Customs Authority under the Customs Act, 1962 (52 of 1962)	(i) Verify the documents (ii) Inform the Ministry of Environment, Forests and Climate Change of any illegal traffic (iii) Analyse wastes permitted for imports and exports, wherever required. (iv) Train officials on the provisions of these rules and in the analysis of hazardous and other wastes (v) Take action against exporter or importer for violations under the Indian Ports Act, 1908 or Customs Act, 1962

SCHEDULE VIII

[*See rules 13(2) and 13 (4)*]

List of documents for verification by Customs for import of other wastes specified in Part D of Schedule III

S. No.	Basel No.	Description of other wastes	List of Documents
(1)	(2)	(3)	(4)
1	B1010	Metal and metal-alloy wastes in metallic, non-dispersible form: - Precious metals (gold, silver, platinum) - Iron and steel scrap - Nickel scrap - Aluminium scrap - Zinc scrap - Tin scrap - Tungsten scrap - Molybdenum scrap - Tantalum scrap - Cobalt scrap - Bismuth scrap - Titanium scrap - Zirconium scrap - Manganese scrap - Germanium scrap - Vanadium scrap - Hafnium scrap - Indium scrap - Niobium scrap - Rhenium scrap - Gallium scrap - Magnesium scrap - Copper scrap - Chromium scrap	(a) Duly filled up Form 6 - Movement document; (b) The import license from Directorate General of Foreign Trade, wherever applicable; (a) Pre-shipment inspection certificate issued by the inspection agency of the exporting country or the inspection and certification agency approved by Directorate General of Foreign Trade; (c) The valid consents to operate under the Air and Water Acts and the authorisation under these rules, for actual users. For traders, only valid one time authorisation from concerned SPCB is required; (d) The chemical analysis report of the waste being imported; (e) an acknowledged copy of the annual return filed with concerned State Pollution Control Board for import in the last financial year.

(1)	(2)	(3)	(4)
2	B1050	Mixed non-ferrous metal, heavy fraction scrap, containing metals other than specified in Part B1050 and not containing constituents mentioned in Schedule II in concentrations sufficient to exhibit Part C characteristics* *	(a) Duly filled up Form 6 - Movement document; (b) The import license from Directorate General of Foreign Trade, wherever applicable; (b) Pre-shipment inspection certificate issued by the inspection agency of the exporting country or the inspection and certification agency approved by Directorate General of Foreign Trade; (c) The valid consents to operate under the Air and Water Acts and the authorisation under these rules, for actual users. For traders, only valid authorisation from concerned SPCB is required; (d) The chemical analysis report of the waste being imported; (e) An acknowledged copy of the annual return filed with concerned SPCB for import in the last financial year.
3	B1100	Metal bearing wastes arising from melting, smelting and refining of metals: - Hard Zinc spelter - Zinc-containing drosses: ~ Galvanizing slab zinc top dross (>90% Zn) ~ Galvanizing slab zinc bottom dross (>92% Zn) ~Zinc die casting dross (>85% Zn) ~ Hot dip galvanizers slab zinc dross (batch) (>92% Zn) ~ Zinc skimmings − Aluminium skimmings (or skims) excluding salt slag	(c) Duly filled up Form 6 - Movement document; (d) The import license from Directorate General of Foreign Trade, wherever applicable; (e) Pre-shipment inspection certificate issued by the inspection agency of the exporting country or the inspection and certification agency approved by Directorate General of Foreign Trade; (f) The valid consents to operate under the Air and Water Acts and the authorisation under these rules, for actual users. For traders, only valid authorisation from concerned SPCB is required; (g) The chemical analysis report of the waste being imported; (h) An acknowledged copy of the annual return filed with concerned SPCB for import in the last financial year.
4	B1110	Electrical and electronic assemblies (including printed circuit boards, electronic components and wires) destined for direct reuse and not for recycling or final disposal	
(a)		Used electrical and electronic assemblies imported for repair and	(a) Duly filled up Form 6 - Movement document;

(1)	(2)	(3)	(4)
		to be re-exported after repair within one year of import	(b) Undertaking for re-export; (c) Details of previous import, if there has been any and confirmation regarding their re-export; (d) An acknowledged copy of the annual return filed with concerned SPCB for import in the last financial year (e) Certificate from exporting company for accepting the repaired and unrepairable electrical and electronic assemblies and the spares or part or component or consumables being re-exported.
(b)		Used electrical and electronic assemblies imported for rental purpose and re-exported back within one year of import	(a) Duly filled up Form 6 - Movement document; (b) Undertaking for re-export; (c) Details of previous import, if there has been any and confirmation regarding their re-export; (d) An acknowledged copy of the annual return filed with concerned SPCB for import in the last financial year
(c)		Used electrical and electronic assemblies exported for repair and to be re-imported after repair	(a) Duly filled up Form 6 - Movement document; (b) Proof of export of the defective electrical and electronic assemblies i.e. shipping or airway document authenticated by Customs
(d)		Used electrical and electronic assemblies imported for testing, research and development, project work purposes and to be re-exported back within a period of three years from the date of import	(a) Duly filled up Form 6 - Movement document; (b) Undertaking for re-export; (c) Details of previous import, if there has been any and confirmation regarding their re-export; (d) Chartered Engineer Certificate or certificate from accredited agency of exporting country indicating the functionality, manufacturing date, residual life and serial number; (e) an acknowledged copy of the annual return filed with concerned SPCB for import in the last financial year; (f) Certificate from exporting company for accepting the second hand functional or non-functional electrical and electronic assemblies and/or the spares or part or component or consumables being

(1)	(2)	(3)	(4)
			re-exported at the end of three years.
(e)		Spares imported for warranty replacements provided equal number of defective / non-functional parts are exported back within one year of the import.	(a) Duly filled up Form 6 - Movement document; (b) if refurbished components being imported as replacement to defective component then undertaking for export of equivalent numbers of defective components; (c) Details of previous import, if there has been any and confirmation regarding their re-export; (d) Certificate from exporting company for accepting the re-export of defective or non-functional spares or part or component or consumables being re-exported; (e) Documents on the declared policy regarding the use of second hand or refurbished spare parts for repair of electrical and electronic assemblies during warranty period.
(f)		Used electrical and electronic assemblies imported by Ministry of Defence, Department of Space and Department of Atomic Energy.	---
(g)		Used electrical and electronic assemblies (not in bulk; quantity less than or equal to three) imported by the individuals for their personal uses.	---
(h)		Used Laptop, Personal Computers, Mobile, Tablet up to 03 number each imported by organisations in a year.	---
(i)		Used electrical and electronic assemblies owned by individuals and imported on transfer of residence.	As per existing guidelines of Custom Authority
(j)		Used electrical and electronic assemblies, spares, imported by airlines for aircraft maintenance and remaining either on board or under the custodianship of the respective airlines warehouses located on the airside of the custom bonded areas.	----

