INFECTIOUS/BIOLOGICAL WASTE MANAGEMENT PROTOCOL

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INTRODUCTION
The Medical University of South Carolina (MUSC) will treat infectious waste generated onsite pursuant to SC DHEC Infectious Waste Regulation R61-105 through an agreement with TreatMed, MUSC’s Autoclave Facility Operator. MUSC contracts with an outside vendor to provide for treatment and disposal of offsite and onsite overage of infectious waste. The direction and coordination of this effort has been assigned to MUSC’s Occupational Safety and Health Department. Additionally, MUSC maintains a transport vehicle and a current SC DHEC infectious waste transporter permit for emergency transport of infectious waste.

DEFINITION
MUSC adopts SC DHEC’s definition of infectious waste in Regulation R61-105 which states:

“(1) An infectious waste is any used material which is: generated in the health care community in the diagnosis, treatment, immunization, or care of human beings; generated in embalming, autopsy, or necropsy; generated in research pertaining to the production of biologicals which have been exposed to human pathogens; generated in research using human pathogens; and which is not excluded in (2) below and which is listed in the categories below:
(a) Sharps.
Any discarded article that may cause puncture or cuts, including but not limited to: needles, syringes, Pasteur pipettes, lancets, broken glass or other materials, and scalpel blades.
(b) Microbiologals. Specimens, cultures, and stocks of human pathogenic agents, including but not limited to: waste which has been exposed to human pathogens in the production of biologicals; discarded live and attenuated vaccines; and discarded culture dishes/devices used to transfer, inoculate, and mix microbiological cultures.
(c) Blood and Blood Products.
All waste unabsorbed human blood, or blood products, or absorbed blood when the absorbent is supersaturated, including but not limited to: serum, plasma and other components of blood, and visibly bloody body fluids such as suctioned fluids, excretions, and secretions.
(d) Pathological Waste.
All tissues, organs, limbs, products of conception, and other body parts removed from the whole body, excluding tissues which have been preserved with formaldehyde or other approved preserving agents, and the body fluids which may be infectious due to bloodborne pathogens. These body fluids are: cerebrospinal fluids, synovial fluid, pleural fluid, peritoneal fluid, pericardial fluid, amniotic fluid, semen, and vaginal/cervical secretions.
(e) Contaminated Animal Waste.
Animal carcasses, body parts and bedding when the animal has been intentionally exposed to human pathogens in research or the production of biologicals.
(f) Isolation Waste.
All waste generated from communicable disease isolation of the Biosafety Level 4 agents, highly communicable diseases, pursuant to the ‘Guidelines for Isolation Precautions in Hospitals’, published by the Centers For Disease Control.

(g) Other Waste.
Any other material designated by written generator policy as infectious, or any other material designated by a generator as infectious by placing the material into a container labeled infectious as outlined in Section J. Any solid waste which is mixed with infectious waste becomes designated as infectious and must be so managed unless expressly excluded in 2 (c) below.

(h) Infectious Waste Residues Resulting from Discharges.
Any residue or contaminated soil, water, or other debris resulting from the cleanup of a spill of any infectious waste.

(2) The following are excluded from the definition of infectious waste:
(a) Hazardous waste which is to be managed pursuant to the Hazardous Waste Management Regulations, R. 61-79, as amended, et seq.
(b) Radioactive material which is managed pursuant to the Department Regulation 61-63, Radioactive Material (Title A).
(c) Mixed waste containing regulated quantities of both RCRA hazardous waste and source, special nuclear, or byproduct material subject to the Atomic Energy Act of 1954, as amended, are to be managed pursuant to all applicable regulations.
(d) Infectious wastes generated in a private residence except when determined by the Commissioner to be an imminent or substantial hazard to public health or the environment.
(e) Etiologic agents or specimens being transported for purposes other than disposal to a laboratory consistent with shipping and handling requirements of the U.S. Department of Transportation, U.S. Department of Health and Human Services, and all other applicable requirements.
(f) Human corpses, remains, products of conception, and anatomical parts that are intended to be interred, cremated, or donated for medical research. Teeth which are returned to a patient.
(g) Infectious waste samples transported offsite by the EPA or the Department for possible enforcement actions or transportation of materials from other governmental response actions.”

