# Waste Management Policy

## Introduction

Vels Institute of Science, Technology and Advanced Studies (VISTAS), Chennai, is committed to achieving a sustainable and eco-conscious campus environment. This policy provides a structured and holistic approach to managing all types of waste generated on campus, including solid waste, liquid waste, and e-waste. By incorporating advanced techniques, stakeholder engagement, and a culture of environmental stewardship, the university aims to lead by example in waste management.

## Objectives

- To reduce waste generation at its source and encourage reusability and recycling.
- To ensure the proper segregation, collection, storage, and environmentally safe disposal of waste.
- To comply with national and local waste management regulations and global sustainability standards.
- To raise awareness among students, staff, and faculty about sustainable waste practices and their benefits.
- To integrate innovative waste management solutions into university operations, teaching, and research.

**Prevention and Minimization**: VISTAS, Chennai is committed to minimizing solid waste generation and preventing the release of pollutants into the environment. This will be achieved through a hierarchy of actions:

## Guiding Principles and Responsibilities:

1. Source reduction to prevent waste generation at its origin.
2. Reuse and recycling of materials where feasible.
3. Safe treatment and disposal of waste that cannot be reused or recycled.

The university will also ensure the reduction of hazardous waste and toxic materials by implementing policies for their safe use, tracking, storage, and disposal.

**Re-use and Recycling**: Priority will be given to reusing waste generated within the campus. However, in cases where reuse is impractical, such as large-scale waste like plastic materials for hygienic or safety reasons, the university will actively pursue recycling as the next viable option to manage such waste responsibly.

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**Recovery and Conservation of Energy**: VISTAS will adopt measures to reduce resource consumption by eliminating wasteful practices, encouraging efficient use of resources, and implementing practical energy conservation strategies. These strategies will be applied across existing infrastructure, renovations, and new construction projects.

**Environmentally-friendly Disposal**: The University will ensure that waste which cannot be reused or recycled is disposed of in an environmentally responsible manner, adhering to regulatory and ethical standards to minimize environmental impact.

**Environmentally-responsible Outsourcing and Acquisition**: VISTAS will incorporate environmental responsibility into its contracting and procurement practices. When acquiring products and services, the university will prioritize options that offer the best value by considering lifecycle environmental impacts along with cost and functionality.

**Environmental Awareness**: The University is dedicated to fostering a culture of environmental responsibility by providing ongoing education and awareness programs for employees, contractors, students, and visitors. These initiatives will emphasize the importance of sustainable practices in all university operations. Additionally, VISTAS will ensure transparency by sharing accurate information about its environmental performance with stakeholders and the public.

**Hazardous Waste Management**

1. **Labelling and Storage:** Implement robust protocols for the identification, labelling, and secure storage of hazardous substances.
2. **Training Programs:** Train laboratory and maintenance staff to handle hazardous waste safely.
3. **Disposal Alliances:** Engage certified agencies for the ethical and environmentally sound disposal of hazardous materials.
4. **Regular Inspections:** Conduct regular audits to ensure compliance with hazardous waste management standards.

**Solid Waste Management**

**Types of Solid Waste:**

1. **Biodegradable Waste:** Includes food waste, garden clippings, and paper-based materials.
2. **Non-Biodegradable Waste:** Comprises plastics, metals, and glass.
3. **Hazardous Waste:** Generated from chemicals, batteries, and laboratory activities.

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**Management Approach:**

1. **Segregation:** Use a color-coded bin system: green for biodegradable, blue for non-biodegradable, and red for hazardous waste.
2. **Collection Points:** Designate easily accessible collection hubs to encourage responsible disposal by the university community.
3. **Processing:** Compost biodegradable waste, recycle non-biodegradable waste, and dispose of hazardous waste through certified methods.
4. **Community Engagement:** Involve student clubs and societies in solid waste monitoring and awareness initiatives.

**Liquid Waste Management**

**Types of Liquid Waste:**

1. **Domestic Wastewater:** From kitchens, restrooms, and cleaning.
2. **Laboratory Effluents:** Contains chemicals and hazardous substances.
3. **Rainwater:** Runoff from roofs and campus surfaces.