(1)	(2)	(3)	(4)
(j)		Used multifunction print and copying machines (MFDs)*	(a) The country of Origin Certificate along with bill of lading and packaging; (b) The certificate issued by the inspection agency as certified by the exporting country or the inspection and certification agency approved by Directorate General Foreign Trade (DGFT) for functionality, having residual life of not less than five years and serial number; (c) Extended Producer Responsibility-Authorisation under e-waste (Management and Handling) Rules, 2011 as amended from time to time as Producer; (d) The MFDs shall be for printing A 3 size and above; (e) An acknowledged copy of the annual return filed with concerned SPCB for import in the last financial year.
5	B3020	Paper, paperboard and paper product wastes The following materials, provided they are not mixed with hazardous wastes: Waste and scrap of paper or paperboard of: - unbleached paper or paperboard or of corrugated paper or paperboard - other paper or paperboard, made mainly of bleached chemical pulp, not coloured in the mass - paper or paperboard made mainly of mechanical pulp (for example newspapers, journals and similar printed matter) - other, including but not limited to (1) laminated paperboard (2) unsorted scrap	(a) Duly filled up Form 6 – Movement document; (b) The import license from Directorate General of Foreign Trade, wherever applicable; (i) Pre-shipment inspection certificate issued by the inspection agency of the exporting country or the inspection and certification agency approved by Directorate General of Foreign Trade; (c) The valid consents to operate under the Air and Water Acts and the authorisation under these rules, for actual users. For traders, only valid authorisation from concerned SPCB is required; (d) The chemical analysis report of the waste being imported; (e) an acknowledged copy of the annual return filed with concerned State Pollution Control Board for import in the last financial year.
6.	B3140	Aircraft Tyres exported to Original Equipment Manufacturers for re-treading and re-imported after re-treading by airlines for aircraft	As per existing guidelines of Custom Authority

(1)	(2)	(3)	(4)
		maintenance and remaining either on board or under the custodianship of the respective airlines warehouses located on the airside of the custom bonded areas	

Note: * The policy for free trade for multifunction print and copying machine to be reviewed once the MFDs are domestically manufactured.

FORM 1

[See rule 6 (1)]

Application required for grant/renewal of authorisation for generation or collection or storage or transport or reception or recycling or reuse or recovery or pre-processing or co-processing or utilisation or treatment or disposal of hazardous and other waste

Part A: General (to be filled by all)

1. (a) Name and address of the unit and location of facility :
   (b) Name of the occupier of the facility or operator of disposal facility with designation, Tel, Fax and e-mail:
   (c) Authorisation required for (Please tick mark appropriate activity or activities:

(i) Generation	☐
(ii) Collection	☐
(iii) Storage	☐
(iv) Transportation	☐
(v) Reception	☐
(vi) Reuse	☐
(vii) Recycling	☐
(viii) Recovery	☐
(ix) Pre-processing	☐
(x) Co-processing	☐
(xi) Utilisation	☐
(xii) Treatment	☐
(xiii) Disposal	☐
(xiv) Incineration	☐

(d) In case of renewal of authorisation previous authorisation numbers and dates and provide copies of annual returns of last three years including the compliance reports with respect to the conditions of Prior Environmental Clearance, wherever applicable:

2. (a) Nature and quantity of waste handled per annum (in metric tonne or kilo litre)
   (b) Nature and quantity of waste stored at any time (in metric tonne or kilo litre)

3. (a) Year of commissioning and commencement of production:
   (b) Whether the industry works:

(i) 01 Shift	☐
(ii) 02 Shifts	☐
(iii) Round the clock	☐

4. Provide copy of the Emergency Response Plan (ERP) which should address procedures for dealing with emergency situations (viz. Spillage or release or fire) as specified in the guidelines of Central Pollution Control Board. Such ERP shall comprise the following, but not limited to:

- Containing and controlling incidents so as to minimise the effects and to limit danger to the persons, environment and property;
- Implementing the measures necessary to protect persons and the environment;
- Description of the actions which should be taken to control the conditions at events and to limit their consequences, including a description of the safety equipment and resources available;
- Arrangements for training staff in the duties which they are expected to perform;

- Arrangements for informing concerned authorities and emergency services; and
- Arrangements for providing assistance with off-site mitigatory action.

5. Provide undertaking or declaration to comply with all provisions including the scope of submitting bank guarantee in the event of spillage, leakage or fire while handling the hazardous and other waste.

Part B: To be filled by hazardous waste generators

1. (a) Products and by-products manufactured (names and product wise quantity per annum):

(b) Process description including process flow sheet indicating inputs and outputs (raw materials, chemicals, products, by-products, wastes, emissions, waste water etc.) Please attach separate sheets:

(c) Characteristics (waste-wise) and Quantity of waste generation per annum:

(d) Mode of management of (c) above:

i. Capacity and mode of secured storage within the plant;
ii. Utilisation within the plant (provide details);
iii. If not utilised within the plant, please provide details of what is done with this waste;
iv. Arrangement for transportation to actual users/ TSDF;

(e) Details of the environmental safeguards and environmental facilities provided for safe handling of all the wastes at point (c) above;

2. Hazardous and other wastes generated as per these rules from storage of hazardous chemicals as defined under the Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989

Part C: To be filled by Treatment, storage and disposal facility operators

1. Provide details of the facility including:
   (i) Location of site with layout map;
   (ii) Safe storage of the waste and storage capacity;
   (iii) The treatment processes and their capacities;
   (iv) Secured landfills;
   (v) Incineration, if any;
   (vi) Leachate collection and treatment system;
   (vii) Fire fighting systems;
   (viii) Environmental management plan including monitoring; and
   (ix) Arrangement for transportation of waste from generators.

2. Provide details of any other activities undertaken at the Treatment, storage and disposal facility site.

3. Attach a copy of prior Environmental Clearance.

Part D: To be filled by recyclers or pre-processors or co-processors or users of hazardous or other wastes

1. Nature and quantity of different wastes received per annum from domestic sources or imported or both:

2. Installed capacity as per registration issued by the District Industries Centre or any other authorised Government agency. Provide copy:

3. Provide details of secured storage of wastes including the storage capacity:

4. Process description including process flow sheet indicating equipment details, inputs and outputs (input wastes, chemicals, products, by-products, waste generated, emissions, waste water, etc.). Attach separate sheets:

5. Provide details of end users of products or by-products:

6. Provide details of pollution control systems such as Effluent Treatment Plant, scrubbers, etc. including mode of disposal of waste:

7. Provide details of occupational health and safety measures:

8. Has the facility been set up as per Central Pollution Control Board guidelines? If yes, provide a report on the compliance with the guidelines:

9. Arrangements for transportation of waste to the facility:

Signature of the Applicant
Designation

Date……..

Place……

FORM 2

[See rule 6(2)]

FORM FOR GRANT OR RENEWAL OF AUTHORISATION BY STATE POLLUTION CONTROL BOARD TO THE OCCUPIERS, RECYCLERS, REPROCESSORS, REUSERS, USER AND OPERATORS OF DISPOSAL FACILITIES

1. Number of authorisation and date of issue :
2. Reference of application (No. and date) :
3. ……of …….is hereby granted an authorisation based on the enclosed signed inspection report for generation, collection, reception, storage, transport, reuse, recycling, recovery, pre-processing, co-processing, utilisation, treatment, disposal or any other use of hazardous or other wastes or both on the premises situated at……...

