

*Insert Facility/Institute Logo Here*

**Waste Handling and Disposal Program Plan *TEMPLATE***

|  |  |
| --- | --- |
|  | |
| Facility: | |
| SOP Title: *Waste Handling and Disposal Program Plan* | |
| Document Number: *4-02-008* | Version Number: *01* |
| Process Leader: | Effective Date: *MM-DD-YYYY* |
| Other documents cross-referenced in this SOP (i.e., manuals, SOPs, forms, records):   * Biorisk Management Manual (Chapter V, Biorisk Assessment; Chapter XII, Equipment; Chapter XVIII, Disinfectants and Decontamination; Chapter XIX, Waste Handling and Disposal) (*4-00-001*) * Personnel Protective Equipment SOP (*4-02-004*) * Autoclave Operation and Maintenance SOP (*3-02-006*) * Waste handling and disposal SOPs | |

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| Revision Number | Sections Changed | Description of Change | Date | Approved By |
|  |  |  |  |  |

**INSTRUCTIONS:** The Biorisk Management Manual and supporting Standard Operating Procedure (SOP) templates provide a general overview of common considerations and information that should be addressed within a biorisk management system and program. These templates are not exhaustive and facilities must customize each document to ensure it is locally applicable and relevant.

* **Black text** can be considered generic text which may be appropriate for inclusion in a facility’s biorisk management manual and SOPs.
* ***Red text*** should be considered guidance or examples and must be reviewed and replaced with facility-specific information.

1. Purpose

The purpose of this document is to establish the Waste Management Plan for handling and disposing of waste generated in *[Insert Facility Name]*’s facilities to ensure proper collection, identification, segregation, packaging, labeling, decontamination, storage, transportation and final disposition for the protection of personnel, environment and community from potential contamination and/or exposure to hazardous materials.

1. Scope

This document applies to all facility personnel who work with within the *[Insert Facility Name]* facilities.

1. Definitions and Terminology *[Adapted from WHO Laboratory Biosafety Manual 4th Edition unless otherwise indicated]*

Accident- An inadvertent occurrence that results in actual harm such as infection, illness, injury in humans or contamination of the environment.

Biohazard-potential source of harm caused by biological materials [C]

Biological agent- A microorganism, virus, biological toxin, particle or otherwise infectious material, either naturally occurring or genetically modified, which may have the potential to cause infection, allergy, toxicity or otherwise create a hazard to humans, animals, or plants.

Biorisk-effect of uncertainty expressed by the combination of the consequences of an event (including changes in circumstances) and the associated “likelihood” of occurrence, where biological material is the source of harm. The harm can be the consequence of an unintentional exposure, accidental release, or loss, theft, misuse, diversion, unauthorized access, or intentional unauthorized release. [C]

Biorisk management system- Coordinated activities to direct and control an organization with regard to biorisk [A]

Biosafety- Containment principles, technologies and practices that are implemented to prevent unintentional exposure to biological agents or their inadvertent release

Biosecurity- Principles, technologies and practices that are implemented for the protection, control and accountability of biological materials and/or the equipment, skills and data related to their handling. Biosecurity aims to prevent their unauthorized access, loss, theft, misuse, diversion or release.

Decontamination - Reduction of viable biological agents or other hazardous materials on a surface or object(s) to a pre-defined level by chemical and/or physical means

Disinfection- A process to eliminate viable biological agents from items or surfaces for further safe handling or use.

Incident- An occurrence that has the potential to, or results in, the exposure of facility personnel to biological agents and/or their release into the environment that may or may not lead to actual harm.

Sterilization – A process that kills and/or removes all biological agents including spores.

