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GRC Environmental Programs Manual—Chapter 23

Medical Waste Management

Approved by: Energy and Environmental Management Office Chief

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**NASA - Glenn Research Center
Cleveland, OH 44135**

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Change Record

Revision	Effective Date	Expiration Date	C-25, Change Request #	Description
A	4/2015	4/2020		Corrected name of office on title page Page 8 – replaced company name of current janitorial contractor with “janitorial contractor” Changed COTR to COR throughout document Changed SHED to SHeD where applicable Updated links and corrected form names Added revision dates to forms

***Include all information for each revision. Do not remove old revision data. Add new rows to table when space runs out by pressing the tab key in the last row, far right column.*

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Chapter 23—Medical Waste Management

NOTE: This chapter is maintained and approved by the Energy and Environmental Management Office (EEMO). The last revision date of this chapter was March 2015. The current version is maintained on the Glenn Research Center internet at <http://www.grc.nasa.gov/WWW/FTD/EEMO/index.html>. Approved by: Chief of Energy and Environmental Management Office.

1.0 PURPOSE

This chapter establishes the policy and procedures and assigns the responsibilities necessary for the management of infectious wastes (IWs) at the NASA Glenn Research Center (GRC). All generators of IW must be aware of the current policies and procedures and the impact that they have on their operations.

2.0 APPLICABILITY

This chapter applies to all organizational elements of GRC Lewis Field (LF) and Plum Brook Station (PBS). The guidance provided in this chapter is applicable to GRC employees and support service contractors at all levels who in any way participate in the development and execution of NASA actions. This includes, but is not limited to, biological research laboratories, Medical Services Office, personal usage, and spill response. Employees can refer to Chapter 11, Bloodborne Pathogens, of the Occupational Health Manual (OHM) to determine their roles and responsibilities on personal usage and potential need to participate in the Bloodborne Pathogen Program.

3.0 BACKGROUND

3.1 What is an Infectious Waste?

In Ohio, IW is defined by categories. Nearly all of the categories of IW depend upon the presence of infectious agents or the possibility of the presence of infectious agents. The exceptions to this are blood and blood products, cultures, and sharps categories, which the generator must handle as an IW. IW categories are listed below:

- Cultures and stocks of infectious agents and associated biologicals. This includes specimen cultures, cultures and stocks of infectious agents, wastes from the production of biologicals, and discarded live and attenuated vaccines.
- Laboratory wastes that were, or are likely to have been, in contact with infectious agents that may present a substantial threat to public health if improperly managed.
- Pathological wastes, including human and animal tissues, organs, and body parts, and body fluids and excreta that are contaminated with, or are likely to be contaminated with, infectious agents.
- Waste materials from the rooms of humans or animals that have been isolated because of diagnosed communicable disease that are likely to transmit infectious agents.
- Human and animal blood specimens and blood products that are being disposed of, provided that, with regard to blood specimens and blood products from animals, the animals were or are likely to have been exposed to a zoonotic of infectious agent. “Blood products” does not include patient care waste such as bandages or disposable gowns that are lightly soiled with blood or other body fluids, unless they are soiled to the extent that the generator determines that they should be managed as IW.
- Contaminated carcasses, body parts, and bedding of animals intentionally exposed to infectious agents from zoonotic or human diseases during research, production of biologicals, or testing or pharmaceuticals, and carcasses and bedding animals otherwise infected by zoonotic or infectious agents that may present a substantial threat to public health if improperly managed.
- Sharps wastes used in the treatment or inoculation of human beings or animals. Also, sharp wastes that have, or are likely to have, come into contact with infectious agents in medical, research, or industrial laboratories. Sharp wastes include, but are not limited to, hypodermic needles, syringes, scalpel blades, and glass articles that have been broken.
- Any other waste materials generated in the diagnosis, treatment, or immunization of human beings or animals, research pertaining to the immunization of human beings or animals, or in the production or

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testing or biologicals, that the public council identifies as IW after determining that the wastes present a substantial threat to human health when improperly managed because they are contaminated with, or likely to be contaminated with, infectious agents.

- Any other waste materials designated by the generator to be IW.