Details of Authorisation

Sl. No.	Category of Hazardous Waste as per the Schedules I, II and III of these rules	Authorised mode of disposal or recycling or utilisation or co-processing, etc.	Quantity (ton/annum)

(1) The authorisation shall be valid for a period of …….

(2) The authorisation is subject to the following general and specific conditions (Please specify any conditions that need to be imposed over and above general conditions, if any):

A. General conditions of authorisation:

1. The authorised person shall comply with the provisions of the Environment (Protection) Act, 1986, and the rules made there under.
2. The authorisation or its renewal shall be produced for inspection at the request of an officer authorised by the State Pollution Control Board.
3. The person authorised shall not rent, lend, sell, transfer or otherwise transport the hazardous and other wastes except what is permitted through this authorisation.
4. Any unauthorised change in personnel, equipment or working conditions as mentioned in the application by the person authorised shall constitute a breach of his authorisation.
5. The person authorised shall implement Emergency Response Procedure (ERP) for which this authorisation is being granted considering all site specific possible scenarios such as spillages, leakages, fire etc. and their possible impacts and also carry out mock drill in this regard at regular interval of time;
6. The person authorised shall comply with the provisions outlined in the Central Pollution Control Board guidelines on “Implementing Liabilities for Environmental Damages due to Handling and Disposal of Hazardous Waste and Penalty”
7. It is the duty of the authorised person to take prior permission of the State Pollution Control Board to close down the facility.
8. The imported hazardous and other wastes shall be fully insured for transit as well as for any accidental occurrence and its clean-up operation.

9. The record of consumption and fate of the imported hazardous and other wastes shall be maintained.
10. The hazardous and other waste which gets generated during recycling or reuse or recovery or pre-processing or utilisation of imported hazardous or other wastes shall be treated and disposed of as per specific conditions of authorisation.
11. The importer or exporter shall bear the cost of import or export and mitigation of damages if any.
12. An application for the renewal of an authorisation shall be made as laid down under these Rules.
13. Any other conditions for compliance as per the Guidelines issued by the Ministry of Environment, Forest and Climate Change or Central Pollution Control Board from time to time.
14. Annual return shall be filed by June 30th for the period ensuring 31st March of the year.

B. Specific conditions:

Date:

Signature of Issuing Authority
Designation and Seal

FORM 3

[See rules 6(5), 13(7), 14(6), 16(5) and 20 (1)]

FORMAT FOR MAINTAINING RECORDS OF HAZARDOUS AND OTHER WASTES

1. Name and address of the facility :
2. Date of issuance of authorisation and its reference number :
3. Description of hazardous and other wastes handled (Generated or Received)

Date	**Type of waste with category as per Schedules I, II and III of these rules**	**Total quantity (Metric Tonnes)**	**Method of Storage**	**Destined to or received from**

* *Fill up above table separately for indigenous and imported waste.*

4. Date wise description of management of hazardous and other wastes including products sent and to whom in case of recyclers or pre-processor or utiliser:
5. Date of environmental monitoring (as per authorisation or guidelines of Central Pollution Control Board):

Signature of occupier

Date……..

Place……

FORM 4

[See rules 6(5), 13(8), 16(6) and 20 (2)]

FORM FOR FILING ANNUAL RETURNS

[To be submitted to State Pollution Control Board by 30th day of June of every year for the preceding period April to March]

1. Name and address of facility:

2. Authorisation No. and Date of issue:

3. Name of the authorised person and full address with telephone, fax number and e-mail:

4. Production during the year (product wise), wherever applicable

Part A. To be filled by hazardous waste generators

1. Total quantity of waste generated category wise

2. Quantity dispatched
   (i) to disposal facility
   (ii) to recycler or co-processors or pre-processor
   (iii) others

3. Quantity utilised in-house, if any -

4. Quantity in storage at the end of the year –

Part B. To be filled by Treatment, storage and disposal facility operators

1. Total quantity received -

2. Quantity in stock at the beginning of the year -

3. Quantity treated –

4. Quantity disposed in landfills as such and after treatment –

5. Quantity incinerated (if applicable) -

6. Quantity processed other than specified above -

7. Quantity in storage at the end of the year -

Part C. To be filled by recyclers or co-processors or other users

1. Quantity of waste received during the year –
   (i) domestic sources
   (ii) imported (if applicable)

2. Quantity in stock at the beginning of the year -

3. Quantity recycled or co-processed or used –

4. Quantity of products dispatched (wherever applicable) –

5. Quantity of waste generated -

6. Quantity of waste disposed -

7. Quantity re-exported (wherever applicable)-

8. Quantity in storage at the end of the year -

Signature of the Occupier or
Operator of the disposal facility

Date……..

Place……

FORM 5

[See rules 13 (1) and 14 (1)]

APPLICATION FOR IMPORT OR EXPORT OF HAZARDOUS AND OTHER WASTE FOR REUSE OR RECYCLING OR RECOVERY OR CO-PROCESSING OR UTILISATION

TO BE FILLED IN BY APPLICANT

S. No.	Description	Details to be furnished by the importer or exporter
(1)	(2)	(3)
1.	Importer or Exporter (name and address) in India	
	Contact person	
	Tel, fax and e-mail	
	Facility location/address	
	Reason for import or export	
2.	Importer or exporter (name and address) outside of India	
3.	Details of waste to be imported or exported	
	(a) Quantity (b) Basel No. (c) Single/multiple movement (d) Chemical composition of waste (attach details), where applicable (e) Physical characteristics (f) Special handling requirements, if applicable	
4.	For Schedule III A hazardous waste whether Prior Informed Consent has been obtained	
5.	**For importer** (a) Process details along with environmental safeguard measures (attach separate sheet) (b) Capacity of recycling or co-processing or recovery or utilization **Enclose a copy each of valid authorisation and valid consent to operate from SPCB**	
6.	Details of import against the Ministry of Environment, Forest and Climate Change permission in the previous three years	
7.	Port of entry	

9. Undertaking :

I hereby solemnly undertake that:

(i) The information is complete and correct to the best of my knowledge and legally-enforceable written contractual obligations have been entered into and that my applicable insurance or other financial guarantees are or shall be in force covering the transboundary movement.

(ii) The waste permitted shall be fully insured for transit as well as for any accidental occurrence and its clean-up operation.

(iii) The record of consumption and fate of the imported waste shall be recorded and report sent to the SPCB every quarter.
(iv) The hazardous or other waste which gets generated in our premises by the use of imported hazardous or other wastes in the form of raw material shall be treated and disposed of as per conditions of authorisation.
(v) I agree to bear the cost of export and mitigation of damages if any.
(vi) I am aware that there are significant penalties for submitting a false certificate/ undertaking/ disobedience of the rules and lawful orders including the possibility of fine and imprisonment.
(vii) The exported wastes shall be taken back, if it is not acceptable to the importer.

Signature of the Applicant
Designation

Date……..