**STORAGE AND DISPOSAL PROCEDURES**
The following procedures will be employed to ensure that all infectious waste is stored and disposed of properly, and apply to all infectious/biohazardous waste including:

- Cultures and stocks of etiologic agents
- Blood and blood products
- Pathological wastes
- Other wastes from surgery and autopsy
- Contaminated laboratory wastes
- Sharps
- Dialysis unit wastes
• Animal carcasses and body parts
• Discarded biologicals
• Contaminated equipment

Storage Requirements
The regulations for storage of infectious waste apply not only to the generating facility but also the disposal facility. In general, wastes may be stored for up to 30 days if refrigerated below 42° (degrees) F although infectious waste may be stored in an unrefrigerated state for up to 14 days. Time restricted material will be treated and disposed of first.

Procedures for Generators of Infectious Waste
Generators of infectious waste are to segregate infectious waste from solid and hazardous waste as close to the point of generation as practical to avoid commingling of the waste. The preferred method of disposal for the majority of infectious waste from the hospital is autoclaving. However, chemotherapy waste should be sent for incineration.

Generators of infectious/biological waste will place the waste in red plastic bags which have sufficient strength to prevent tearing and will seal the bags. Red bags are provided by OSHP at 843.792.3604.

Needles and other sharps will not be bagged. All contaminated sharps must be disposed of in rigid, leak resistant, and puncture resistant containers which have been labeled with the biohazard symbol.

Glassware must be placed in puncture proof containers before being placed in bags.

Bagged waste and needle disposal boxes will then be placed into an infectious/biohazard waste disposal cart.


Procedures for On-Campus Transport of Infectious Waste
When full, Environmental Services, University Housekeeping, or Comparative Medicine personnel will transport the disposal carts to one of five MUSC storage areas. The storage areas are located at Children’s Research Institute, the Strom Thurmond/Gazes Building, the Autoclave Facility located in Main Hospital, the Drug Discovery Building and at the Ashley River Tower.

Crothall Healthcare, Inc is MUSC’s environmental services vendor. Please refer to Crothall Healthcare, Inc. Procedure 8.02 Infectious Waste Removal and Transportation and Procedure 8.08 Waste Handling and Transportation.
Procedures for All MUSC Infectious Waste Storage Areas EXCEPT the Autoclave Facility Located in Main Hospital

After transported to infectious waste storage areas, waste is checked for radioactivity, loaded onto a truck, and manifested by Occupational Safety and Health employees for final shipment.

- **Manifests**
  The appropriate type of manifest must be completed and signed by Occupational Safety and Health personnel. The contractor provides manifests for waste shipment.

- **Regulations**
  All appropriate SCDHEC, DOT or state requirements of the treatment facility or incineration site must be strictly adhered to.

- **Radiological Monitoring**
  All infectious waste is screened before it is transported off site to ensure that it does not contain any radioactive isotopes. The waste is screened by personnel from MUSC’s OSHP or Radiation Safety department prior to leaving MUSC.

- **Transportation**
  Disposal transporters of pathological/infectious waste generally require special hauling permits, under the jurisdiction of environmental regulatory, public health or public utility agencies or a combination thereof. Vehicle identification requirements will be specified by these agencies. Manifests will be checked and signed by the driver at the point of loading. Manifests will be checked and signed off at the disposal facility as received.

- **Personnel Protection**
  In general, properly packaged wastes present no hazard to personnel. Standard worker uniforms, rubber gloves, and safety glasses are adequate for personal protective equipment. Please refer to the Spill Plan Section for proper actions to be taken should a spill occur.

