



Maharashtra Institute of Technology (Autonomous), Chhatrapati Sambhajnagar
Laboratory Waste Management Policy
Laboratory Safety Cell
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1. Introduction

Laboratory operations at educational institutions generate various forms of hazardous and non-hazardous waste. Inappropriate handling of such waste can result in serious environmental, health, and regulatory consequences. As a responsible academic and research institution, Maharashtra Institute of Technology (MIT), Chhatrapati Sambhajnagar, proposes the implementation of a Laboratory Waste Management Policy in compliance with the Maharashtra Pollution Control Board (MPCB) norms and other relevant national/international guidelines.

2. Objectives

- Ensure safe, sustainable, and compliant handling, storage, and disposal of laboratory waste.
- Minimize environmental and health risks associated with laboratory waste.
- Implement segregation and classification protocols aligned with MPCB guidelines.
- Build capacity and awareness among laboratory users.
- Establish transparent record-keeping and vendor management processes.

3. Scope

This policy applies to all faculty members, technical staff, students, research scholars, and vendors engaged in laboratory activities at MIT, across all departments, including Engineering, Sciences, and Allied disciplines.

4. Classification of Laboratory Waste

Waste Category	Examples
Chemical Waste	Acids, solvents, bases, heavy metal compounds
Biological Waste	Contaminated cultures, cell lines, blood samples
Radioactive Waste	Isotope-contaminated materials (e.g., H-3, C-14)
Sharp Waste	Needles, broken glassware



Waste Category	Examples
Toxic Waste	Carcinogenic or highly reactive substances
Waste Oil	Used pump oil, lubricants
Empty Containers	Bottles, cans, ampules (post-rinsing)
Gas Cylinders	Empty or outdated compressed gas cylinders
Unknown Waste	Improperly labeled or unidentified chemicals

5. Segregation and Handling Procedures

5.1 General Guidelines

- All laboratory waste must be segregated at the source.
- Waste containers must be clearly labeled with waste category, date, department, and responsible person.
- Appropriate Personal Protective Equipment (PPE) must be worn during all waste handling activities.

5.2 Chemical Waste Handling

- Separate acids, bases, and solvents into compatible containers.
- No mixing of incompatible chemicals (e.g., acids + oxidizers).
- Store chemical waste in leak-proof plastic/metal containers labeled as per MPCB guidelines.
- Do not neutralize acids or bases in the lab without authorization.

5.3 Biological Waste Handling

- Treat infectious waste via chemical (e.g., hypochlorite) or thermal (autoclaving) decontamination.
- Biohazard waste must be collected in yellow/red bio-bins with approved autoclave bags.
- Indicate autoclaved bags using autoclave tape (dark bars indicate successful sterilization).

5.4 Radioactive Waste Handling

- Supervised by Radiation Safety Officer (RSO) only.
- Waste must be stored in shielded, labeled containers with access restricted to trained personnel.
- Follow disposal standards set by AERB and MPCB.



6. Waste Storage Facilities

- Designated Waste Sheds are located across the MIT campus, equipped with:
 - Ventilation, spill kits, fire extinguishers (ABC type)
 - Smoke/heat detectors and flameproof electrical systems
 - Fire breaks, secondary containment, and drainage systems
- Separate storage for flammable, corrosive, toxic, and reactive materials
- Entry restricted to authorized personnel only
- Daily inspection logs maintained by Housekeeping and Safety Cell

7. Collection and Disposal Protocol

Waste Type	Collection Frequency
Bio-hazardous Waste	Weekly
Chemical (Liquid & Solid) Waste	Monthly
Toxic Waste	Monthly
Waste Oil	Monthly
Empty Containers, Unknown Waste	Bi-monthly
Gas Cylinders	Every 6 months
Radioactive Waste	Monthly (on-campus disposal)

- Waste is collected from 10 designated pickup points across campus.
- All departments must transport waste to these points in sealed, labeled containers.
- Reminder emails are issued before each scheduled pickup.

7.1 Cleaning and labeling empty chemical bottles must follow safety and environmental protocols to prevent chemical exposure, cross-contamination, and regulatory non-compliance. Below are the standard procedures aligned with Maharashtra Pollution Control Board (MPCB) and institutional best practices:



Procedure for Cleaning Empty Chemical Bottles

7.1.1. Safety Precautions (Before Handling)

- Wear appropriate PPE: lab coat, gloves (chemical-resistant), eye protection, closed footwear.
- Work in a well-ventilated area, preferably under a fume hood.
- Read the MSDS (Material Safety Data Sheet) for the chemical residue in the bottle.

