



SATHYABAMA

Institute of Science and Technology

Chennai, Tamil Nadu-600119

POLICY ON WASTE MANAGEMENT

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SATHYABAMA INSTITUTE OF SCIENCE AND TECHNOLOGY

POLICY ON WASTE MANAGEMENT

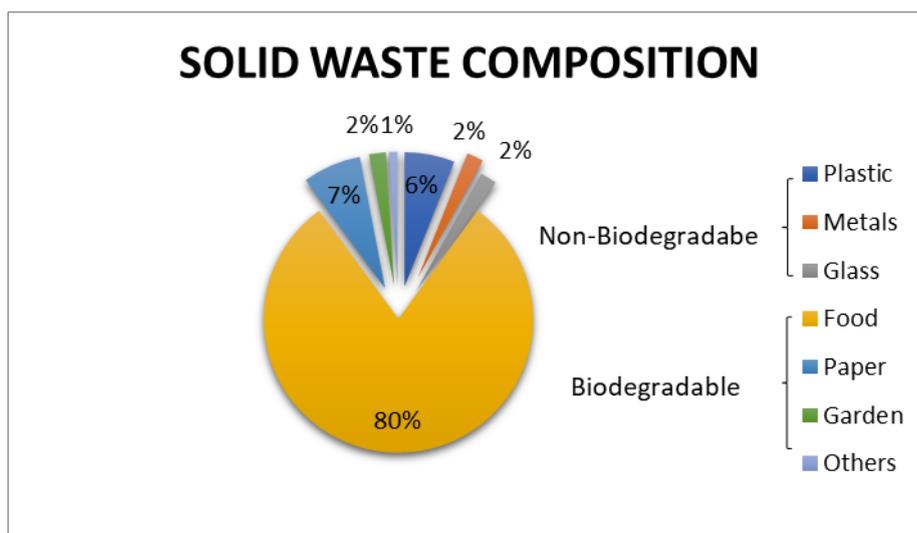
1. Introduction

Waste Management Policy is an important component of Sathyabama Institute of Science and Technology's Sustainability Strategy to achieve the Sustainable Development Goals. This policy aims to promote responsible waste production and disposal practices on campus. The Institution is committed to promoting waste as a resource and encourage re-use and recycling to reduce the quantity of waste generated in campus. This policy ensures that generation of all types of waste viz., liquid waste, solid waste, plastic waste, e-waste, food waste etc. are minimized and disposed in a responsible manner without affecting the land and aquatic ecosystem.

2. Waste Management

2.1 Solid Waste Management

Solid waste often includes wasted material resources that could otherwise be channelized into better service through recycling and reuse. Several processes are involved in effectively managing waste generated in an Institution. These include monitoring, collection, transport, processing, recycling, and disposal. Proper solid waste management in the campus reduces or eliminates the adverse impact on the environment. Thus, the minimization of solid waste being generated, and their effective management is essential for maintaining a sustainable environment inside the campus. Solid waste generated in the Institution comprises of both organic and inorganic waste materials produced by various activities in the Institution. These wastes have the potential to pollute all the vital components of living environment - air, land, and water. The composition of solid waste generated in the institution is given in Figure the following figure.



Solid waste composition of the Institute

2.1.1 Strategies adopted to handle solid waste in campus

- ❖ The average quantity of biodegradable wastes generated (Paper, dried leaves, vegetation, garden waste, except food waste) is 804 kg/year. Paper Waste like Newspaper, Magazines, Cardboard, Box Board. They can be disposed by selling it to vendors in exchange of recycled papers.
- ❖ Metal waste including Steel chairs, scrap cupboards, racks generated can be disposed by selling to Scrap dealers.
- ❖ Glass waste generated can be recycled and reused, non-recyclable glass waste can be disposed through the City's waste disposal.

2.2 Plastic Waste Management

The Institution does not recommend the use of plastic items like milk packets, plastic covers, PET bottles, plastic bags, food packaging and containers inside the campus. If used it shall be segregated from other wastes and to be disposed in the separate bins.

2.3 Food Waste Management

Effective measures to be taken to minimize food wastage in the campus. Food waste generated in the Institution's kitchen to be disposed in a responsible manner or can be used for alternative purpose like use as cattle feed or other research purpose of the Centre for Waste Management.