Place……

FORM – 6

[See rules 13(2), 13 (10) and 14 (5)]

TRANSBOUNDARY MOVEMENT- MOVEMENT DOCUMENT

S.No	Description		Details to be furnished by the exporter or importer
(1)	(2)		(3)
1	Exporter (Name and Address) Contact Person Tele, Fax and email	: : :	
2.	Generator(s) of the waste (Name and Address)[1] Contact Person Tele, Fax and email	: : :	
	Site of generation	:	
3.	Importer or Actual user (Name and Address) Contact person Tele, Fax and email	: : :	
4.	Trader (Name and Address) Contact person Tele, Fax and email	: : :	
	Details of actual user (Name, Address, Telephone and email)	:	
5.	Corresponding to applicant Ref. No., If any	:	
6.	Bill of lading (attach copy)	:	
7.	Country of import/export	:	
8.	General description of waste	:	
	(a) Quantity (b) Physical characteristics (c) Chemical composition of waste (attach details), where applicable (d) Basel No. (e) UN Shipping name (f) UN Class (g) UN No (h) H Number (i) Y Number (j) ITC (HS) (k) Customs Code (H.S.) (l) Other (specify)		
9.	Type of packages	:	
	Number	:	
10.	Special handling requirements including emergency provision in case of accidents	:	
11.	Movement subject to single/multiple consignment		
	In case of multiple movement- (a) Expected dates of each shipment or expected frequency of the shipments (b) Estimated total quantity and quantities for each individual shipment	: :	

(1)	(2)		(3)
12.	Transporter of waste (Name and Address)[1] Contact Person Tele, Fax and email	:	
	Registration number	:	
	Means of transport (road, rail, inland waterway, sea, air)[2]	:	
	Date of Transfer	:	
	Signature of Carrier's representative	:	
13.	**Exporter's declaration for hazardous and other waste:**		
	I certify that the information in Sl. Nos. 1 to 12 above are complete and correct to my best knowledge. I also certify that legally-enforceable written contractual obligations have been entered into and are in force covering the transboundary movement regulations/rules. Date:..... Signature:..... Name:.....		
TO BE COMPLETED BY IMPORTER (ACTUAL USER OR TRADER)			
14.	Shipment received by importer/ actual user/trader[2/ 3]		
	Quantity received.....Kg/litres Date: Name: Signature:		
15.	Methods of recovery		
	R code*		
	Technology employed (Attached details if necessary)		
16.	I certify that nothing other than declared goods covered as per these rules is intended to be imported in the above referred consignment and will be recycled /utilized. Signature: Date:		
17.	SPECIFIC CONDITIONS ON CONSENTING TO THE MOVEMENT if applicable.		(attach details)
Notes:-(1) Attach list, if more than one; (2) Select appropriate option; (3) Immediately contact competent authority in case of any emergency; (4) If more than one transporter carriers, attach information as required in SL. No. 12.			

List of abbreviations used in the Movement Document

Recovery Operations (*)

R1 Use as a fuel (other than in direct incineration) or other means to generate energy.
R2 Solvent reclamation/regeneration.

R3 Recycling/reclamation of organic substances which are not used as solvents.
R4 Recycling/reclamation of metals and metal compounds.
R5 Recycling/reclamation of other inorganic materials.
R6 Regeneration of acids or bases.
R7 Recovery of components used for pollution abatement.
R8 Recovery of components from catalysts.
R9 Used oil re-refining or other reuses of previously used oil.
R10 Land treatment resulting in benefit to agriculture or ecological improvement
R11 Uses of residual materials obtained from any of the operations numbered R 1 to R 10

Date: **Signature:**

Place: **Designation:**

FORM 7

[See rule 13 (2) (c)]

APPLICATION FORM FOR ONE TIME AUTHORISATION OF TRADERS FOR PART- D OF SCHEDULE III, WASTE

[To be submitted by trader to the State Pollution Control Board]

1.	Name and address of trader with Telephone, Fax Number and e-mail	:	
2.	TIN/VAT Number/Import/ Export Code	:	
3.	Description and quantity of other waste to be imported	:	
4.	Details of storage, if any	:	
5.	Names and address of authorised actual user (s)	:	

Signature of the authorised person

Date:

Place:

FORM 8

[See rules 17 (1) and 18 (2)]

LABELLING OF CONTAINERS OF HAZARDOUS AND OTHER WASTE

Handle with care

Waste category and characteristics as per Part C of Schedules II and III of these rules ……..	Incompatible wastes and substances ……..
Total quantity ……..	Date of storage
Physical State of the waste (Solid/Semi-solid/liquid):	
Sender's name and address	Receiver's name and address
Phone…….	Phone…….
E-mail…….	E-mail…….
Tel. and Fax No…….	Tel. and Fax No…….
Contact person……	Contact person……
In case of emergency please Contact ……	

Note:

1. *Background colour of label - fluorescent yellow.*
2. *The word, 'HAZARDOUS WASTES' and 'HANDLE WITH CARE' to be prominent and written in red, in Hindi, English and in vernacular language.*
3. *The word 'OTHER WASTES' to be written prominently in orange, in Hindi, English and in vernacular language.*
4. *Label should be of non-washable material and weather proof.*

FORM 9

[See rule 18 (2)]

TRANSPORT EMERGENCY (TREM) CARD

[To be carried by the transporter during transportation of hazardous and other wastes, provided by the sender of waste]

1. Characteristics of hazardous and other wastes:

S. No.	Type of waste	Physical properties/	Chemical constituents	Exposure hazards	First Aid requirements

2. Procedure to be followed in case of fire :
3. Procedure to be followed in case of spillage/accident/explosion :
4. For expert services, please contact :
   (i) Name and Address :
   (ii) Telephone No. :

(Name, contact number and signature of sender)

Date……..

Place……

FORM 10

[See rule 19 (1)]

MANIFEST FOR HAZARDOUS AND OTHER WASTE

1.	Sender's name and mailing address (including Phone No. and e-mail) :	
2.	Sender's authorisation No. :	
3.	Manifest Document No. :	
4.	Transporter's name and address: (including Phone No. and e-mail)	
5.	Type of vehicle :	(Truck/Tanker/Special Vehicle)
6.	Transporter's registration No. :	
7.	Vehicle registration No. :	
8.	Receiver's name and mailing address (including Phone No. and e-mail) :	
9.	Receiver's authorisation No. :	
10.	Waste description :	
11.	Total quantity :	……..m^3 or MT
	No. of Containers :	……..Nos.
12.	Physical form :	(Solid/Semi-Solid/Sludge/Oily/Tarry/Slurry/Liquid)
13.	Special handling instructions and additional information :	
14.	Sender's Certificate	I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping name and are categorised, packed, marked, and labelled, and are in all respects in proper conditions for transport by road according to applicable national government regulations.
	Name and stamp: Signature: Month Day Year	
15.	Transporter acknowledgement of receipt of Wastes	
	Name and stamp: Signature: Month Day Year	
16.	Receiver's certification for receipt of hazardous and other waste	
	Name and stamp: Signature: Month Day Year	

FORM 11

[See rule 22]

FORMAT FOR REPORTING ACCIDENT

[To be submitted by the facility or sender or receiver or transporter to the State Pollution Control Board]

1.	The date and time of the accident	:
2.	Sequence of events leading to accident	:
3.	Details of hazardous and other wastes involved in accident	:
4.	The date for assessing the effects of the accident on health or the environment	:
5.	The emergency measures taken	:
6.	The steps taken to alleviate the effects of accidents	:
7.	The steps take to prevent the recurrence of such an accident	:

Date: **Signature:**

Place: **Designation:**

FORM 12

[See rule 24 (1)]

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

1.	Name and address of the person making the appeal	:	
2.	Number, date of order and address of the authority which passed the order, against which appeal is being made	:	(certified copy of the 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……..