**Management Approach:**

1. **Treatment Facilities:** Install and maintain an advanced Sewage Treatment Plant (STP) for domestic wastewater.
2. **Rainwater Harvesting:** Use storm water for groundwater recharge and non- potable applications like gardening.
3. **Chemical Neutralization:** Treat laboratory effluents to neutralize harmful substances before disposal.
4. **Awareness Drives:** Educate the university community on the importance of protecting water resources through training and events.

**e-Waste Management**

**Types of e-Waste:**

1. **Electronic Devices:** Computers, laptops, printers, and mobile phones.
2. **Components:** Circuit boards, batteries, and peripherals.
3. **Lab Equipment:** Projectors, scientific instruments, and AV devices.

**Management Approach:**

1. **Segregation and Collection:** Establish collection bins for reusable, recyclable, and hazardous e-waste.

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2. **Reusing Devices:** Refurbish and donate functional devices to local schools or community centers.
3. **Recycling Partnerships:** Collaborate with certified e-waste recyclers to ensure responsible recycling and disposal.
4. **Awareness Campaigns:** Educate stakeholders about the environmental risks of improper e-waste disposal and promote safe practices.

**Implementation and Monitoring**

1. **Waste Management Committee:** Form a cross-departmental committee responsible for overseeing policy implementation and improvements.
2. **Digital Monitoring:** Use software solutions to track waste generation, segregation, and disposal efficiency.
3. **Regular Audits:** Conduct biannual audits to assess compliance and identify areas of improvement.
4. **Reporting:** Publish annual sustainability reports detailing achievements, challenges, and future plans.

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**Solid Waste Management:**

Solid waste management at VISTAS involves the placement of over 250 recycling bins across the campus to collect both degradable and non-degradable waste, such as food waste, paper waste, general solid and liquid waste, dry waste from fallen flowers and leaves, and food wrappers. The campus strictly prohibits the use of plastic, resulting in a significant reduction in plastic waste production. Additionally, paperless administration is implemented through an ERP system to minimize paper waste generation. After segregating recyclable waste, it is sent to landfills, while garden waste and dry leaves are directed to the compost yard.

**Liquid Waste Management:**

VISTAS have installed Sewage Treatment Plants (STPs) and Effluent Treatment Plants (ETPs) across all its campuses. The treatment process for liquid waste includes:

Primary Treatment (Screening): Raw sewage undergoes filtration, with solid particles manually removed at fixed intervals and disposed of. Organic waste collected during this process is converted into compost.

Secondary Treatment:

i) Equalization: Filtered sewage is collected in a collection sump for equalization before being transferred to an aeration tank by pump sets.

ii) Biological Treatment: This step converts organic matter in wastewater into bacterial floc.

iii) Secondary Settling: Overflow from the settling tank is directed to a Clarified Water Tank.

Tertiary Treatment and UF: Water is pumped through a pressure sand filter, with necessary alum and chlorine mixing to reduce BOD and COD levels.

Sludge Drying: Excess sludge generated is utilized as manure for gardening.

The treated water is utilized for gardening, lawn maintenance, and pond upkeep on campus.

**Biomedical Waste Management**

VISTAS had established agreements with authorized agencies like GJ Multiclave (India) Pvt Ltd & ReSustainability IWM Solutions Limited for the disposal of biomedical waste. This waste, generated in hospitals, laboratories, and animal facilities, is collected in colour-coded bins and disposed of through these agencies.

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**E-waste management:**

VISTAS has partnered with the authorized agency Redit Eco Recycling for e-waste disposal. E-waste is regularly collected at its source, transported to a designated storage facility, and then disposed of by the vendor. Some gadgets are replaced through exchange options or buyback systems. VISTAS also operate an e-waste pilot plant to recycle valuable materials like gold, silver, and copper.

**Waste Recycling system:**

VISTAS employ a vermi-composting system to convert organic waste from hostel kitchens, mess areas, and canteens into nutrient-rich manure suitable for agriculture and gardening.

**Hazardous chemicals and radioactive waste management:**

Hazardous chemical waste undergoes treatment involving neutralization, incineration, or chemical conversion before safe disposal in accordance with regulatory guidelines, including burial in designated landfills or storage in specialized facilities. VISTAS do not generate radioactive waste.

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