2.4 Biomedical Waste Management

Sathyabama Dental College and Hospital established in 2009 is an autonomous Institution affiliated to Sathyabama Institute of Science and Technology, Chennai, Tamil Nadu, India. Sathyabama Dental College and Hospital has 18 functioning departments and has its own pharmacy. These departments are under the supervision of 60-90 doctors and 20-35 paramedical staff. The total numbers of patients coming to have treatment are about 150-250 per day. GJ Multiclave (India) Pvt. Ltd Adyar, Chennai is the authorized recycler who collects the biomedical waste being generated in the Institution for further treatment and disposal.

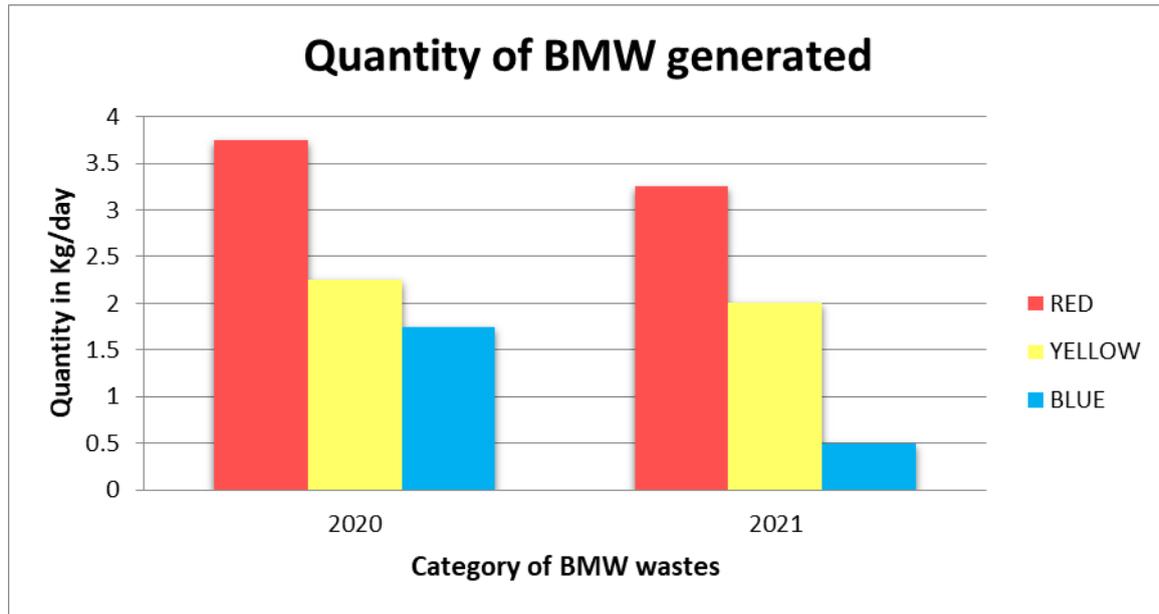
Biomedical wastes generated from Dental College and Hospital are potentially hazardous, toxic and highly infectious because of their high potential for disease transmission. Indiscriminate disposal of such waste can pose health risk to human population, especially to health care personnel, sanitary workers, and students in and around the campus. Audit to be done to see if biomedical wastes are managed with at most importance in an environmentally sound manner.

2.4.1 Colour Coding of Biomedical Waste

- ❖ **Yellow**-Human & Animal Anatomical Waste, Discarded Chemicals, Chemical Waste, Lab Waste
- ❖ **Red**- Contaminated Waste (Recyclable) – Wastes generated from disposable items such as tubing, bottles, intravenous tubes and sets, catheters, urine bags, syringes (syringe without needle)
- ❖ **Blue**-Broken or discarded and contaminated glass vials including medicine vials and ampoules
- ❖ **White**-Needles, syringes with fixed needles, needles from needle tip cutter or burner, scalpels, blades.



Colour coded dustbins and bags used in the institution



Quantity of Biomedical Waste Generated

2.4.2 Biomedical Waste Handling procedure

- ❖ Biomedical waste is to be segregated at source and put in color coded bags in compliance with the BMW Management Rules, 2016
- ❖ Sealing of the color-coded bags before giving it to Common Biomedical Waste treatment facility for treatment processing and disposal
- ❖ Adequate awareness to be given to the doctors and the paramedical staff on biomedical waste segregation, disposal and management exist.
- ❖ Records of the Biomedical waste generation is maintained
- ❖ The institution is maintaining separate bins for the collection of infectious waste and Covid-related waste