3.2 Who Regulates the Disposal of Infectious Waste?

The Ohio Environmental Protection Agency’s (OEPA) Infectious Waste Program regulates the generation, treatment, packaging, storage, transportation, and disposal of IW in the state. The detailed requirements can be found in Ohio Administrative Code (OAC) Chapters 3745–27 and 3745–37, and in Ohio Revised Code (ORC) Chapter 3734. These regulations contain standards for generators, transporters, and treatment facilities.

3.3 How Do We Recognize Infectious Wastes?

IWs (other than “sharps”) are to be placed in red or conspicuously labeled plastic bags labeled with the international biohazard symbol (see Figure 3.1). The international biohazard symbol must be a minimum of 5 inches in diameter. Sharps are to be placed in a sharps container. Sharps containers shall be only those containers specifically designed and manufactured for the management and/or disposal of sharps. Sharps containers are to be labeled with the word “SHARPS” and shall be conspicuously labeled with the international biohazard symbol. If you believe that a container is labeled incorrectly, call and inform the Contractor Waste Manager (WM).



Figure 3.1.—International Biohazard Symbol.

4.0 POLICY

It is the policy of GRC to comply with all local, State, and Federal regulations governing the generation, storage, shipment, and disposal of medical waste.

5.0 RESPONSIBILITIES

5.1 Contractor Waste Manager/Waste Management

The Contractor Waste Manager will ensure all applicable local, State, and Federal regulations are followed. The WM will provide tracking numbers for all IW shipments and maintain copies of the manifests in their office along with copies of the Monthly Infectious Waste Generation Logs (MIWG logs), see Appendix D, supplied by NASA Occupational Medicine Services (OMS). The WM will take all IW collected from biological labs via the Waste Disposal Request form (GRC260A) to OMS.

The WM will receive training as necessary for the oversight of Infectious Waste Support Service Contractors. Documentation that the training listed below has been administered will be kept as part of the individual's training records.

5.2 Waste Handling Area User

Waste Handling Area Users are personnel whose normal job duties require them to periodically place waste at an IW accumulation area in their normal work location. Because of the large amount of Waste Handling Area Users

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associated with specific waste sites and the limited amount of training required for them, LF has determined that the most feasible action is to develop a short training program to train these users in safety and procedural issues. This program is designed to supply the users with the necessary amount of training so that they may identify IW, recognize the hazards associated with IW, respond to a release in accordance with the contingency plan, and perform standard procedures at waste sites. Content of the program includes basic IW hazards, release prevention and response, and standard procedures. Please see Section 6.8 for training specifics.

6.0 REQUIREMENTS

6.1 Large Quantity Generator (OAC 3745–27–30 and 3745–27–36)

A large quantity generator generates 50 pounds or more of IW per calendar month. As a large quantity generator of IW, GRC must

- Register as a large quantity generator of IW in the State of Ohio every 3 years.
- Segregate wastes at the point of generation, and handle and package them appropriately.
- Ship untreated IW to a licensed treatment facility by a licensed transporter prior to disposal.
- Provide information on the major components of the facility’s IW, any method of treatment of the wastes to render them non-infectious, and the system for distinguishing between waste packages that contain treated and untreated waste to persons who agree to transport, treat, or dispose of the waste, upon a written request from those persons.
- Use properly completed shipping papers.
- Develop and implement a Spill Containment and Clean-Up Procedure.
- May file a “Reversion to Small Generator form” with the Division of Solid and Infectious Waste OEPA at least 30 days prior to expiration of the current waste certification if GRC can show less than 50 pounds of IW has been generated consistently over time.

6.2 Small Quantity Generator (OAC 3745–27–30 and 3745–27–36)

A small quantity generator generates less than 50 pounds of IW per calendar month and must handle IW as follows:

- All IW, except untreated specimen cultures or cultures of infectious agents, may be disposed of, untreated, as solid waste, (i.e., normal trash).
- Specimen cultures and cultures of infectious agents must either be treated onsite by an approved IW treatment method or taken by a registered transporter to a licensed treatment facility.
- Must keep a record of the amount of IW generated each calendar month. This record is called a Monthly Infectious Waste Generation Log (MIWG log).