Procedures for the Autoclave Facility Located in Main Hospital

MUSC will treat infectious waste generated onsite pursuant to SC DHEC Infectious Waste Regulation R61-105 through an agreement with TreatMed, MUSC’s Autoclave Facility Operator. Once waste is autoclaved it will be disposed of in MUSC’s Sabin Street Solid Waste Compactor and transported to an authorized landfill.

- **Unloading and Handling Procedures:**
Please refer to the Autoclave Facility Operator Operating Procedures for ECODAS T2000 Infectious Waste Hybrid Steam Sterilizer.

- **Safety Procedures:**
  Please refer to the Autoclave Facility Operator Operating Procedures for ECODAS T2000 Infectious Waste Hybrid Steam Sterilizer.

- **Emergency Preparedness and Response Plans:**
  Please refer to the Autoclave Facility Operator Operating Procedures for ECODAS T2000 Infectious Waste Hybrid Steam Sterilizer.

  Please refer to MUSC’s Emergency Response and Evacuation Procedures Plan and MUSC’s Occupational Health and Safety Program Policy.

- **Receiving, Record Keeping, and Reporting Procedures:**
  Please refer to the Autoclave Facility Operator Operating Procedures for ECODAS T2000 Infectious Waste Hybrid Steam Sterilizer.

- **Remedial Action Plans:**
  Please refer to the Autoclave Facility Operator Operating Procedures for ECODAS T2000 Infectious Waste Hybrid Steam Sterilizer.

  MUSC contracts with an outside vendor to provide for treatment and disposal of offsite and onsite overage of infectious waste. The direction and coordination of this effort has been assigned to MUSC’s Occupational Safety and Health Department. All contracts entered into between MUSC and waste vendors require vendors to adhere to all federal, state, and local regulations. Additionally, MUSC maintains a transport vehicle and a current SC DHEC infectious waste transporter permit for emergency transport of infectious waste.

- **Quality Assurance Plans for Treatment Methods:**
  Please refer to the Autoclave Facility Operator Operating Procedures for ECODAS T2000 Infectious Waste Hybrid Steam Sterilizer.

- **Radiological and Hazardous Waste Monitoring Procedures:**
  After transported to the Autoclave Facility waste carts will be checked for radioactivity by the Autoclave Facility Operator to ensure that "hot" carts are quickly identified and do not get processed until they have reached acceptable radiation levels. Once the carts have been checked for radioactivity, the waste is autoclaved.

- **Procedures for Identifying Types and Quantities of Infectious Waste Received:**
Crothall Healthcare, Inc is MUSC’s environmental services vendor. Please refer to Crothall Healthcare, Inc. Procedure 8.01 Infectious Waste Identification Procedure.

Please refer to the Autoclave Facility Operator Operating Procedures for ECODAS T2000 Infectious Waste Hybrid Steam Sterilizer for procedures for identifying quantities of infectious waste received.

- **Contingency Plans for Use of Alternate Facilities:**
  MUSC’s Occupational Safety and Health Program manages a contract for off-site treatment of infectious waste generated at MUSC, a contract for overage of onsite waste which may not be autoclaved, and the agreement with TreatMed, the Autoclave Facility’s Operator.

- **Procedures for Disposition of Treatment Residues:**
  Please refer to the Autoclave Facility Operator Operating Procedures for ECODAS T2000 Infectious Waste Hybrid Steam Sterilizer.

- **Spill Procedures:**
  In the event of an accidental spill of infectious waste, the Autoclave Facility Operator shall notify MUSC’s Occupational Safety and Health Department at 843-792-3604 for spill clean-up. All OSHP responders have taken or are scheduled to take a 40-hour HAZWOPER Training course. An 8-hour annual refresher course is also mandatory for OSHP personnel having completed the course. Appropriate OSHP personnel have taken or are scheduled to take the regulated medical waste training. All OSHP personnel take annual bloodborne pathogens exposure training. OSHP personnel will:
  - Contain the spill to the area immediately affected;
  - Immediately disinfect the area which is contaminated;
  - Pick up, repackage as required or otherwise immediately remove the spilled material into the treatment system
  - Record the incident in a log book, including the quantity spilled, personnel involved, and the nature and consequences of the event.
  - The Manager of Environmental Programs will determine if we are required to contact the South Carolina Department of Health and Environmental Control.

