

## Waste Management at NTPC Stations

The management of municipal solid waste/Hazardous Waste/E-Waste/Plastic Waste/ Bio-Medical waste/Battery waste is the most important obligatory functions of any industry & urban local bodies. NTPC is committed for the protection of the environment through the implementation of an effective waste management guidelines that meets all legislative and regulatory requirements placed on it. The ways to handle waste management are based on Rules notified by the Ministry of Environment, Forest & Climate Change, Govt. of India. NTPC is having a **Waste Management Guideline (Zero Deviation Document)** for management of all the waste generated from the NTPC station premises. Genesis of this document is on principle of recovery of either energy or material from all the wastes generated in NTPC premises. Two activities namely open burning of any waste or making any earthen pit for disposal of any type of waste generated either from plants or residential townships are strictly prohibited. The waste storage facility, collection, transportation and disposal are being done as per the guidelines. The brief description of the waste generation and disposal from station summarised in Annexure-1. Brief is as follows:

**1.0 Hazardous waste Recyclable:** No hazardous waste is generated in the process of electricity generation. However, hazardous waste like used oil/waste oil are generated during maintenance activities/ overhauls. These hazardous wastes are sold to the recycling agencies, authorized by MoEF/ SPCB/ CPCB. Necessary storage facilities and disposal as per the Hazardous and Other Waste Management Rules -2016 is being followed. Also Waste **Drum (Oil drums/ Chemical drum/ Misc. drum)** are being sold to approved (MOEF&CC/ SPCB/CPCB) recyclers.

**2.0 Hazardous waste - Non-recyclable:** This type of wastes conventionally being disposed off in **Treatment Storage Disposal Facility (TSDF)** which is recognized by CPCB/ SPCB, whereas in case of NTPC LTD under concept of 4Rs for such wastes i.e.

- Replace the process by alternative material to reduce such wastes.
- Reduce the quantity of waste generation under this category
- Reuse such waste in the process at alternate location like used of used grease
- Recover either energy or material from such waste as per permitted processes under legal framework.

Most commonly used process in NTPC stations is to dispose the waste through co-processor to recover either energy or material. Such type of wastes are namely - used insulation materials (Glass wool /Mineral Wool), oil soaked cotton waste, Used Activated Carbon, Spent Resin, Used Grease, Water & Waste Water Treatment Plant Sludge, Fuller Earth Contaminated with FRF, Photo Chemical Solution, Used Filter media, Asbestos , Waste FRF/ FRF mixed with water, Silica wastes and Dry Cells/ used torch batteries collected from domestic waste. Only those waste (less than 0.1% of total waste) are disposed to **Treatment Storage Disposal Facility (TSDF)** which is recognized by CPCB/ SPCB.

**3.0 E-Waste:** Waste is being sold through approved recyclers/dismantler (approved by MoEF&CC / CPCB/ SPCB) for recycling of respective type of E-waste.

**Non-recyclable E-Waste:** Any lamp/ tube shall be disposed only through approved E-Waste Dismantlers/Recyclers (approved by MoEF&CC/CPCB/SPCB) for dismantling/ recycling/ disposal for respective type of E-waste.

**4.0 Battery waste:** Disposal through buy back basis is being done. Provision in Purchase order for buy back is being made. In case of old batteries, without buy back provision, are being sold to MoEF / SPCB/ CPCB approved recyclers.

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### **5.0 Solid Waste Management**

- **Biodegradable Domestic Waste:** The bio degradable waste generated from plant and Township are being used for **Energy or resource recovery** by Conventional composting/ vermi-composting/ Waste to Energy plant/ Biogas plant etc.
- **Nonbiodegradable Domestic (Recyclable) :** Disposal is being done through Coprocessor/ RDF/ Waste to Energy plant as per the provisions of Solid Waste Management Rule 2016 depending on the type of waste and its composition. The facility for use of municipal solid and agriculture waste into **Torrified Coal** has also been set up and used as a fuel along with coal in the power plant.
- **Horticulture waste:** Conventional Composting pits has been set up for use of Biodegradable waste from grass cutting ( Parks/lawn/stadium), leaf droppings and small twigs and converted into compost. Also, **Bio Pellets** plants are being set up to convert the waste into fuel.

**6.0 Plastic Waste:** NTPC is having dedicated Plastic Waste Management Policy and single use plastics are banned. The plastic waste is being disposed to Cement Industries for Coprocessing purpose

**7.0 Bio Medical waste:** The Bio Medical waste generated from NTPC Hospital is being disposed to to the Common Bio-medical Waste Treatment Facility (CBMWTF) approved by the SPCB

**8.0 Construction and Demolition Waste** are being disposed in low lying area.

With the above measures, the waste generated from the plant are being used for **Energy or resource recovery purpose and No land filling done** the plant premises.

The implementation of the above is being done through various training & awareness programs to all concerned executives, all other staff members, associated agencies, family members of NTPC staff and staff of other associated agencies staying in NTPC's Townships.