Toxin-the toxic material of plants, animals, microorganisms, viruses, fungi, or infectious substances, or a recombinant molecule, whatever its origin or method of production, including:

* Any poisonous substance or biological product that may be engineered as a result of biotechnology produced by a living organism;
* Any poisonous isomer or biological product, homolog, or derivative of such a substance [D]

1. Responsibilities

* *Top or Senior Management* ensures that:
  + This plan is established, validated, implemented and enforced effectively
  + SOPs are developed at workspace-level to comply with this plan
  + Users are trained on the SOPs which support this plan and are competent prior to independent facility work
  + The organization develops a biorisk management program: a set of tools, information and associated actions that are overseen, enforced and continuously improved upon
* *Scientific Manager* ensures that:
  + Waste handling and disposal supplies are ordered to appropriate specifications
  + Waste handling and disposal supplies are adequately maintained
  + Any third-party waste disposal companies handle waste appropriately and ethically
  + Approve SOPs developed to support implementation of this plan
* *Biorisk Management Advisor*(or Biosafety Officer):
  + Advises upon this and other processes impacted by facility or organizational biosafety and biosecurity programs
* *Facility personnel* and *support personnel* involved in waste handling:
  + Follow the procedures outlined and supporting this plan
  + Report any problems to the *Facility Manager*
  + Develop/follow workspace SOPs to support implementation of this plan

1. Waste Management Plan

The goal for a waste handling system is to ensure hazardous waste, which may include biohazardous waste, sharps waste, chemical waste, genetically-modified organisms, and radiological waste, has been processed, contained, and/or rendered no longer hazardous before it enters the general community. Hazardous waste poses a risk to personnel within the facility (including facility workers and others involved in waste handling), visitors, the general public, and the environment if not handled properly.

An effective and sustainable waste handling program must ensure that all personnel involved with waste handling and disposal are aware of the potential risks, are trained to mitigate those risks, and provided the appropriate tools (e.g. Personal Protective Equipment (PPE), waste collection containers, signage) to handle waste in the facility safely. In addition, communication between all personnel involved with waste generation, handling, and disposal require clear communication pathways to ensure that the management system is meeting the needs of all users. Therefore, stringent procedures, clear labeling of the waste items, training/retraining, and communication are important elements of the system as are periodic reviews of procedures and reassessment of risks.

A risk assessment should be performed to determine the best method(s) for waste collection, handling, transport, storage, decontamination/disinfection, and final disposal. The risk assessment should prompt an informed development of a risk mitigation plan, including elimination of hazards by work modifications, substitutions of less hazardous equipment or materials, engineering and administrative controls and provision of PPE. All infectious waste generated from the facility should be decontaminated prior to disposal. Decontamination as close as possible to the point or source of generation fosters safer waste handling and minimizes the chance of personnel inadvertently coming in contact with infectious material. When it is not possible to dispose of waste close to the source, safe transportation procedures should be established to reduce the risk of contamination to any personnel. In addition, waste handling systems should be developed and implemented in accordance with local, national, and international regulations and/or requirements. *[Reference applicable waste and disposal-related regulations here]*

*[Provide additional details about your facility’s waste handling and disposal process below or reference the Waste Handling and Disposal SOPs]*

1. Facility-Level Policies and Considerations for Waste Management Plan

## Sharps

*FAST FACTS****:***

* Use extreme caution when working with sharps.
* Dispose of needles and other sharps in puncture resistant containers ("sharps" containers).
* Needles and syringes or other sharp instruments should be restricted in the facility for use only when there is no alternative. Whenever practical, facility supervisors should adopt improved engineering and work practice controls that reduce the risk of sharps injuries.
* Never recap a used needle or otherwise manipulate it by hand.
* Needles, scalpels, and razor blades may only be disposed of in approved puncture-resistant sharps container, adequately marked.
* *Used needles must not be bent, sheared, broken, recapped, removed from the syringe to which they are attached or otherwise manipulated by hand before disposal*. *[This is the best practice. In the case that needles are reused, this section needs to be revised].*
* Broken glassware must not be handled directly but must be removed my mechanical means such as a brush and dustpan, tongs, or forceps. Glass ware should be substituted with plastic ware whenever possible.
* Handle paper with care, paper can also cut skin.