Date:

----------x----------x----------

[23-16/2009- HSMD]

(Bishwanath Sinha)
Joint Secretary to Government of India

ANNEXURE 2

INVENTORY OF HAZARDOUS WASTES GENERATING INDUSTRIES

IN

THIRUVANANTHAPURAM, KOLLAM, PATHANAMTHITTA, ALAPPUZHA DISTRICTS

THIRUVANANTHAPURAM

SI.NO	Name and Address	Products tonne/year	HW Generating process as per schedule 1	HW Generating stream as per schedule 1	HW Generating stream as per schedule 2	HW Generation in t/y as per Schedule 1	HW generation in t/y as per schedule 2	Total Quantity of HW in t/y	Disposal in landfills	Recyclable	Incinerable
1	Bharat Petroleum, Kochuveli, Thiruvananthapuram	Storage and supply of petroleum products	3	3.3		16.68		16.68	0	16.68	0
2	Deedi Automobiles, Neeramankara, Thiruvananthapuram.	Servicing of vehicles	5	5.1		0.21		0.21	0	0.21	0
3	English Indian Clays Ltd., Veli, Thiruvananthapuram	Processed China Clay 120000	3 ,5	3.3 ,5.1		1 ,1.6		2.6	0	2.6	0
4	EVM Motors, Neeramankara, Thiruvananthapuram	Automobile Servicing and Repairs	5	5.1		5		5	0	5	0
5	Hi tech Industries, Maruthi Serivice, Ulloor, thiruvanathapuram	Automobile Servicing and Repairs	5	5.1		7.3		7.3	0	7.3	0
6	Cheran Automobiles, Neeramankara, Trivandrum	Automobile Servicing and Repairs	5	5.1		1.1		1.1	0	1.1	0
7	Hindustan Latex Ltd ., Akkulam, Thiruvananthapuram	Blood bags- 2000 nos	5	5.1		0.52		0.52	0	0.52	0
8	Hindustan Latex Ltd., Peroorkada, Thiruvananthapuram	Natural rubber condom- 1080	5, 35	5.1, 35.1		1.54		1.54	0	1.54	0

9	Indus Motors, Mettukkada, Thiruvananthapuram	Automobile Servicing and Repairs	5	5.1		9		9	0	9	0
10	K.S.R.T.C Central Workshop, Thiruvananthapuram	Servicing & repairing of vehicles	5	5.1		3.04		3.04	0	3.04	0
11	Kerala Automobiles, Aralummodu, Thiruvananthapuram	Automobile Servicing & Repairs	5	5.1		4.6		4.6	0	4.6	0
12	Kerala Cars, Vallakkadavu, Thiruvananthapuram	Automobile Servicing & Repairs	5	5.1		7.56		7.56	0	7.56	0
13	KINFRA Common ETP, Thumba, Thiruvanathapuram	Industrial park	35	35.1		0.015		0.015	0	0.015	0
14	KSEB,TMR Division,Thirumala , Thiruvananthapuram	Transformer Maintanence	5	5.1		15		15	0	15	0
15	Kulathungal Motors Kuravankonam, Thiruvananthapuram	Vehicle servicing	5	5.1		1.2		12	0	12	0
16	MILMA, Thiruvananthapuram Dairy, Ambalathara, Thiruvananthapuram	Dairy	5	5.1		255.5		255.5	0	255.5	0
17	Moopan Motors, Kazhakkuttom, Thiruvananthapuram	Vehicle servicing	5	5.1		14		14	0	14	0
18	Muthoot Yamaha, Ulloor/killipalam, Thiruvananthapuram	Vehicle servicing	5	5.1		5.553		5.553	0	5.553	0
19	Orient Service Station, Peroorkada, thiruvananthapuram	Vehicle servicing	5	5.1		0.03		0.03	0	0.03	0

20	Peninsular Honda, Patel(p) Ltd., Kazhakuttom, Thiruvananthapuram	Vehicle servicing and repair	5	5.1		1.59		1.59	0	1.59	0
21	Poabs Granites,Kuthirakulam, Thiruvananthapuram	Crusher unit	5	5.1		3.8		3.8	0	3.8	0
22	Popular Mega Motors, Pallichal, Thiruvananthapuram	Automobile Servicing & Repairs	5	5.1		19.65		19.65	0	19.65	0
23	Prasad Film Laboratory, KINFRA, Kazhakootam, Thiruvananthapuram	Film Processing	35	35.1		0.2		0.2	0.2	0	0
24	S.P. Service centre, Thirumala, Thiruvananthapuram	vehicle Servicing	5	5.1		0.1		0.1	0	0.1	0
26	T V Sundaram Iyengar And Sons Ltd., Kaimanam, Thiruvananthapuram	Automobile Servicing & Repairs	5,35	5.1, 5.2, 35.4		75,0.9,0.6		76.5	0.6	75.9	0
27	Taj Garden Retreat, Varkala, Thiruvananthapuram	Hotel	5	5.1		0.09		0.09	0	0.09	0
28	Travancore Titanium Poroducts, Veli, Thiruvananthapuram	Titanium dioxide-16251	26 , 17 , 5	26.1 , 17.1 , 5.1		961.455, 69.085		1030.54	1030.54	0	0
29	Vikram Sarabhai Space Center, Veli Thiruvananthapuram	Space Center	36	36.2		18.085		18.085	0	18.085	0
30	EVMPassenger Cars India (P) Ltd	Vehicle servicing and repair	5	5.1		1.26		1.26	0	1.26	0

31	Nippon Motor Corporation Enchakal, Trivandrum	Vehicle servicing and repair	5	5.1		15.96		15.96	0	15.96	0
32	Brahmos Aerospace Trivandrum Ltd, Airport Road, Chackai	Aerospace componets	5	5.1		0.382		0.382	0	0.382	0
33	GEEPEE SUZUKI, Opp: Women's Polytechnic College, Kaimanam	Vehicle Servicing/ Repairing	5	5.1		1.2		1.2	0	1.2	
35	Kairali Ford, Enchakal, Vallakadavu.P.O	Vehicle Servicing/ Repairing	5	5.1		2.26		2.26	0	2.26	0
35	TVS Sundaram Iyengar & Sons Pvt Ltd, Neeramankara Thiruvananthapuram	Automobile Servicing & Repairs	5	5.1		30.27		30.27	0	30.27	0
36	Kathir Motors (TVS) Karamana	Vehicle Servicing/ Repairing	5	5.1		0.21		0.21	0	0.21	0
37	Nippon Toyota, Industrial Development Area, Kochuvely	Automobile Servicing & Repairs	5	5.1		0.21		0.21	0	0.21	0

38	Southern Refineries, Kuzhinjavila, Parrasala, Thiruvananthapuram	Processed oil-18000	4,35	4.5, 35.3		300,1		301	1	300	0
39	Infosys Ltd.,Plot no:1,Technopark Campus SEZ, Attipara Village, Thiruvananthapuram	Consulting, technology, outsourcing	5	5.1		0.425		0.425	0	0.425	0
TOTAL								**1864.98**	**1032.34**	**832.64**	**0**

