

# Standard Operating Procedure (SOP): Chemical, Pharmaceutical, and Infectious Waste Management

This SOP describes the **chemical, pharmaceutical, and infectious waste management** steps, including proper segregation of waste types, safe collection and storage practices, handling and transportation protocols, treatment and disposal methods compliant with regulatory standards, and procedures to minimize environmental impact and health risks. The goal is to ensure safe and effective management of hazardous wastes to protect personnel, the community, and the environment.

## 1. Purpose

To outline procedures for the safe and compliant management of chemical, pharmaceutical, and infectious waste in alignment with local, national, and international regulatory standards.

## 2. Scope

This SOP applies to all personnel involved in the handling, storage, transportation, treatment, and disposal of hazardous wastes within the facility.

## 3. Responsibilities

- All staff: Follow proper waste segregation, handling, and disposal procedures.
- Waste Management Personnel: Manage collection, storage, transportation, treatment, and record keeping.
- Supervisors: Ensure staff adherence to SOP and regulatory compliance, provide training.

## 4. Definitions

Waste Type	Description
Chemical Waste	Substances discarded from laboratories/industries, e.g., solvents, reagents, used cleaning agents.
Pharmaceutical Waste	Expired, unused, or contaminated drugs and vaccines.
Infectious Waste	Items contaminated with blood, body fluids, cultures, or infectious agents.

## 5. Procedure

### 5.1 Segregation of Waste

1. Identify waste at the point of generation.
2. Segregate into color-coded, clearly labeled containers as follows:
  - **Red**: Infectious Waste
  - **Blue or Yellow**: Chemical Waste
  - **Black**: Pharmaceutical Waste
3. Avoid mixing different waste types.
4. Use secondary containment for spill-prone materials.

### 5.2 Collection and Storage

1. Collect waste daily or as required to prevent overflow.
2. Wear appropriate PPE (gloves, mask, eye protection, gown/lab coat).
3. Store waste in designated, secure, and ventilated areas away from public access.
4. Maintain storage limits and do not exceed maximum holding times as per regulations.

### 5.3 Handling and Transportation

1. Inspect containers before transportation; ensure intact and sealed.

2. Transport using trolleys or carts dedicated for hazardous waste, avoiding manual carrying of heavy loads.
3. Label all containers with waste type, date, and origin before transport.
4. Minimize risk of spills/leakage via secondary containment measures.
5. Staff must be trained in spill response and emergency procedures.

## 5.4 Treatment and Disposal

- **Chemical Waste:** Treat as per chemical compatibility (neutralization, chemical deactivation, containment for offsite disposal).
- **Pharmaceutical Waste:** Return to manufacturer or dispose via incineration, encapsulation, or as per regulatory guidance.
- **Infectious Waste:** Autoclave, incinerate, or treat using approved disinfection methods; dispose as per medical waste regulations.

## 5.5 Documentation and Record Keeping

1. Maintain logs of waste generation, quantities, handling, treatment, and disposal.
2. Document incidents, spills, non-compliance, and corrective actions.
3. Retain records for the period required by regulation.

## 6. Spill and Exposure Response

1. Evacuate area if necessary and notify supervisor.
2. Contain spill using appropriate absorbents/neutralizers.
3. Clean up using PPE following safety data sheet (SDS) guidance.
4. Report incident and seek medical attention if exposed.

## 7. Training

- All personnel must undergo initial and periodic training on waste management procedures and emergency response.

## 8. Environmental and Health Considerations

- Implement waste minimization strategies to reduce quantity and toxicity.
- Monitor waste management processes to ensure compliance and minimize environmental impact.
- Review and update SOP annually or upon regulatory changes.

## 9. References

- Local and national hazardous waste regulations
- WHO Guidelines on Safe Management of Wastes from Health-Care Activities
- Manufacturer safety data sheets (SDS)