## Waste Handling and Disposal

*FAST FACTS****:***

* All cultures, stocks, contaminated wastes and other regulated medical waste are disposed of in accordance with [insert facility name] policy and procedures (refer to regulation, SOP or similar).
* Dispose of waste properly (refer to Waste Handling and Disposal SOP).
* Waste containers must NEVER be filled to a degree where the lid/bag closure cannot close tightly and securely.
* Waste containers must never be filled over the weight limit.
* Waste should always be discarded in the appropriate bags/sharps containers etc. according to *[insert institution name]* policy.
* Sharps containers should be used with the lids on, and the container lid should be used to pull the needle of the syringe.
* The sinks and sewer system may only receive the following liquid waste:

*[Insert according to institutional policy]*

### Inactivation of Liquids.

*FAST FACTS****:***

* **Heat:** Biohazardous liquids can be autoclaved if the autoclave is designed for liquid cycles. NEVER autoclave infectious waste that contains a mixture of chemicals, corrosive, volatile, explosive or radioactive material.
* **Chemicals:** Another way to decontaminate liquids may be decontaminated by adding bleach to a final concentration of 10% or other appropriate disinfectant to a final concentration as recommended by the manufacturer. Use durable, leak proof containers must be used for liquid waste. Mix well and allow to sit for at least 15 minutes or the manufacturer’s recommended time. Pour decontaminated liquid into the sink and rinse with copious amounts of cold water. Note that not all liquid waste is compatible with certain chemical disinfectants and follow supervisor directions.
  + Proper consideration must be given to temperature, concentration contact time, pH, the presence and state of dispersion, penetrability and reactivity of organic material. Small variations in these factors may make significant differences in the effectiveness of decontamination.
  + Shelf life of the chemical and storage temperature/sunlight are also crucial factors.

### Infectious Biological Waste Types:

* Cultures and stocks of potentially infectious agents, or microorganisms from diagnostic, pathological, hospital, research, quality control areas and vaccine productions.
* Live and attenuated vaccines.
* Disposable containers, materials, and supplies that may have been contaminated during the manipulation of microbial cultures and stocks.
* Animal carcasses/animal body parts, bedding from research.
* Cultures, tissues, specimens of body fluids, or potentially infectious wastes are placed in a container with a cover that prevents leakage during handling, processing and storage.
* Genetically modified organisms known to cause infection.

**Infectious Biological Waste Treatment**

* **Heat:** Biohazardous waste including animal parts can be autoclaved if the autoclave is designed for it and there is adequate ventilation.
* NEVER autoclave infectious waste that contains a mixture of chemicals or radio-active material.

### Radioactive Mixed Waste

* + Do not put radioactive material in the infectious waste stream.
  + Decontaminate infectious material with an appropriate disinfectant.
  + Collect decontaminated radioactive mixed waste in the appropriately labeled radiation bin.[insert how the institution handles radioactive waste].

### Chemical Contaminated Waste

* + Segregate infectious waste that is contaminated with chemicals into appropriate collections devices (biohazard bag or sharps container) and label with “Chemical Contaminated” – DO NOT AUTOCLAVE.
  + Dispose of chemical contaminated waste according to[insert how the institution handles this].

### Sharps containing waste

* Careful management of needles and other sharps are of primary importance. Precautions should be taken with sharp items that include, needles, syringes with attached needles, scalpel or razor blades, scissors, lancets, guide wires and contaminated glass Pasteur pipettes, etc. Needles must not be bent, sheared, broken, recapped, removed from disposable syringes, or otherwise manipulated by hand before disposal. Disposable sharps must be placed in a plastic sharps container as soon after use as possible. Use one hand for the procedure. Sharps container should be kept in the immediate vicinity of the workplace. Sharps containers are available from[insert from where].
* Sharps containers[insert how they are disposed of].

### Infectious animal waste

* Animal carcasses and bedding must be treated before final disposal [describe how].

### Human Cadavers and/or Body Parts

Human cadavers and recognizable human body parts (blood, dialysate, cerebrospinal, synovial, pleural, peritoneal and pericardial fluids and their respective containers require special handling for disposal.