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### Annexure-I

#### Waste from Power Plants, Applicable Rule & Management practices at NTPC Stations

Waste Type	Applicable Rule (Legal Provision) under Environment Protection Act, 1986	Waste Management Practices at NTPC Stations
Used Oil	HOW(M&TBM) Rule 2016 & Amendments thereof if any	Being Sold through approved (MOEF&CC/ SPCB/CPCB) recycler / Approved TSDF
Waste Oil	HOW(M&TBM) Rule 2016 & Amendments thereof if any	Sale through approved (MOEF&CC/ SPCB/CPCB) recycler / TSDF
Oil Sludge	HOW(M&TBM) Rule 2016& Amendments thereof if any	Disposal to TSDF
Waste Drum ( Oil drums/ Chemical drum/ Misc drum)	HOW(M&TBM) Rule 2016 & Amendments thereof if any	Sale through approved (MOEF&CC/ SPCB/CPCB) recycler / TSDF
Oil Soaked Cotton	HOW(M&TBM) Rule 2016 & Amendments thereof if any	Through Co-processor mainly Cement industries /TSDF
Used Filter / Filter media	HOW(M&TBM) Rule 2016 & Amendments thereof if any	Through TSDF
Used insulation Material (Glass wool /Mineral Wool)	HOW(M&TBM) Rule 2016 & Amendments thereof if any	Through Co-processor /TSDF
Used Grease	HOW(M&TBM) Rule 2016 & Amendments thereof if any	In house reuse / Through Co-processor /TSDF
Water & Waste Water Treatment Plant Sludge	HOW(M&TBM) Rule 2016 & Amendments thereof if any	Disposal to Ash Dyke, if non-Hazardous after testing / TSDF if Hazardous after testing
Used Activated Carbon and spent Resin	HOW(M&TBM) Rule 2016 & Amendments thereof if any	Through Co-processor /TSDF

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Battery Waste	Batteries (Management and Handling) Rules, 2001. Draft Rules for all types of Batteries published by MoEF&CC. Batteries (Management and Handling) Rules, 2020 yet to be Notified for all types of Batteries.	Provision in Purchase order for buy back. Old batteries w/o that provision are being sold to approved recyclers
Dry Cells/ used torch batteries collected from domestic waste	HOW(M&TBM) Rule 2016 & Amendments thereof if any / Draft Rules for all types of Batteries published by MoEF&CC. Batteries (Management and Handling) Rules, 2020 yet to be Notified for all types of Batteries.	Through TSDF
Asbestos packing/ Gland/ Rope or other Miscellaneous material made up of Asbestos as base material	HOW(M&TBM) Rule 2016 & Amendments thereof if any	Through TSDF
Photo Chemical Solution	HOW(M&TBM) Rule 2016 & Amendments thereof if any	Through approved processor/ Disposal to TSDF
Fuller Earth Contaminated with FRF	HOW(M&TBM) Rule 2016 & Amendments thereof if any	Through to TSDF
Waste FRF/ FRF mixed with water etc	HOW(M&TBM) Rule 2016 & Amendments thereof if any	Through approved (MOEF&CC/ SPCB/CPCB) recycler/ TSDF
Silica wastes	HOW(M&TBM) Rule 2016 & Amendments thereof if any	Through TSDF
E-waste	E-Waste (Management) Rules, 2016	Sale / Disposal through approved recycler/ dismantler (MoEF&CC approved)
Bio-medical waste	Bio-medical waste Management Rule-2016	Disposal to Common Waste Treatment and Disposal Facility (CWTF) approved by CPCB/SPCB/ MoEF&CC
Any other waste as packaging material made of Thermocol/ Styrofoam Packaging or other material not covered	HOW(M&TBM) Rule 2016 & Amendments thereof if any	Through WTE plant or Coprocessor or RDF plant / TSDF

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Biodegradable Domestic Waste	Solid Waste Management Rule 2016	Energy or resource recovery by Conventional composting/ vermicomposting/ WTE plant/ Biogas plant/ Food machine
Biodegradable Grass cutting & Other waste	Solid Waste Management Rule 2016	Resource recovery by Conventional composting/ vermicomposting / Biomass briquettes / pellets
Non-biodegradable Domestic from Township (Recyclable)	Solid Waste Management Rule 2016	Through recycler, if not successful, attempt to send these to Co-processor/ RDF/ WTE plant as per the provisions of Solid Waste Management Rule 2016 depending on the type of waste and its composition
Non-biodegradable Domestic from Township (NonRecyclable)	Solid Waste Management Rule 2016 (Annexure-III)	Disposal through Co-processor/ RDF/ WTE plant as per the provisions of Solid Waste Management Rule 2016 depending on the type of waste and its composition
Domestic Hazardous (Traces of E-Waste/ Hazardous waste/ Plastic) from Township	Solid Waste Management Rule 2016 (Annexure-III)	Send to plant area Hazardous waste storage area after segregation on monthly basis
Sanitary waste i.e. wastes comprising of used diapers, sanitary towels or napkins, tampons, condoms, incontinence sheets and any other similar waste;	Solid Waste Management Rule 2016	Disposal through CWTDF approved by CPCB/SPCB/ MoEF&CC until facility at District authority become operational
Construction and Demolition Waste & Sweepings	Construction and Demolition Waste Management Rules,2016	Shall be sent to authority at District level (presently no such authorities). Using for land development/ low lying area development.
Metallic Waste (Ferrous / Non Ferrous)	Not Applicable	Being sold at MSTC Platform to recyclers
Ash from Coal (Not a waste but a resource material)	MoEF&CC Gazette notification dated 14 <sup>th</sup> Sept. 1999 and its amendments	Fly ash is not a waste material rather a resource material for many of the Industries like Cement , RMC, Brick, block tiles etc. A note on Ash utilisation is attached herewith.

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Note:-

- EPA: Env't Protection Act
- HOW(M&TBM): Hazardous and other waste (Management and Transboundary movement)
- TSDF : Treatment Storage Disposal Facility
- CWTDF: Common waste treatment disposal facility
- WTE: Waste to Energy Plant
- RDF: Residue derived fuel