

Standard Operating Procedure (SOP)

Waste Treatment: Incineration and Autoclaving Processes

This SOP details the procedures for **waste treatment using incineration and autoclaving processes**, covering the preparation, operation, monitoring, and maintenance of both systems. It aims to ensure effective and safe disposal of hazardous and infectious waste by adhering to regulatory standards, minimizing environmental impact, and protecting personnel from exposure. The guidelines include waste segregation, equipment operation protocols, temperature and time controls, emission management, safety precautions, and proper documentation of all waste treatment activities.

1. Purpose

To establish standardized procedures for the safe, effective, and compliant treatment of waste using incineration and autoclaving methods.

2. Scope

This SOP applies to all personnel involved in the handling, treatment, and disposal of hazardous and infectious waste at the facility.

3. Responsibilities

- Facility Manager: Oversight and implementation of this SOP.
- Operators: Execution of waste treatment procedures and recordkeeping.
- Safety Officers: Monitoring safety compliance and environmental impact.

4. Materials and Equipment

Item	Use
Personal Protective Equipment (PPE)	Worker safety (gloves, gown, goggles, respirator)
Waste Segregation Bins	Separation of hazardous/infectious waste
Incinerator	High-temperature destruction of waste
Autoclave	Steam sterilization of infectious waste
Waste Transport Carts	Safe movement of waste materials
Temperature/Time Log System	Monitoring process parameters
Emission Monitoring Instruments	Control of atmospheric pollutants (for incinerators)

5. Procedure

1. Waste Segregation and Preparation

- Separate waste into designated bins according to hazard type.
- Label all waste containers appropriately.
- Transport waste to treatment area using proper equipment.

2. Incineration Process

- a. Inspect incinerator for operational readiness and cleanliness.
- b. Load waste carefully, avoiding overfilling.
- c. Set incinerator to required temperature (>850°C for hazardous waste).
- d. Start incineration cycle. Record start/end times and temperatures.
- e. Monitor emissions using designated instruments; respond to any alarms or abnormal readings.
- f. Allow incinerator to cool before ash removal. Dispose ash as per regulatory standards.
- g. Document each cycle in the treatment logbook.

3. Autoclaving Process

- a. Check autoclave functionality and cleanliness.
- b. Load waste without overpacking to allow steam circulation.
- c. Select the correct cycle (typically 121°C, 15 psi, 30-60 min).
- d. Start autoclave and record cycle parameters.
- e. Verify sterilization with indicators (biological/chemical).
- f. Once cooled, remove and transfer treated waste to the designated disposal area.
- g. Log all processes and any irregularities in the treatment record.

- 4. **Cleaning and Maintenance**
 - Clean equipment and surrounding area after each use following safety protocols.
 - Carry out routine maintenance and calibration according to the manufacturer's instructions.
 - Document maintenance activities.
- 5. **Safety Precautions**
 - Wear required PPE at all times.
 - Handle all waste as potentially infectious or hazardous.
 - Follow emergency procedures in case of equipment malfunction or exposure.
- 6. **Documentation and Recordkeeping**
 - Record all treatment cycles, including date, time, operator, type and quantity of waste, temperatures, cycle durations, and indicators used.
 - Report and document all incidents or deviations from SOP immediately.

6. References

- Regulatory standards (e.g., local Environmental Protection Agency, OSHA, WHO guidelines)
- Incinerator and autoclave manufacturer manuals
- Facility-specific waste management protocols

7. Review and Revision History

Date	Version	Description of Change	Approved By
2024-06-10	1.0	Initial issue	Facility Manager

End of SOP