* Items saturated or dripping with human blood or blood products.
* Items caked with dried human blood or blood products.
* *Intravenous bags. [Delete this section if this type of trash is not relevant for the institution.]*

### *“Hospital-Like” Waste*

*Hospital-like wastes are containers, bags, or tubing which is not contaminated with human blood, body fluids, human derived or biohazardous materials, hazardous chemicals, or radioactivity and can be disposed of as regular trash. Examples of these materials include: Urine collection bags & tubing, IC solution bags & tubing, colostomy, ileostomy, urostomy bags, plastic fluid containers, enteral feeding containers & tubing, hemovacs, tubing, enema bottles, and thermometer probe covers. [Delete this section if this type of trash is not relevant for the institution.]*

### Broken Clean Glassware

* If broken glassware does not contain or is not contaminated with radioactive material (any amount), chemicals (more than a trace amount) or infectious material (any amount):
* This type of waste must be put into any ordinary cardboard box, lined with a regular trash bag. Once full, the bag top should be twisted and taped closed, the box top taped shut, and labelled “Sharps”. This type of waste can then be treated as regular trash.
* Use of glass Pasteur Pipettes is discouraged. Glass pipettes should be replaced with safer alternatives (i.e. plastic) as recommended in the BMBL, 5th ed.
* Sharps containers must be located as close as possible to the area where sharps are used and should not be stored above eye level. When the sharps container is 2/3 full, close until lid “clicks” securely. Contact (insert person/department) to request a waste pick up by calling (insert phone no) or submit a PICK-UP request online or (fill in the procedure at the institution).

### Other Biological Waste

This is biological waste that is not known to be pathogenic to humans, are typically handled on the bench, does not cause disease and is not regulated by national authorities. These materials may be disposed in the regular waste stream without prior treatment; however, facilities should consider autoclaving or chemical inactivation prior to final disposal based on risk assessment and local permits.

* RG1 microorganisms (typically handled on the bench and not known to cause disease in healthy humans).
* Tissue culture other than Human or Non-Human Primate (e.g. rodent, avian, insect, plant, cells).
* It should be considered if “clean” examination (latex) gloves should go in this part or in clean medical waste. Even though these gloves have not been in contact with potentially infectious agents it can be perceived as the institution does not have a safe waste handling policy by the surrounding community and damage the reputation*.*

This Chart is designed to aid in determining how to collect, decontaminate, and dispose of your waste

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Type of Waste** | **RG level** | **Proper Collection & Containers** | **Decontamination Method** | **Disposal** |
| **Liquids** | **RG1**  **Non-Biohazardous** | **Use autoclavable, leak proof plastic or glass if necessary.** | **Not Required, however autoclaving or chemical inactivation recommended** | **Sink (down the drain flushed w/ water** |
| **RG2 and higher**  Biohazardous | **Use autoclavable, leak proof plastic bags or glass if necessary. Mark w Biohazard symbol.** | **Autoclaving or chemical inactivation required** | **Sink (down the drain flushed w/ water** |
| **Solids** | **RG1**  **Non-Biohazardous** | **May be deposited in regular waste/trash receptacles** | **Not required** | **Place in regular trash** |
| **RG2 and higher Biohazardous** | **Place in autoclave bags. Use double containment.**  Mark w Biohazard symbol. | **Autoclaving or incineration required** | **Place in regular trash** |
| **Sharps** | **RG1, RG2 and higher** | **Place in sharps containers (needles, lancets, sutures, razor blades, scalpels)**  Other contaminated sharp-like materials that can puncture skin (e.g. broken glass, Pasteur pipettes, etc.) must be placed in sharps container. | **Autoclaving or incineration required or pick up by medical waste company.** | ***[Institution to fill in]*** |
| **Animal Carcasses** | **Non Biohazardous/Chemical/Rad** | **[Place in bag …. And then what?]** | **[Institution to fill in]** | ***[Institution to fill in]*** |
| **RG2 and higher**  Biohazardous | **[Place in bag …. And then what?]** | **Autoclaving or incineration required** | ***[Institution to fill in]*** |
| **Other Animal Waste (e.g. soiled bedding, cages)** | **RG1**  **Non-Biohazardous** | **[Place in bag …. And then what?]** | **[Institution to fill in]** | ***[Institution to fill in]*** |
| **RG2 and higher**  Biohazardous | **[Place in bag …. And then what?]** | **Autoclaving or incineration required** | ***[Institution to fill in]*** |

Waste Handling System

* 1. Waste Identification and Segregation – *[Insert Facility Name]* uses waste segregation in its waste management system for the identification and separation of facility waste and waste containers (e.g., solids, liquids, sharps, chemicals). *Use pictures, flow charts and other job aides to communicate proper* *procedures.*