6.3 Guidelines for Waste Handling Area User (OAC 3745–27–35)

The following section describes the specific guidelines for IW disposal at GRC:

1. Segregate waste at the point of generation. Normal solid waste should be separated from IW. IW should be separated from hazardous waste. Hazardous waste mixed with IW must be disposed of as a hazardous waste.
2. Collection boxes (supplied by the IW disposal facility) with red liners will be kept in the patient areas. Separate boxes will be maintained for the sharps containers. Sharps boxes must be lined with red bags and kept covered at all times.
3. Discard all contaminated and uncontaminated needles, syringes, disposable scissors, tweezers, razor blades, sutures, blood tubes, etc., in the sharps collection container located in each patient care room. To avoid accidental skin puncture, do not recap needles. Discard needles immediately and properly. When full, these containers must be sealed and labeled with the (1) date, (2) “NASA Occupational Medicine Services (OMS),” (3) the word “SHARPS,” and (4) the international biohazard symbol. Filled containers should be placed in the appropriate collection box for offsite transport.

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4. Place all other non-sharp-type waste into the lined receptacle for IW in each patient area. When full, the plastic bag with contents is placed into the appropriate collection box for offsite transport.
5. Contact Medical Services for scheduled pick-up times. Prior to transport, the boxes of IW to be shipped out that day must be weighed. Record the number of boxes and their weight in the MIWG log.
6. Fill out a **GRC260A**, Waste Disposal Request form for collection boxes each time they are picked up. This form should include the following:
 - a. Number of boxes disposed
 - b. Contents of boxes, (i.e., scrap medical waste consisting of used needles and syringes, used vaginal speculums, soiled bandages and dressings, soiled latex and vinyl gloves, used blood tubes, and used disposable sharps. Sharps containers containing used needles, syringes, and blood tubes should be in a separate box and not mixed with other IW.)
 - c. Signature of the Medical Services Contracting Officer's Representative (COR)
7. WM will pick up the IW from Medical Services and store the IW until the waste hauler comes to GRC for pickup.

6.4 Packaging (OAC 3745–27–34)

Generally, LF must package IW to meet the following requirements:

- IW must be placed in bags that are red in color or conspicuously labeled with the international biohazard symbol. Each bag must be constructed of material of sufficient thickness and strength to preclude ripping, tearing, or bursting, and must be leak resistant.
- IW bags must be impervious to moisture.
- Filled bags must be securely tied or sealed to prevent leakage or expulsion of wastes from them during storage, handling, or transport.
- Bags containing IW being transported off LF premises must be placed inside a second sealed plastic bag, or within a fully enclosed, rigid, and sturdy container. Containers shall be in good condition, and at a minimum, be labeled with the international biohazard symbol on two opposite sides.
- IW sharps containers must be rigid, puncture resistant, leak resistant, and closed tightly to prevent loss of contents. Sharps containers must be only those containers specially designed and manufactured for the management/disposal of sharps.
- IW containers must be handled in a manner and location that maintains the integrity of the packaging.
- Outside storage areas containing IW must be locked to prevent unauthorized access.
- IW storage areas are to be designated with the words "Warning: Infectious Waste" and/or displaying the international biohazard symbol at all points of access.
- Any spill of IW must be contained and cleaned up according to prescribed process in Section **6.7**.
- IW must be maintained in a nonputrescent state, using refrigeration or freezing when necessary.
- IW must be maintained in a manner that affords protection from animals, insects, and rodents.

6.5 Shipping Paper System/Transportation (OAC 3745–27–31 and 3745–27–33)

A treatment shipping paper shall accompany the shipment of untreated IW. The treatment shipping paper shall be used when a shipment is transported to an IW treatment facility that is not owned or operated by GRC. The treatment shipping paper must be produced from a form prescribed by or approved by the OEPA as described in OAC Chapter 3745–27–33. Each shipping paper will have a unique tracking number assigned by SHED.

6.6 Waste Transportation (OAC 3745–27–31 and 3745–27–36)

Only transporters who are registered with the OEPA to transport untreated IW off the premises where they are generated may transport IWs offsite. Generators of IW must also obtain a transporter registration to transport IWs

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off the premises where they are generated. All IW transported offsite must be accompanied by a shipping paper that meets a form prescribed by or approved by the OEPA, and also meets the requirements of OAC Chapter 3745–27–33.