7.1.2. Triple Rinsing Method

This is the most commonly accepted method.

Step	Description
1st Rinse	Use a small volume of water (or suitable solvent) to rinse the bottle. Collect this rinse in a chemical waste container. This contains the highest concentration of residue.
2nd & 3rd Rinse	Use water to rinse again. These can typically be disposed of in the sink with copious running water, unless stated otherwise in the MSDS.
For Organic Solvents	Use a compatible solvent like ethanol or acetone for the first rinse instead of water. Follow MSDS instructions.
For Toxic or Hazardous Labels (e.g., Hg, Cr, Pb)	Rinses should all be collected as hazardous waste. Do not pour into drains.

7.1.3. Drying the Bottle

- Air dry in a fume hood or isolated area.
- Avoid direct exposure to sunlight or high-traffic areas.

7.1.4. Label Defacing and Relabeling of Clean Bottles

A. Label Removal/Defacing

- Strike out the original chemical name using a permanent black marker.
- Write "EMPTY & CLEANED" prominently on the bottle.
- If the original label is peelable, remove it completely.

B. New Labeling (As per MIT/MPCB Guidelines)

Use the standard Empty Chemical Bottle Label, which should include:



Field	To be filled
Department Name	
Lab In-charge	
Chemical Last Contained	
Date of Cleaning (DD/MM/YYYY)	
Cleaning Method Used	☐ Triple Rinse ☐ Solvent Rinse
Final Status	☐ Cleaned & Dry ☐ Unclean
Signature	

(You can get printed labels from MIT Housekeeping Office or download from the institute website.)

X Important Don'ts

- Do not reuse unclean bottles for new chemicals.
- Do not dispose of bottles without defacing the original label.
- Do not discard bottles labeled with radioactive or biohazardous materials unless approved by the RSO or biosafety officer.

8. Vendor and Compliance Management

- Waste disposal is conducted by MPCB-authorized vendors.
- MoUs are maintained with each vendor for:
 - Chemical waste
 - Bio-waste
 - Oil waste
 - Gas cylinder disposal
- Vendors must provide proof of disposal certificates after every collection.
- MIT holds a valid MPCB Authorization for handling all waste types.



9. Documentation and Reporting

- Maintain a centralized waste disposal log in each department.
 - All waste categories must be logged with:
 - Quantity
 - Nature of waste
 - Pickup date and vendor
 - Annual audit reports submitted to the MPCB as part of compliance.
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10. Emergency Preparedness

- In the event of chemical spills or exposure:
 - Use dry absorbents (never water) for cleanup.
 - Inform Safety Cell immediately.
 - Evacuate area if necessary and implement containment measures.
 - Emergency kits with spill control materials, PPE, and fire blankets to be available in each lab.
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11. Training and Awareness

- Annual training for all lab personnel on:
 - Hazard classification and labeling
 - Proper disposal techniques
 - Emergency response procedures
 - Display safety signboards and waste segregation posters in all labs.
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12. Review and Audit

- This policy will be reviewed annually by the Laboratory Safety Committee.

- Internal audits will be conducted every six months.
- Suggestions for improvement will be incorporated based on audit findings and MPCB updates.

Annexures

1. Template for Waste Labeling
2. Schedule of Waste Collection Points
3. *MPCB Certification (Copy attached) (Proposal Pending and under discussion)
4. List of Authorized Vendors
5. Safety Checklist for Laboratory Waste Handling

13. Laboratory Waste Management Committee (LWMC)

To ensure effective implementation, regular monitoring, and continuous improvement of the Laboratory Waste Management Policy, Maharashtra Institute of Technology (MIT), Chhatrapati Sambhajnagar shall constitute a Laboratory Waste Management Committee (LWMC).