KOLLAM											
SI. NO	Name and Address	Products tonne/year	HW Generating process as per schedule 1	HW Generating stream as per schedule 1	HW Generating stream as per schedule 2	HW Generation in t/y as per Schedule	HW generation in t/y as per schedul	Total Quantity of HW in t/y	Disposal in landfills	Recyclable	Incinerable
1	Focus Motors, Kavanad, Kollam	Servicing of vehicles	5	5.1		0.6		0.6	0	0.6	0
2	Popular vehicles and service Pvt Ltd, H&C compound, Mundakkal West	Servicing of vehicles	5	5.1		1.68		1.68	0	1.68	0
3	St Antonys Engg Theatre, SN College Jn, Kollam	Servicing of vehicles	5	5.1		0.4		0.4	0	0.4	0
4	TV Sundaram Iyengar & Sons Ltd., Kilikolloor, Kollam	Servicing of vehicles	5	5.1		1		1	0	1	0
5	Venad Automobiles, Venadermukku, Kollam	Servicing of vehicles	5	5.1		10.8		10.8	0	10.8	0

6	St. Antony Cars (P) Ltd St. Antony Engineering Theatre, Asinara, S. N College Junction, Kollam, Ph. 0474-2747031	Vehicle Servicing	5	5.1		10.8		10.8	0	10.8	0
7	M/s Sarathy Auto Cars, NH-Bypass Road, VPX 17813, Ayathil, Kollam Ph. 0474 2728810	Vehicle Servicing	5	5.1		0.6		0.6	0	0.6	0
8	M/s sarathy auto car, elambal P.O., punalur ph.0475 2230660	Vehicle Servicing	5	5.1		10.8		10.8	0	10.8	0
9	sarathy motors pallimukku	Vehicle Servicing	5	5.1		0.42		0.42	0	0.42	0

10	Deedi Motors(P) LTD Cantonment North Pullikada Kollam	automobile Servicing/Repair stations	5	5.1		0.6		0.6	0	0.6	0
11	Popular Mega Motors Eranoor ,kakkad Panavelil P.O Kottarakkara	automobile Servicing/Repair stations	5	5.1		0.6		0.6	0	0.6	0
12	Kerala Minerals & Metals Ltd. Sankaramangalam, Chavara, Kollam. (subjected to NGT)	Titaniumdioxide-25466	5, 21	5.1, 21.1		10, 18250		18260	18250	10	0
13	Popular Mega Motors	automobile Servicing/Repair stations	5	5.1		1.095		1.095	0	1.095	0
TOTAL								**18299**	**18250**	**49.395**	**0**

PATHANAMTHITTA											
SI.NO	Name and Address	Products tonne/year	HW Generating process as per schedule 1	HW Generating streams as per schedule 1	HW Generating stream as per schedule 2	HW Generation in t/y as per Schedule 1	HW generation in t/y as per schedule 2	Total Quantity of HW in t/y	Disposal in Iandfills	Recyclable	Incinerable
1	Akay Flavours & Aromatics Ltd., Elavumthitta P.O., Pathanamthitta-689 625	Essence oil of spices Paprica-117.572 Curicumin-21.885 Capsicum-8.587 Pepper-O.R.& Oil-43.375 Rest-18.461	5,35	5.1, 35.3		0.18, 1.44		1.62	1.44	0.18	0
2	Pee Jay Enterprises Kutoor P.O., Thiruvalla, Pathanamthitta	Lead ingots	9	9.1		108		108	0	108	0
3	Pilot Latex Factory, Pathanamthitta	Preserve field latex/ skim latex	35	35.3		1.5		1.5	1.5	0	0
4	Carborundam universal Ltd., Maniyar	Electricity 330 lakhs unit/year	5	5.1		5		5	0	5	0
5	Marikar Industries(Automobile work shop) PTA	Vehicle service	5	5.1		3.6		3.6	0	3.6	0
6	Traco Cable Co.Ltd., Chumathra	Aluminum conductors with steel enforcement	5	5.2		0.8		0.8	0	0.8	0
7	AVG Motors, Mylapra	Vehicle service	5	5.1		0.312		0.312	0	0.312	0
8	Focus Motors, Thekkemala	Vehicle service	5	5.1		6		6	0	6	0
9	Indus Motors, Kumbazha	Vehicle service	5	5.1		0.89		0.89	0	0.89	0

10	AVG Motors, Kozhenchery	Vehicle service	5	5.1		2.4		2.4	0	2.4	0
11	Eric Motors Pullad	vehicle service	5	5.1		5.4		5.4	0	5.4	0
12	TVSundram Iyengar & Sons, Kozhencherry	Vehicle service	5	5.1		12		12	0	12	0
13	Sajina Motors,Mallappally	Vehicle service	5	5.1		1.8		1.8	0	1.8	0
14	Sajina Motors,Kurampala South P.O,Pandalam	Vehicle service	5	5.1		2.7		2.7	0	2.7	0
15	Harrisons Malayalam Ltd., Kumbuzha Eatate,P.B.No.1, Pathanamthitta 689 645.	Cenex 3502.77 Skim 350.275	35	35.3		10		10	10	0	0
16	Plantation Corporation of Kerala Ltd., Kodumon, Pathanamthitta	CF Latex and skim crepe	35	35.3		1		1	1	0	0
17	Deedi Motors,Churulicode,Pathanamthitta.	Vehicle service	5	5.1		2.52		2.52	0	2.52	0
18	Harrisons Malayalam Ltd., Konni Estate, Pathanamthitta	Latex grade Rubber sheets	35	35.3		0.66		0.66	0.66	0	0
TOTAL								**166.202**	**14.6**	**151.602**	**0**

ALAPPUZHA

SI.NO	Name and Address	Products tonne/year	HW Generating process as per schedule 1	HW Generating stream as per schedule 1	HW Generating stream as per schedule 2	HW Generation in t/y as per Schedule 1	HW generation in t/y as per schedule 2	Total Quantity of HW in t/y	Disposal in landfills	Recyclable	Incinerable
1	Abad Exports Pvt. Ltd., 1/168 Aroor P.O., Alappuzha	Processed sea foods	5	5.1		0.07		0.07	0	0.07	0
2	A S Marine Industries, Aroor Alapuzha	Frozen Marine products-306	5	5.1		2.1		2.1	0	2.1	0
3	Accelerated Freeze Drying Company Ltd., Ezhupunna, Alappuzha	Freeze dried shrimps -360	5	5.1		0.05		0.05	0	0.05	0
4	Accelerated Freeze Fish Exports Chemical Industrial Estate Alappuzha	Processed sea foods	5	5.1		0.25		0.25	0	0.25	0
5	AFDC Mini Plant, Ezhupunna P.O., Cherthala, Alappuzha	Frozen fish meat	5	5.1		0.08		0.08	0	0.08	0
6	Alleppey Coir Mats &Mattings Co-Operative Society Ltd., alappuzha	Coir Mat-24 Mattings-120	35	35.3		2.5		2.5	2.5	0	0
7	Aluminium Industries Ltd. Mannar, Alapuzha	6.6 KV/11KV/33 KV panels, breaker, interruptor-720	5, 21	5.1,21.1		12.96,.06		13.02	0.06	12.96	0
8	Amalgom Foods Ltd, Ezhupunna P O, Cherthala, Alapuzha	Frozen fish meat	5	5.1		0.648		0.648	0	0.648	0