2.5 E-Waste Management

E-Waste can generally be defined as any electrical powered appliance that has reached its end-of-life. Electronic waste or E-waste is generated when electronic and electrical equipment become unfit for their originally intended use or have crossed the expiry date. Computers, servers, mainframes, monitors, compact discs (CDs), printers, scanners, copiers, calculators, fax machines, battery cells, cellular phones, TVs, iPods, medical apparatus,

refrigerators, and air conditioners are the general type of E-Waste generated in the campus. E-waste consists of toxic elements such as Lead, Mercury, Cadmium, Chromium etc. The unscientific disposal of E-Waste can generate a threat to the environment as well as to human health. Due to the presence of these toxic substances in E-Waste, recycling and disposal of E-Waste becomes an important issue. The Institution can play a key role in management of E-Waste by following initiatives such as Extended Producer Responsibility (EPR); Design for Environment (DfE); Reduce, Reuse, Recycle (3Rs), technology platform for linking the market facilitating a circular economy aiming correct disposal of the e-waste, with increased reuse and recycling rates, and adopt sustainable consumer habits.

An audit to analyze whether E-waste generated is channelized through authorized producer or dismantler or recycler. Auditor will also diagnose whether the records of E-waste generated are maintained as per Form-2 and whether such records are produced for scrutiny by the concerned State Pollution Control Board. Auditor will ensure that all steps are taken to manage the E-waste in a manner which shall protect the health and environment against any adverse effects.

2.5.1 Best Practices in the Institution -E-Waste Management

- ❖ Effort to utilize the Extended Producer Responsibility
- ❖ Use of reusable resources in all possible areas
- ❖ E-Waste generated is channelized through authorized recycler for treatment, dismantling and disposal
- ❖ Compliance with the E-Waste Management Rules 2016
- ❖ Adequate efforts put in to ensure that no damage is caused to the environment during storage and transportation of the E-Waste

2.6 Liquid Waste Management

The major liquid waste generated in campus is

- i) Sewage from all buildings in campus
- ii) Waste Cooking Oil from the Institution's Kitchen

Measures have been taken to handle both the waste by establishing a Sewage Treatment Plant in campus to handle the wastewater and obtain treated water for toilet flushing and gardening. The waste cooking oil generated is converted into biodiesel used for fueling buses partially and for the operation of Generators and pump sets.

The campus has storm water drainage channels that collect the storm water and divert it to rainwater harvesting pits. The Institution has also made facilities for roof to rainwater harvesting structures and rain water harvesting pits which is highly appreciable. Institution has own RO unit catering to drinking water requirement of the entire campus. The maintenance department shall ensure there is no water wastage through leaky pipes.

The various usage points of water in the Institution are cooking, drinking, bathing, hand washing, toilet flushing, laboratory use, mopping and cleaning of the campus, gardening, washing the buses etc. The waste water generated shall be effectively treated before disposing it. The Institution shall conduct periodic awareness programmes for students on water conservation, Sanitation and Hygiene.

2.7 Waste Audit

Waste audit is a valuable step in managing an organization's waste in a more environmentally friendly manner, while helping in the reduction of waste disposal costs. The institution with the active involvement of Centre for Waste Management shall go for Waste audit. Waste Audit to be done by an authorized Auditor who is involved in the assessment of the waste generated by the Institution with the support of his team and an Internal Waste Audit Committee.

The institution practices a step-by-step process to conduct Waste Audit and monitors waste generated within campus prioritizing it as an important policy. Various records and documents are verified several times to clarify the waste data received through survey and discussions. Following measures shall be taken by the institution to manage the Waste.

- Involvement of Student Eco Clubs supervised by the Internal Waste Audit Committee (WAC)
- Waste Source/ Site inspection pursued by the members of the WAC dividing the student members into groups led by the members of the WAC to audit the various types of waste generated inside the institution.
- Interviews held and Questionnaire responses collected from the in-charges of different waste generation locations. For example, mess supervisor for food waste, STP Head

for waste water data, Systems Administrator for E-waste etc.,

- Creating Awareness on the importance of waste segregation at the source among the students, teaching, non-teaching, and research faculties in the Institution.
- Generating and Maintaining Waste Records in duly available forms published in Solid Waste Management Rules by the Central Pollution Control Board governed by the Ministry of Environment Forest and Climate Change.
- The audit process seeks, on a sampled basis, to track past actions, activities, events, and procedures to ensure that they are carried out according to systems requirements and in the correct manner.
- The real value of Auditing is when they are carried out at defined intervals, and their results and recommendations can bring improvement or change over time. Hence Periodic Review of Documents and Records by Internal Waste Audit Committee and Annual Waste Audit conducted at the end of every financial year by the Authorized External Waste Audit Committee.