

## "Comprehensive Waste Management at Thapar Institute: Sustainable Practices for Solid, Liquid, Biomedical, E-Waste, and Recycling"

### **Waste Management Facilities at Thapar Institute:**

Thapar Institute implements a comprehensive waste management system to address both degradable and non-degradable waste types on campus, aligning with environmental sustainability goals and regulatory standards.

#### **1. Solid Waste Management**

The institute handles waste inside the campus, for which TIET had constructed MRF facility and wet waste management facility.

Total Avg. **4.63 metric tons** of solid waste generation daily:

Dry waste: **1.78 MT**

Pre-cooked Food waste: **1.05 MT**

Leftover food waste: **1.80 MT (Apx.)**

This process is managed through a collaboration with “Saahas Zero Waste”, a third-party agency specialized in sustainable waste management. Solid waste is processed through several eco-friendly methods:

- Composting: Organic waste, such as food scraps and garden trimmings, is composted on-site, creating nutrient-rich compost used to support campus landscaping.
- Animal Feeding: Waste suitable for animal consumption is diverted to local farms (piggery farm), reducing food waste and supporting a circular economy.
- Sorting and Recycling: Recyclable materials, including paper, plastic, glass, and metals, are sorted and sent for recycling, ensuring that reusable waste is repurposed rather than landfilled. This systematic approach minimizes the overall waste impact and promotes sustainable practices.



**FIGURE 1. MRF FACILITY NEAR STP PLANT**

## 2. Liquid Waste Management

To manage liquid waste, Thapar Institute constructed & operates an “on-campus Sewage Treatment Plant (STP)”, which treats wastewater generated by various campus facilities. The STP employs a multi-step process to purify water, removing contaminants and making it safe for non-potable uses such as irrigation and general cleaning. By reusing treated water for landscape maintenance, the institute reduces its dependence on external water sources and minimizes its water footprint, promoting water conservation within the campus ecosystem. Total liquid waste generation ranges from 1500-1800 KLD.



FIGURE 2. BAR SCREEN & COLLECTION CHAMBER



FIGURE 3. STP PUMP SYSTEM

## 3. Biomedical Waste Management:

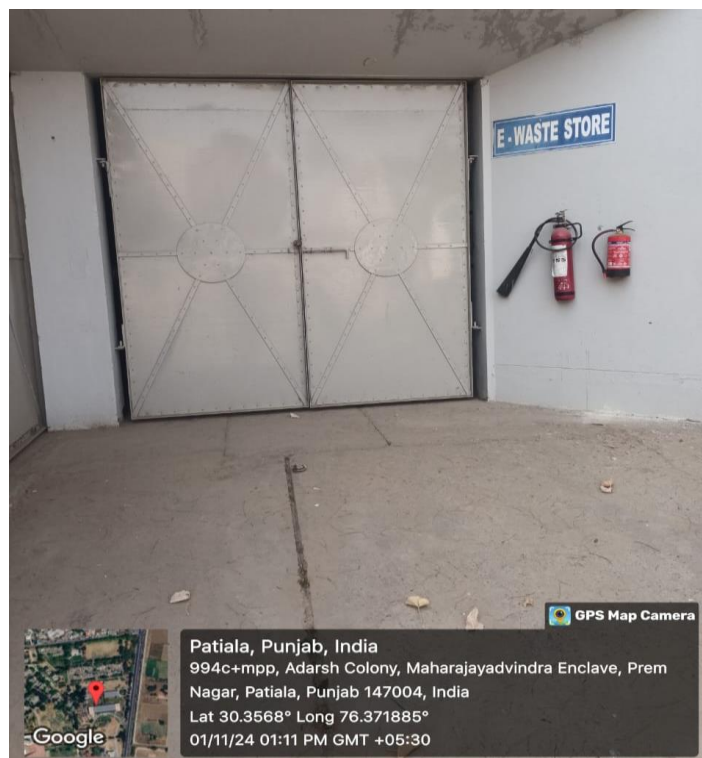
Biomedical waste generated from medical facilities on campus is managed in strict adherence to health and safety regulations. Thapar Institute has partnered with a licensed third-party agency M/s RAINBOW ENVIRONMENTS PVT LTD to handle the collection, transport, and safe disposal of biomedical waste. This arrangement ensures that medical waste, which may include sharps, bandages, sanitary waste and other potentially infectious materials, is disposed of responsibly to prevent contamination and uphold campus health standards. Total Bio-Medical waste managed if FY 2023-24 is 177.82 Kg.



**FIGURE 4. COLLECTION OF SANITARY WASTE**

#### 4. E-Waste Management

The institute recognizes the environmental hazards associated with electronic waste, or e-waste, such as outdated computers, batteries, and other electronic devices. Through a contract with an authorized e-waste disposal agency “ **M/s Spreco Recycler**”, the institute collects & store the waste and safely disposes of electronic waste according to regulatory guidelines. This partnership helps prevent hazardous substances in e-waste, like lead and mercury, from entering landfills, safeguarding the environment and public health. Total E-Waste manage in FY 2-23-34 is 3.756 MT.



**FIGURE 5. STORAGE FACILITY FOR THE E-WASTE**

## 5. Hazardous Waste Management

Hazardous waste, including chemical by-products and other potentially dangerous materials, is handled through an external agency (SATKAR OIL COMPANY) with expertise in hazardous waste disposal. This partnership enables Thapar Institute to comply with legal requirements and ensures safe handling, storage, and disposal practices, protecting both campus occupants and the environment. Total waste managed in FY 2022-23 is 1972 litres used/Waste oil (Cat.1).

## 6. Waste Recycling System

Thapar Institute fosters a recycling culture, ensuring that recyclable materials are properly segregated and processed. Through its waste management practices with Saahas Zero Waste, materials such as paper, plastic, glass and metals are sorted, and sent for recycling. This effort reduces landfill waste, conserves natural resources, and promotes sustainable program.



**FIGURE 6. SORTING OF DRY WASTE**

SZW team had engaged authorized recycler/aggregator for the collection of all types of sorted recyclable waste from TIET campus for the recycling purposes. The total waste send for recycling purpose from march-24 to oct-23 is 230.90 MT in which 48.3 MT is the plastics waste. The recycler/aggregators are-

- a. A.K plastics industries, Focal point, Patiala
- b. K.M.J Enterprises, Patiala

By incorporating these waste management strategies, Thapar Institute prioritizes ecological responsibility, health and safety standards, and resource efficiency, creating a model of sustainable waste management for the educational sector.