9	Ambalpuzha Coir Mats & Mattings, Ambalapuzha Alapuzzha	Coir Mat-2.7 Mattings-120	35	35.1		0.4		0.4	0.4	0	0
10	Anand Exports, Chandiroor, Alapuzha	Frozen shrimps, cuttle fish, squid and other marine products-500	5	5.1		0.095		0.095	0	0.095	0
11	Aspinwall and Company (T) Ltd., P.B., No. 5, CCNB Road, Alapuzha	Coir mats-571 Mattings-486	35	35.3		3.2		3.2	3.2	0	0
12	Autokast Ltd., SN puram, Cherthala, Alapuzha	Cast Iron-8400 SG Iron cast- 14400	13	13.1		24		24	24	0	0
13	Batson Aquatic Products, Industrial Development Area, Aroor, Alapuzha.	Frozen Marine products-600	5	5.1		0.15		0.15	0	0.15	0
14	Benz Motors, Madaparambil Estate, Thookkukulam Junction, Santhanapuram, Alapuzha	Sevicing of vehicles	5	5.1		1.9		1.9	0	1.9	0
15	Bharat Petroleum Corporation Ltd.. Cheppad, Kayamkulam, Alapuzha	Storage of Naphtha-2 Tanks (5000KL	3	3.3		0.045		0.045	0	0.045	0
16	Bharat Sea Foods, Freezing plant, Chandiroor, Alapuzha	Frozen shrimps-1800,	5	5.1		0.09		0.09	0	0.09	0
17	Bharat Sea Foods, IQF Plants, Chandiroor Alapuzha.	Frozen Shrimps-3600	5	5.1		2.79		2.79	0	2.79	0

18	Brillian Exports, Aroor P.O. Alapuzha	Frozen Marine Products 1080	5	5.1		0.09		0.09	0	0.09	0
19	Chandra & Co. , Kareelakulangara P.O, Kayamkulam, Alapuzha.	Storage of oil	3, 5	3.3, 5.1		0.0821, 0.0821		0.1642	0	0.1642	0
20	Charankattu Coir Manufacturing Co. Pvt. Ltd, Cherthala, Alapuzha	Coir Mats and matting 720, Jute Matting-90 Sea Grass Matting-90 Sisal matting-90	26	26.2		3.2		3.2	3.2	0	0
21	Cherthala Coir Mats & Mattings Co-operative Society, Cherthala, Alapuzha	Coir products-288	26	26.2		2.02		2.02	2.02	0	0
22	Cherukattu Industries, Marine Division Aroor Alapuzha	Frozen Shrimps-3600	5, 3	5.1, 3.3		0.315		0.315	0	0.315	0
23	Cochin Frozen Foods Exports Pvt. Ltd., IV/475, Arookutty Ferry Road Aroor, Alapuzha	Frozen Shrimps 180, Fishs - 18250	5, 3	5.1, 3.3		2.55		2.55	0	2.55	0
24	DC Mills Pvt. Ltd., Unit-III, Pathirapally, Alappuzha	Synthetic Fiber Carpets-108	33	33.2		0.05		0.05	0	0	0.05
25	DC Mills, Valavanad,Alappuzha	PVC tufted Coir products-1800	5 , 35	5.1 , 35.2		1.5 , 2.7		4.2	2.7	1.5	0
26	Devi Galvanisers, I.D. Plot, Vadackal P.O Alappuzha	G.I.Wire-480	12	12.1		0.38		0.38	0.38	0	0
27	Excel Glasses, Pathirapally, Alappuzha	Flint Glass bottles-4800	5	5.1 , 5.2		0.05 , 0.5		0.55	0	0.55	0

28	Fish India Exports International, Poochackal,Cherthala, Alappuzha	Marine Products-144	5	5.1		0.19		0.19	0	0.19	0
29	Foam Mattings, P.B. NO. 4619, Alappuzha	Coir Mattings-216 Latex backed coir mattings-660	26	26.2		3.8		3.8	3.8	0	0
30	Geo Aquatic Products (P)Ltd., Veluthully Rood, Chandiroor, Alappuzha	Fozen sea food products- 540	5	5.1		0.35		0.35	0	0.35	0
31	GKS Business Associates(P) Ltd., IV/464, GKS Complex, Aroor,Alappuzha	Frozen shrimps 540 Squid-36 Cuttle fish-20	5	5.1		0.09		0.09	0	0.09	0
32	Higashimaru Feed Indian Ltd., Chitin Unit Ezhupunna South, Cherthala, Alappuzha	Chitin-30	35	35.4		1.82		1.82	1.82	0	0
33	Hindustan Lever Ltd., Industrial Area, Aroor, Alappuzha	IQF Marine products-5040	5, 35	5.1, 35.2		1.28		1.28	0	1.28	0
35	Hindustan Lever Ltd., Kuthiyathodu, Thuravoor P.O, Cherthala Alappuzha	Frozen Sea Foods-3000	5 , 35	5.1 , 35.2		1 , 5		6	5	1	0
35	Innovative Marine Foods Ltd., Ezhupunna P.O., Alappuzha	Frozen sea Foods-486	5	5.1		0.09		0.09	0	0.09	0

36	Integrated Rubian Exports Ltd., Rubian Complex, Aroor, Alappuzha-688 635	Frozen Shrimps/Fish items-2400	5	5.1		2.7		2.7	0	2.7	0
37	International Creative Foods Ltd., Industrial Area , Aroor, Alappuzha	Processed sea foods	5	5.1		2.2		2.2	0	2.2	0
38	International Freeze Fish Export Unit-1, Chemical Industrial Estate, Aroor, Alappuzha	Cuttle fish, Shrimps, Octopus-3600	5	5.1		0.1		0.1	0	0.1	0
39	Johnson Dye House, Ward No.X, Aryad North P O Alappuzha	Dyed yarn, Dyed fibre-720	26	26.2		3.1		3.1	3.1	0	0
40	Kerala Balers Cocoplast Unit,Alapuzha	PVC tufted &flocked coir mats-4500 pieces per day	35	35.3		3		3	3	0	0
41	Kerala Balers Ltd P.B. No. 2823, Alappuzha	Coir products - 480	26	26.2		3		3	3	0	0
42	Kerala Coir Mats & Matting Co-operative Society Ltd No.356, Alappuzha-7	Coir products - 36 Matting-180	26	26.2		3.5		3.5	3.5	0	0
43	Kerala Co-operative Milk Marketing Federation Ltd., Central Products Diary, Punnapra, Alapuzha	Pasturised Milk-10800 Flavoured Milk-3.96 Milma Mango-1176	5, 35	5.1, 35.4		2.6028, 2		4.6028	2	2.6028	0
44	Kerala State Drugs and Pharmaceuticals, Kalavoor, Alapuzha	Vitamin A Dry Powder Formulates-36 Liquid form layer-36	28, 35	28.1, 35.4		29.07, 0.54		29.61	0	0	29.61