13.1 Committee Composition

Sr. No.	Position	Designation/Department	Nem
1	Chairman	Senior Faculty Member (Nominated by Director)	Dr. Deepak Bornare
2	Member	Faculty Representative, Agricultural Engineering	Dr. Parik Potdar
3	Member	Faculty Representative, Plastic & Polymer Engineering	Ms. Aastha Dutta
4	Member	Faculty Representative, Basic Sciences & Humanities (BSH)	Dr. Arjun Nakhate
5	Member	Housekeeping Department Representative	Mr. Mazhar Mulla

13.2 Roles and Responsibilities

- **Chairman**
 - Oversee implementation of waste management policies and safety practices.
 - Convene quarterly meetings and report to the Director.
- **Faculty Members**
 - Ensure departmental compliance with segregation, storage, and disposal protocols.

- o Maintain disposal logs and liaise with authorized vendors.

13.3 Meeting Frequency

- The Committee shall meet once every quarter, and additional meetings may be convened in case of audits, non-compliance incidents, or policy updates.

Prepared By  Dr. Deepak Bornare Chairman, Laboratory Safety Cell Maharashtra Institute of Technology (Autonomous) Chhatrapati Sambhajinagar	Approved By  Director Maharashtra Institute of Technology (Autonomous) Chhatrapati Sambhajinagar
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Director
Maharashtra Institute of Technology,
Chhatrapati Sambhajinagar
(An Autonomous Institute)



Annexure 1: Waste Labeling Template

MIT Laboratory Waste Label

(To be affixed securely on all waste containers before collection)

Field	Details (to be filled)
Department Name	
Laboratory Name	
Contact Person	
Contact Number	
Type of Waste (Tick ✓)	☐ Chemical ☐ Bio-waste ☐ Toxic ☐ Oil ☐ Empty Bottle ☐ Radioactive ☐ Unknown ☐ Sharps
Chemical Name(s) / Description	
Quantity	
Date of Collection	
Remarks (if any)	

Note: Use printed labels or download from MIT website. Containers without proper labels will not be accepted.



Annexure 2: Waste Collection Point Schedule

MIT Campus: Waste Collection Points & Schedule

S.No	Department / Block	Collection Point Location	Schedule	Waste Types Collected
1	Agricultural Engineering	Behind Lab Block A	1st Monday Monthly	All except gas cylinders
2	Biotechnology	Service Corridor Ground Floor	1st Tuesday Monthly	All
3	Chemical Engineering	Chemical Storage Shed	2nd Monday Monthly	All
4	Basic Sciences	Near Main Gas Bank	2nd Tuesday Monthly	Chemical, Bio-waste
5	Mechanical Engineering	Workshop Compound	3rd Monday Monthly	Waste Oil, Sharps
6	Civil Engineering	Near Material Testing Lab	3rd Tuesday Monthly	Toxic, Empty Bottles
7	Pharmacy	Adjacent to Dispensing Unit	4th Monday Monthly	All
8	Computer Science	Service Entry – Server Room	As Needed	E-waste, Sharps
9	Central Instrumentation	Inside Instrument Room	Bi-weekly	Toxic, Unknown Waste
10	Campus Waste Shed	Main Storage Yard	Daily Access	Centralized Temporary Storage

Note: Departments are required to bring waste to the designated point with labels and logs.



Annexure 3: *Copy of MPCB Authorization (Proposal Pending and Under Discussion)

(Attach scanned PDF or copy of valid authorization license from MPCB for waste generation and disposal for MIT)

Document Title: Authorization under Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016

Issuing Authority: Maharashtra Pollution Control Board (Divisional Office, Chhatrapati Sambhajinagar)

Validity:

Authorization Number:



Annexure 4: List of Authorized Waste Disposal Vendors

Vendor Name	Waste Category	Contact Person	Contact Number	MoU Validity	MPCB Authorization No.
[Vendor A Name]	Chemical Waste				
[Vendor B Name]	Bio-waste				
[Vendor C Name]	Oil Waste				
[Vendor D Name]	Gas Cylinder Collection				

Note: Only vendors with valid MPCB licenses will be considered.



Annexure 5: Laboratory Waste Safety Checklist

Checklist for Safe Handling and Disposal of Laboratory Waste

Checklist Item	Yes / No	Remarks
Are containers labeled with waste type and date?		
Are incompatible chemicals stored separately?		
Is appropriate PPE worn by handlers?		
Are spill kits available in all lab areas?		
Are radioactive materials under RSO supervision?		
Are autoclaved bio-waste bags marked correctly?		
Are empty bottles triple-rinsed and defaced?		
Are emergency contact details posted in each lab?		
Are waste logs updated and verified monthly?		
Are expired/unknown chemicals identified and tagged?		