*[Insert general location of waste generation and waste collection for each type of waste generated as close to generation point as reasonable (e.g. solid biohazardous waste with sharps, liquid biohazardous waste to be decontaminated by autoclave, liquid biohazardous waste to be decontaminated by chemical disinfection, etc.) to be used to guide specific work space-level SOPs in Table 1]. If color system is regulated by law or policy, please describe here. (ex. Red=biohazard, Yellow=trace chemical, Black=solid non-infectious, etc.)*

**Table 1:** Facility Policies on Waste Identification and Segregation

|  |  |  |  |
| --- | --- | --- | --- |
| Waste Description | Waste Type | Point of generation | Point of collection |
| *Disposable gloves, paper towels,* | *Solid biohazardous waste, no sharps* | *Bench top area B* | *Biohazard bag set inside autoclavable tub at bench top area B* |
| *Filter Effluent* | *Liquid waste to be autoclaved* | *Biosafety cabinet* | *500 mL autoclavable bottle located Inside biosafety cabinet* |
| *Pipette tips* | *Treat as sharps* | *Biosafety cabinet* | *Biohazard bag set inside autoclavable tub inside biosafety cabinet, placed in hard sided box after autoclaving. Do not bag.* |
| *Etc.* |  |  |  |

* 1. Waste Collection - Waste should be collected at the point of generation. Waste containers, pans, or jars, preferably unbreakable (e.g. plastic), should be appropriate size, shape, and rigidity for waste type and conveniently located in the workspace. All containers must be clearly marked with waste type and biohazard symbol as appropriate. *How much waste is allowed at collection point? How long can waste be held at generation point? How is waste secured at collection point? All waste containers should be clearly labeled with relevant information (e.g., source, symbols, colors, contents, responsible party contact information).*
  2. Waste Transportation *– How or when is waste moved from point of generation to central storage collection point or final disposition? Does the outside of the container need to be surface decontaminated before transport (such as those containers which have been in a Biological Safety Cabinet)? Is waste treated before or after transportation? Who is responsible for transportation of waste? What PPE is required for waste transportation? What container requirements for transportation? Wheeled carts or containers necessary? What security precautions are taken during transportation of waste?*
  3. Waste Storage*- How long and where can waste be stored and at what temperature? Untreated biohazardous waste should be secured appropriately to prevent unauthorized removal. Who is responsible for incidents or spills at waste storage location?*
  4. PPE for Waste Handling *- Are PPE requirements different for handling before and after treatment? Proper PPE should be sturdy and protect against sharps, chemicals, and high temperatures, as appropriate.*
  5. Handling Mixed Waste *- If biohazardous waste is mixed with other hazardous waste (e.g. chemical or radioactive), refer to the facility’s chemical hygiene plan and/or consult with the appropriate safety officer to determine how the hazardous waste should be handled. Detail steps to avoid chemical reactions from chemical waste that might be combined or cannot be stored together.*
  6. Sharps Handling and Disposal *– Sharps use should be minimized in the facility as they are a major source of accidents. Use blunt-tipped scissors. Never bend, recap or manipulate sharps by hand. Treat pipette tips as sharps to avoid bag punctures and spills of waste.*
  7. Waste Treatment*- Where does decontamination take place with regard to the waste creation? Is there a secondary form of decontamination necessary? How is waste decontamination verified or validated?**Typical treatment options include autoclaving followed by incineration in accordance with local public health and air pollution authorities and/or pick up by municipal waste providers for final disposition (e.g., landfill).*
  8. Waste Minimization *- For example, uncontaminated exterior packaging material and boxes should be disposed of in municipal waste streams. Disposable vs. durable materials: benefits and risks should be discussed in areas where safe and secure waste management poses challenges and considered during risk assessment process.*
  9. Emergency Operations*-In the event of system failure (e.g., autoclave or incinerator malfunction) describe alternative storage and/or treatment options and plans.*