45	Kerala State Electronics Development Corporation, Keltron Control Division, Aroor, Alappuzha	Control panels for thermal power stations - 240	12	12.1		0.012		0.012	0.012	0	0
46	Koluthara Exports LTD.,P.B.No.7, Aroor,Alappuzha	Frozen sea foods-3060	5	5.1		0.37		0.37	0	0.37	0
47	Koncherry Coir Factories, Mayithara Market Cherthala Alappuzha	Bleached and dyed coir & other allied yarn-1800	26	26.2		4		4	4	0	0
48	KSRTC Cherthala, Alappuzha	Sevicing of vehicles	5	5.2		1.8		1.8	0	1.8	0
49	KSRTC Regional Works, Mavelikara P.O Alappuzha	Sevicing of vehicles	5	5.2		0.225		0.225	0	0.225	0
50	Lekshmi Marine Products, Chemical Industrial Estate Aroor, Alappuzha	Frozen Marine Products-504	5	5.1		0.15		0.15	0	0.15	0
51	Mahesh Industries Vadackal, Alappuzha	G.I. Wire-720	12	12.1		2.19		2.19	0	2.19	0
52	Malabar Cement Ltd.,Grinding units, I.G.C., Pallipuram Cherthala Alappuzha	Portland Slag Cement for Portland Puzzolona Cement-200000	5	5.1		0.95		0.95	0	0.95	0
53	Maraikar Industries Kdappakada, Punnapra, Alappuzha	Servicing of vehicles	5	5.1		1.85		1.85	0	1.85	0
54	Mc Dowell & Co. (United Spirits Ltd.) Distillary Division, PB No.2, Cherthala, Alappuzha	Indian made foreing liquor-95000 cases of 9 liter each	5 , 35	5.1 , 35.4		0.18 , 9		9.18	9	0.18	0

55	N .C. John and Sons Ltd., John Dye House, Thumpoli, Alappuzha	Dyed and bleached coir, sisal, jute-1200	26	26.2		3.6		3.6	3.6	0	0
56	National Thermal Power Corporation Ltd., Cheppad, Kayamkulam Alappuzha	Electricity	35	35.4		30		30	30	0	0
57	National Thermal Power Corporation Ltd., Kayamkulam Combined Cycle Power Projexct, Choolatheruva P.O., Alappuzha-695 506	Electricity -360MW	3 , 5	3.3 , 5.1, 5.2		0.48 , 6.6		7.08	0	7.08	0
58	New Mobile Cars Pvt. Ltd., Maruti Service Station, Chungam, Alappuzha	Servicing of vehicles	5	5.1		0.15		0.15	0	0.15	0
59	New Model Coir Mats and Mattings Co-Operative Society Ltd., P.B. NO.41, Alappuzha	Coir Mattings -48	35	35.4		2.5		2.5	2.5	0	0
60	Paragon Sea Foods, Aroor, Cherthala, Alappuzha	Crab,Ribbon fish-378	5	5.1		0.99		0.99	0	0.99	0
61	Perfect Alloys Ltd., Industrial Area, Alappuzha	Lead ingots-1080	9	9.1 , 9.2		90 , 14.4		104.4	14.4	90	0
62	Plam Fibres and Yarn Trading Company, Pathirappally, Alappuzha	Dyed yarn bleached rubberised coir,jute, sisal-240	26	26.2		3.2		3.2	3.2	0	0
63	Premier Exports International, Chandiroor, Alapuzha	Frozen Marine Products-4200	5	5.1		2.7		2.7	0	2.7	0

64	PSN Automobiles Pvt. Ltd., Kalavoor, Mararikulam South, Alapuzha	Vehicles Servicing	35, 5	35.4, 5.1		9.57		9.57	2	7.57	
65	R.F Exports, Chandiroor, Alapuzha	Frozen Marine Products-1500	5	5.1		0.135		0.135	0	0.135	0
66	Relish Custom Foods, Valanjavazhi, Ambalapuzha, Alapuzha	Frozen shrimps, cuttle fish, squid-360	5	5.1		0.1		0.1	0	0.1	0
67	Rubian Exports Industrial Development area, Aroor, Alapuzha	Frozen sea foods-1200	5	5.1		0.09		0.09	0	0.09	0
68	S.D. Pharmacy Pvt. Ltd., M.O. Ward, Near Iron Bridge Alapuzha	Pharmaceuticals	5	5.1		0.23		0.23	0	0.23	0

69	Sangross Lab Pvt. Ltd., Industrial Estate, Kallimel, Mavelikkara, Alapuzha	Clofacimine-9,Clofacimine capdule-300 lakh nos	35	35.3		12		12	12	0	0
70	Sea Fresh Export Limited, Industrial Estate, Aroor, Alapuzha	Frozen Marine Products-720	5	5.1		0.09		0.09	0	0.09	0
71	Sea Pearl Enterprises, Chandiroor, Cherthala, Alapuzha	Marine Products	5	5.1		0.09		0.09	0	0.09	0
72	Silver Star Sea Foods, XI/64, Anwar Palace, Chandiroor P.O., Alapuzha	Frozen sea foods-996	5	5.1		1.82		1.82	0	1.82	0
73	Sonin Exports,Chandiroor, Alapuzha	Frozen sea foods-7200	5	5.1		0.091		0.091	0	0.091	0
74	South Indian Coir Mats and Mattings Co-operative society, Alapuzha	Fibre Mats and Coir Mattings-2160	35	35.3		3.1		3.1	3.1	0	0
75	Torry Harris Sea Products, P.B. No.2, Eramalloor P.O., Cherthala, Alapuzha	Shrimp Feed-14400	5	5.1		0.13		0.13	0	0.13	0
76	Travancore Cocotuft Pvt.Ltd., Thiruvizha, Mayithara, Cherthala, Alapuzha	PVC tufted coir mattings with floc stenching	5	5.1		0.18		0.18	0	0.18	0
77	Travancore Mats & Mattings Company, P.B. No. , Cherthala, Alapuzha	Mats of Coir & Juts 273	5, 35	5.1, 35.3		18, 150		168	150	18	0

78	Travancore Paper Mills, Vallikunnam, Mavelikara, Alappuzha	Kraft paper-260 Kraft Box-250 Duplex Board-160	35	35.3		3.7		3.7	3.7	0	0
79	Universal Oleoresins, Industrial Estate, Aroor, Alappuzha	Turmeric Oleoresin-200kg/day	20	20.2		1.9		1.9	0	1.9	0
80	William Goodacre and Sons Ltd., Alappuzha	Needled Fibre Pad-75 Coir Yarn-90	26	26.4		2.5		2.5	2.5	0	0
81	Toyota Nippon Toyota NH47 Bypass,Kayamkulam	Automobile Servicing and Repairs	5	5.1		1.3		1.3		1.3	0
82	Toyota Nippon Toyota NH47 Bypass,Alappuzha	Automobile Servicing and Repairs	5	5.1		1.47		1.47		1.47	0
TOTAL								**512.183**	**303.692**	**178.831**	**29.66**