6.7 Spill Containment and Cleanup (OAC 3745–27–30 and 3745–27–35)

Cleanup materials and spill kits must be available in those areas designated in the spill containment and cleanup procedures. Spill kits are to contain specific items described in OAC Chapter 3745–27–30(B) (11).

A Spill Containment and Clean-Up Procedure must be available on the premises for persons likely to handle IW. It must include at the top of the procedure the name, address, and telephone number of the IW Control Manager and their backup, along with the location of all spill containment and materials/kits at the location. Copies of the procedure must be provided at the request of the board of health with jurisdiction or the Director of the OEPA or their authorized representative. 0 is a sample procedure that may be adopted for use.

The janitorial contractor is responsible for all infectious waste spill cleanups at LF, and will take all IW to the OMS Office with a completed Medical Waste Disposal Form, see Appendix C.

The Operations and Maintenance contract at PBS shall be responsible for all spill cleanups. Only workers with Bloodborne Pathogen training shall be allowed to perform this duty. The Operations and Maintenance personnel shall place the waste inside a red conspicuously labeled bag with the international biohazard symbol following the packaging requirements detailed in Section 6.4 and deliver the waste to Building 9206. This bag shall be placed inside a rigid, sturdy container. Building 9206 shall then be marked with the words “Warning: Infectious Waste,” displaying the international biohazard symbol at all points of access. The Operation and Maintenance contractors shall then complete a Waste Disposal Request (GRC260A) notifying WM of the material generated. WM shall coordinate the disposal of the IW and provide copies of the manifest to the Environmental Manager at PBS.

6.8 Training (29 CFR 1910.1030)

To ensure compliance with the OAC Chapters 3745–27 and 3745–37 and ORC 3734, each employee responsible for proper disposal of IW shall be informed of provisions of the OEPA’s Infectious Waste Program. Training will be conducted by a person familiar with the applicable regulations of IW. The training course shall include instruction, which teaches facility personnel IW procedures (including, but not limited to, contingency plan implementation) relevant to the positions in which they are employed. See Table 6.1 for details.

TABLE 6.1.—TRAINING REQUIREMENTS

Job Title	Training Requirements	Locations
Waste Handling Area Users	Personal safety, release prevention and response, facility operations, Bloodborne Pathogens	In-house training
Contractor Waste Manager/ Waste Management (WM)	Personal safety, release prevention and response, facility operations, Bloodborne Pathogens, RCRA, DOT, documentation	Off-site training

7.0 RECORDS

Copies of shipping papers will be maintained by both GRC and the waste treatment/disposal facility.

Minimum retention time for these documents is 3 years. Records for LF will be maintained by WM in the Central Chemical Storage Facility (CCSF), Building 215, and records for PBS shall be maintained in the office of Environmental Manager.

Training records will be kept with all other training that the individual has received and will be kept in their company’s office onsite at LF.

8.0 REFERENCES

Document number	Document name
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Ohio Administrative Code (OAC), Solid and Infectious Waste Regulations Chapter 3745–27
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OAC, Chapter 3745–37	Solid Waste, Infectious Waste Treatment, and Construction & Demolition Debris Facility Licenses
Occupational Health Manual, Chapter 11	Bloodborne Pathogens
Occupational Safety and Health Administration, 29 CFR 1910.1030	Toxic and Hazardous Substances: Bloodborne Pathogens
Ohio Revised Code, Chapter 3743	Solid and Hazardous Wastes

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APPENDIX A.—DEFINITIONS AND ACRONYMS

Central Chemical Storage Facility (CCSF).—Building 215

Contracting Officer’s Representative (COR)

Contractor Waste Manager—Lead person for the Infectious Waste Manager Support Service Contractors and is responsible for that contractor’s daily infectious waste operations at GRC.

Department of Transportation (DOT)

Energy and Environmental Management Office (EEMO)

Glenn Research Center (GRC)

Infectious agent.—Type of microorganism, helminthes, or virus that causes, or significantly contributes to the cause of increased morbidity or mortality of human beings.