1. Facility-level Processes for Plan Management
   1. Materials

* Disinfectant: *(such as 5.25% sodium hypochlorite solution based on agent-specific risk assessment) Discuss waste process for use of different disinfectants and provide Safety Data Sheets for all chemical disinfectants used in the facility. Refer to Chemical Hygiene Plan for procurement, handling, and disposal.*
* Biohazard waste bags and containers: *Discuss procurement and ordering process for materials, where facility staff can request additional collection materials, and how much inventory of bags and containers must be available for continuity of work. Are there local/national standards/regulations for color/label/size etc. of bags used?*
* Liquid waste containers: *Facility must make liquid waste containers available, and set policy on what is and is not considered liquid waste, how long liquid waste can be stored at generation point, how liquid waste is treated and disposed, and when container is considered “full”.*
* Sharps containers: *Facility must make sharps containers available, and set policy on what is and is not considered sharps waste (plastic and pipette tips?), how long sharps containers can be left at point of generation before treatment, height of container placement (to allow visual inspection of volume in container, and when container is considered “full”.*
* Labeling materials: *Facility must make labelling materials available, including biohazard, chemical hazard, radioactive hazard, and color-coded containers as determined by policy or regulation.*
* PPE: *Facility must make PPE available and set requirements for waste handlers, as determined by risk assessment.*
* Transport cart: *Facility must make PPE available and set policy on when transport cart required, where are carts stored, and when/how carts must be cleaned and decontaminated. Carts should be constructed and loaded in a way that minimizes the chance for items to tip over or fall off the cart.*
  1. Equipment
* Autoclave: *Refer to Facility Operations and Maintenance manual for care and use of autoclave.*
* Incinerator: *Refer to Facility Operations and Maintenance manual for care and use of incinerator.*
  1. Records and Forms
* Waste treatment records: *Facility must provide forms and logs as required by policy for keeping record of waste, decontamination, and validity testing of waste treatment methods.*
* Waste disposal records: *Facility must provide forms and logs as required by policy for keeping record of final disposition of treated waste.*

1. **Work Area-level Processes to Implement Waste Management Plan** *(refer to Attachment A, Waste Handling and Disposal Template* *Flow Chart)*
   1. Collection
      1. *Determine appropriate PPE for waste handling at collection point.*
      2. *Describe where waste is collected at generation point.*
   2. Identification and Segregation
      1. *Are there relevant facility, local, national, and/or international regulations or guidelines for waste segregation?*
      2. *Refer to Biorisk Management Manual (BRM) Manual: Chapter V, Risk Assessment; Chapter XVIII, Disinfectants and Decontamination; Chapter XIX, Waste Handling and Disposal and Waste Management Program Plan section VII: Facility-Level Processes*
      3. *Determine appropriate actions (steps B-F) for all types of facility waste (e.g., liquids, solids, chemicals, sharps, tissues (anatomical material), potentially infectious materials, perceived medical waste, general refuse (non-infectious, non-hazardous, recyclables), radioactive materials) per facility policy.*
      4. *Provide exact details of facility-specific waste following facility definitions of all types of facility waste (e.g., what criteria/items constitute sharps, what material can be recycled?)*
      5. *Repeat remainder of procedure for each category of waste (refer to Table 2. [Insert Facility Name] Waste Handling and Disposal Summary Table)*
   3. Packaging and Labeling
      1. *Determine what type of waste collection containers are appropriate in size and composition for the intended waste (e.g., sharps, liquids, chemicals) in the facility*
      2. *Use appropriate tags, labels, or other items used to label waste as determine by facility plan*
      3. *Provide details required on label as determined by facility plan (e.g., date, type and source of waste, point of contact, room numbers, phone number)*
      4. *Follow any special packaging instructions for waste to be autoclaved (e.g., to allow adequate steam penetration)?*
   4. Transportation and Storage
      1. *Follow facility policy on how packaged waste is transported from the facility to the storage or treatment site*
      2. *Use appropriate containers or carts for transport as required by facility plan (e.g., sealed, unbreakable and leakproof containers)*
      3. *Describe PPE for waste transport as required by risk assessment for specific facility hazards (refer to PPE SOP)*
   5. Decontamination and Treatment
      1. *Describe PPE requirements for waste treatment conducted in the facility, as determined by risk assessment.*
      2. *Describe treatment/decontamination and validation methods (refer to Biorisk Management Manual (BRM) Manual: Chapter XII, Equipment; Chapter XVIII, Disinfectants and Decontamination; Autoclave: O&M SOP, Operations and Maintenance Manual) for all treatment and decontamination within the facility for each type of waste.*
      3. *Describe contingency plans to address events/situations that interfere with routine operations (e.g., loss of power, equipment failure)*
   6. Final disposition
      1. *Are there relevant facility level policies for waste disposal?*
      2. *Describe how treated waste is disposed of (e.g., onsite incinerator, off-site incinerator, municipal waste vendor/services) if within the facility.*
      3. *Describe PPE for waste disposal (refer to PPE SOP) if within the facility.*
      4. *Is final disposition the same or different for each category of waste?*
      5. *Are there restrictions on use of sanitary sewer (liquids/chemicals) and landfill (solids/sharps/perceived medical waste)?*
      6. *Describe contingency plans to address events/situations that interfere with routine operations (e.g., lack of fuel, equipment failure, delayed pick up)*
      7. *Are waste treatment and/or disposal records required?*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Table 2. *[Insert Facility Name]* Waste Handling and Disposal Summary Table** | | | | | | |
| Type of Waste | Packaging | Labeling | Transportation | Storage | Decontamination Treatment | Final Disposal |
| *Liquid, infectious* |  |  |  |  |  |  |
| *Liquid, chemical* |  |  |  |  |  |  |
| *Solid, infectious* |  |  |  |  |  |  |
| *Solid, chemical* |  |  |  |  |  |  |
| *Solid, sharps* |  |  |  |  |  |  |
| *General refuse* |  |  |  |  |  |  |
| *Radioactive* |  |  |  |  |  |  |
| *Others* |  |  |  |  |  |  |