**INFECTIONOUS WASTE MANAGEMENT PLAN**
This Infectious Waste Management Plan (Plan) identifies actions to be taken by MUSC to ensure proper treatment, storage, handling, clean up and disposal of the Medical University of South Carolina's (MUSC's) infectious waste. Components of this Plan include a spill plan, contingency plan for alternate treatment, storage and/or disposal sites, handling and storage of infectious waste, radiological monitoring, and personnel...
health and safety training. A copy of this Plan will remain in the infectious waste transportation vehicle at all times and on file in Occupational Safety and Health Program’s (OSHP’s) office.

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Spill Plan
In the event that an accident occurs resulting in a spill or release of infectious waste during transport, the following actions are to be taken:

1. Contact MUSC immediately at (843) 792-3604 and provide pertinent information regarding the occurrence. The Manager of Environmental Programs will determine if we are required to contact the South Carolina Department of Health and Environmental Control.

2. Take measures to minimize exposure to human health and the environment. All waste should remain within the confines of the transport vehicle whenever possible.

3. Appropriate personal protective equipment should be donned which includes, at a minimum, gloves and eye protection. Gloves and eye protection will remain in the transport vehicle at all times. A 10:1 water to bleach solution or other applicable disinfecting solution should be used to the affected area. Gray absorbent pads or cat littler should be used to contain any free liquids and prevent further migration of spilled material. The spilled material should be collected in an infectious waste bag. The bag should be closed and placed in an applicable container until it can be processed. A 10:1 water to bleach solution or other applicable disinfecting solution should be reapplied to the affected area.

4. The Infectious Waste Contractor employee(s) or MUSC employee(s) shall remain with the vehicle at all times, if possible. In the event that it is necessary to leave the vehicle to make a phone call, etc., the vehicle will not remain unattended for more than 15 minutes unless it is located in a secured area not generally accessible to the public.

5. Disinfect the transportation vehicle using 10:1 water to bleach ratio.
Contingency Plans for Alternate Treatment, Storage and/or Disposal Sites
MUSC’s Occupational Safety and Health Program manages a contract for off-site treatment of infectious waste generated at MUSC, a contract for overage of onsite waste which may not be autoclaved, and the agreement with TreatMed, the Autoclave Facility’s Operator.

Handling and Storage of Waste
MUSC operates 24 hours a day, seven days a week. Waste generated at MUSC is transported to one of three loading docks by Environmental Service or Housekeeping personnel daily. Please refer to Crothall Healthcare, Inc. Procedure 8.02 Infectious Waste Removal and Transportation and Procedure 8.08 Waste Handling and Transportation.

No infectious waste will remain on-site for over 14 days in an unrefrigerated state or for over 30 days in a refrigerated state. When loading the infectious waste onto trailers or otherwise handling the waste, all OSHP and Infectious Waste Contractor personnel will don appropriate PPE.

Radiological Monitoring
All infectious waste is screened before it is transported off site to ensure that it does not contain any radioactive isotopes. All infectious waste vehicles are screened by personnel from MUSC’s OSHP or Radiation Safety department prior to leaving MUSC. After waste is transported to the Autoclave Facility, waste carts are checked for radioactivity by the Autoclave Facility Operator to ensure that "hot" carts are quickly identified and do not get processed until they have reached acceptable radiation levels. Once the carts have been checked for radioactivity, the waste is autoclaved.

Personnel Health and Safety Training
All OSHP responders have taken or are scheduled to take a 40-hour HAZWOPER Training course. An 8-hour annual refresher course is also mandatory for OSHP personnel having completed the course. Appropriate OSHP personnel have taken or are scheduled to take the regulated medical waste training. All OSHP personnel take annual bloodborne pathogens exposure training.