Infectious waste (IW).—Infectious waste is defined by categories. Nearly all of the categories of infectious waste depend upon the presence of infectious agents or the possibility of the presence of infectious agents. The exceptions to this are blood and blood products, cultures, and sharps categories, which the generator must handle as an infectious waste.

Infectious Waste Handling Area.—Any area where infectious wastes are stored, loaded, unloaded, prepared for treatment, or treated. Infectious waste handling areas also include areas where vehicles or containers are decontaminated, areas where transportation of infectious wastes within the facility premises occurs, and areas where treated infectious wastes are unloaded, stored, and loaded.

Infectious Waste Service Support Contractor.—Singleton Health Services, LLC, and the janitorial contractor are responsible for the daily management of infectious waste at GRC.

Lewis Field (LF)

Monthly Infectious Waste Generation Log (MIWG log)

Occupational Medicine Services (OMS)

Ohio Administrative Code (OAC)

Ohio Environmental Protection Agency (OEPA)

Ohio Revised Code (ORC)

Plum Brook Station (PBS)

Resource, Conservation and Recovery Act (RCRA)

Safety and Health Division (SHeD)

Sharps.—Sharps that have been used in animal or human patient care or treatment or in medical, research, or industrial laboratories. These include hypodermic needles, syringes (with or without the attached needle), pasteur pipettes, scalpel blades, blood vials, needles with attached tubing, and culture dishes (regardless of presence of infectious agents). Also included are other types of broken or unbroken glassware that were in contact with infectious agents, such as used slides and cover slips.

Treatment Shipment Paper.—A list or record of the infectious wastes being transported. May be prepared by the generator, the transporter, or the Waste Treatment Facility.

Waste Handling Area User.—Personnel whose normal job duties require them to periodically place waste at an infectious waste accumulation area at their normal work location.

Waste Management (WM)

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APPENDIX B.—SPILL CONTAINMENT AND CLEAN-UP PROCEDURE

Medical Waste Control Manager: _____
(name, phone, and address)

Alternate: _____
(name, phone, and address)

Facility: _____

Location of Spill Kit(s): _____

**NASA Glenn Research Center
Occupational Medicine Services
21000 Brookpark Road M.S. 15-5
Cleveland, Ohio 44135**

The following procedure shall be implemented subsequent to a spill of infectious waste or its discovery:

1. The clean-up crew shall utilize appropriate personal protective equipment including liquid impermeable and disposable overalls, gloves, boots, caps, and protective eyewear. The protective equipment shall be located in the spill containment and clean-up kit.
2. Limit access to the spill area only to authorized personnel.
3. Place broken containers and spillage inside overpack bags in the spill containment and clean-up kit, minimizing exposure.
4. Disinfect the area and take other clean-up steps deemed appropriate. Disinfectants used in the cleaning-up a spill shall be registered with the U.S. Environmental as hospital disinfectants that are also tuberculocidal, fungicidal, virucidal, and effective against HIV-1, or a ten percent volume/volume sodium hypochlorite solution. Any absorbent material used to disinfect the area shall be considered infectious waste.
5. Clean and disinfect non-disposable items.
6. Remove protective equipment and manage disposable items as infectious waste.
7. Complete the Medical Waste Disposal Form (Appendix C) and give it to OMS.
8. Call the Safety and Health Division (SHeD) for reopening of the area where the release occurred.
9. Call for emergency assistance as needed from the fire department, police department, local health department, local emergency management office, or the Ohio EPA.

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APPENDIX C.—MEDICAL WASTE DISPOSAL

Occupational Medicine Services
 NASA Glenn Research Center
 21000 Brookpark Road MS 15-5
 Cleveland OH 44135
 Phone 216-433-5841
 Fax 216-433-6529

Singleton Health Services, L.L.C.

Medical Waste Disposal

Date of Incident: _____ **Time of Incident:** _____

Location of Incident: Building: _____ **Area:** _____

Person Who Cleaned Up Spill: _____

Description of Waste: _____

Quantity	Type of Waste
Total Weight of Waste:	

Person Transporting Bag: _____

Signature: _____ **Date:** _____

Medical Services Witness: _____

Signature: _____ **Date:** _____

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