1. References
   1. Centers for Disease Control and Prevention (CDC)/National Institutes of Health (NIH), Biosafety in Microbiological and Biomedical Laboratories (BMBL), 6th Edition, <https://www.cdc.gov/labs/BMBL.html>
   2. CDC, Biosafety in Microbiological and Biomedical Laboratories, Appendix A—Primary Containment for Biohazards: Selection, Installation, and Use of Biological Safety Cabinets, 6th Edition
   3. International Organization for Standardization (ISO). ISO 35001:2019 Biorisk Management for Laboratories and Other Related Organisations, <https://www.iso.org/standard/71293.html>
   4. Salerno, RM and Gaudioso, J. Laboratory Biosecurity Handbook, CRC Press, Boca Raton, FL, 2007
   5. Salerno, RM and Gaudioso, J. Laboratory Biorisk Management: Biosafety and Biosecurity. CRC Press, Boca Raton, FL, 2015.
   6. World Health Organisation (WHO), Biorisk Management: Laboratory Biosecurity Guidance, September 2006, <http://www.who.int/csr/resources/publications/biosafety/WHO_CDS_EPR_2006_6.pdf>
   7. WHO, Laboratory Biosafety Manual, 4th Edition, <https://www.who.int/publications/i/item/9789240011311>
   8. WHO, Laboratory Quality Management System Handbook, 2011, <http://www.who.int/ihr/publications/lqms_en.pdf>
   9. WHO, Laboratory Quality Management System Training Toolkit, <https://www.who.int/ihr/lyon/lqms_cd_cover_oct_09_rev.pdf>

1. Attachments
   1. Waste Handling and Disposal SOP Template Flow Chart



**1**

Waste is collected

at point of

generation

·

*Determine appropriate PPE for waste handling*

*(*

*refer to PPE SOP*

*)*

·

*Describe where waste is collected*



**Attachment A**

, Waste Handling and

Disposal SOP Template Flow Chart

**End**

·

*Determine what type of waste collection containers are*

*appropriate in size and composition for the intended waste*

*(*

*e*

*.*

*g*

*.*

*,*

*sharps*

*,*

*liquids*

*,*

*chemicals*

*)*

·

*Describe tags*

*,*

*labels*

*,*

*or other items used to label waste*

·

*Describe details to be included in label*

*(*

*e*

*.*

*g*

*.*

*,*

*date*

*,*

*type and source*

*of waste*

*,*

*point of contact*

*,*

*room,*

*phone number*

*)*

·

*Are their special packaging instructions for waste to be autoclaved*

*(*

*e*

*.*

*g*

*.*

*,*

*to allow adequate steam penetration*

*)*

*?*



**3**

Waste is packaged

and labeled



**4**

Waste is

transported and

/

or

stored



**5**

Waste is treated

and

/

or

decontaminated



**6**

Final disposition of

waste

·

*Describe how packaged waste is transported from the work area*

*to the storage or treatment site*

·

*Describe the type of containers or carts used for transport*

*(*

*e*

*.*

*g*

*.*

*,*

*sealed*

*,*

*unbreakable and leakproof containers*

*)*

·

*Describe PPE for waste transport*

*(*

*refer to PPE SOP*

*)*

·

*Describe PPE for waste treatment*

·

*Describe treatment*

*/*

*decontamination and validation methods*

*(*

*refer to Biorisk Management Manual*

*(*

*BRM*

*)*

*Manual*

*:*

*Chapter XII*

*,*

*Equipment*

*;*

*Chapter XVIII,*

*Disinfectants and*

*Decontamination*

*;*

*Autoclave*

*:*

*O*

*&*

*M SOP*

*)*

·

*Describe contingency plans to address events*

*/*

*situations that*

*interfere with routine operations*

*(*

*e*

*.*

*g*

*.*

*,*

*loss of power*

*,*

*equipment*

*failure*

*)*

·

*Are there relevant local*

*,*

*national*

*,*

*and*

*/*

*or international regulations*

*or guidelines for waste disposal*

*?*

·

*Describe how treated waste is disposed of*

*(*

*e*

*.*

*g*

*.*

*,*

*onsite incinerator*

*,*

*off*

*-*

*site incinerator*

*,*

*municipal waste vendor*

*/*

*services*

*)*

*?*

·

*Describe PPE for waste disposal*

*(*

*refer to PPE SOP*

*)*

·

*Is final disposition the same or different for each category of waste*

*?*

·

*Are there restrictions on use of sanitary sewer*

*(*

*liquids*

*/*

*chemicals*

*)*

*and landfill*

*(*

*solids*

*/*

*sharps*

*/*

*perceived medical waste*

*)*

*?*

·

*Describe contingency plans to address events*

*/*

*situations that*

*interfere with routine operations*

*(*

*e*

*.*

*g*

*.*

*,*

*lack of fuel*

*,*

*equipment*

*failure*

*,*

*delayed pick up*

*)*

·

*Are waste treatment and*

*/*

*or disposal records required*

*?*

·

*Are there relevant local*

*,*

*national*

*,*

*and*

*/*

*or international regulations*

*or guidelines for waste segregation*

*?*

·

*Refer to Biorisk Management Manual*

*(*

*BRM*

*)*

*Manual*

*:*

*Chapter V*

*,*

*Risk Assessment*

*;*

*Chapter XVIII*

*,*

*Disinfectants and*

*Decontamination*

*;*

*Chapter XIX*

*,*

*Waste Handling and Disposal*

·

*Determine appropriate actions*

*(*

*steps*

*2*

*-*

*6*

*)*

*for all types*

*of facility waste*

*(*

*e*

*.*

*g*

*.*

*,*

*liquids*

*,*

*solids*

*,*

*chemicals*

*,*

*sharps*

*,*

*tissues*

*(*

*anatomical material*

*)*

*,*

*potentially infectious materials*

*,*

*perceived*

*medical waste*

*,*

*general refuse*

*(*

*non*

*-*

*infectious*

*,*

*non*

*-*

*hazardous*

*,*

*recyclables*

*)*

*,*

*radioactive materials*

*)*

·

*Provide facility*

*/*

*process*

*-*

*specific definitions of all types*

*of facility waste*

*(*

*e*

*.*

*g*

*.*

*,*

*what criteria*

*/*

*items constitute sharps*

*,*

*what*

*material can be recycled*

*?*

*)*



**2**

Determine type of

waste and segregate



BRM Manual



PPE SOP



BRM Manual



Autoclave

:

O

&

M

SOP



PPE SOP