

# **UNIVERSITY OF RICHMOND**

## **REGULATED MEDICAL WASTE MANAGEMENT GUIDELINES**



**October 2016**

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## **I. Introduction**

This guide provides procedures to ensure regulated medical waste is properly handled. Public concern was raised in recent years when “medical waste” caused closing of public facilities in several states along the Atlantic coast. As a result of these incidents, State and Federal agencies have developed laws and regulations addressing regulated medical waste. The Commonwealth of Virginia issued regulations governing infectious waste management under the Virginia Waste Management Act, Chapter 14, Title 10.1 of the Code of Virginia which authorized the Virginia Waste Management Board to promulgate and enforce such regulations as may be necessary to carry out its own duties and powers. The regulations, which replace the Infectious Waste Management Regulations, were developed to protect public health and safety to enhance the environment and natural resources.

The Environmental Protection Agency (EPA) and Center for Disease Control and Prevention (CDC) issued guidelines for handling medical waste. In response to increased awareness of potential public concerns, Congress passed the “Medical Waste Tracking Act of 1988” which establishes a demonstration program in several states requiring regulated medical waste generators and disposal facilities to track waste from site of generation to ultimate disposal.

It is the intent of the University of Richmond (U of R) to comply with state and federal regulations regarding management of regulated medical waste. In this regard, generators of regulated medical waste are responsible for proper handling, storage, and disposal of these wastes. Central management of the program is under the Office of Safety and Risk Management (OSRM). Questions about the program should be directed to the OSRM.

Reference: Regulated Medical Waste Management Regulations, June 29, 1994,  
Commonwealth of Virginia  
Department of Environmental Quality  
VR 672-40-01:1

## **II. Characteristics of Regulated Medical Waste**

### **GENERAL**

A waste shall be considered capable of producing an infectious disease if it has, or it may have, been contaminated by an organism that is pathogenic to humans, such organism is not routinely and freely available in the community and if such organism has a significant probability of being present in sufficient quantities virulence to transmit disease. Specific categories of regulated medical waste are:

Cultures and stocks of microorganisms and biologicals

Discarded cultures, stocks, specimens, vaccines and associated items that may be pathogenic to humans. Discarded etiologic agents and waste from the production of biologicals and antibiotics that may have been contaminated by organisms pathogenic to humans.

Blood and blood products

Waste consisting of human blood, human blood products (includes serum, plasma, etc.) and items contaminated by free-flowing human blood.

Tissues and other anatomical wastes

All human anatomical wastes that are human tissues, organs, body parts, or body fluids.

Sharps

Used hypodermic needles, syringes, scalpel blades, Pasteur pipettes, broken glass and similar devices likely to be contaminated with organisms that are pathogenic to healthy humans and all sharps used in patient care.

Animal carcasses, body parts, bedding and related wastes

When animals are intentionally infected with organisms likely to be pathogenic to healthy humans for the purposes of research, in vivo testing, production of biological materials or any other reason; the animal carcasses, body parts, bedding material and all other wastes likely to have been contaminated are regulated medical wastes when discarded, disposed of or placed in accumulated storage.

Miscellaneous waste

Residue or contaminated soil, water, or other debris resulting from the clean up of a spill of any regulated medical waste. Any waste contaminated by or mixed with regulated medical waste.

### **III. Exclusions**

#### **NON-REGULATED WASTE**

The following solid wastes and medical wastes are not subject to the requirements of this guide:

- Waste contaminated only with organisms which are not generally recognized as pathogenic to humans, even if those organisms cause disease in other animals or plants; and which are managed in complete accord with all regulations of the U.S. Department of Agriculture and the Virginia Department of Agriculture and Consumer Services.
- Garbage, trash and sanitary waste from septic tanks and sewage holding tanks.

- Meat or other food items being discarded because of spoilage or contamination, and not included in section two above. 2
- Used personal hygiene products, such as diapers, facial tissues and sanitary napkins.
- Material, not including sharps, containing small amounts of blood or body fluids, and no free flowing or unabsorbed liquid.
- Regulated medical waste that has been treated by steam sterilization (as per section six of this guide).

## **IV. Packing and Labeling Requirements**

### **GENERAL**

Segregation of regulated medical waste at the point of generation is essential to ensure proper handling and worker safety. Waste generators are responsible for ensuring regulated medical waste is discarded directly into clearly identifiable containers and labeled as described below. Regulated medical waste must be packaged and labeled before it is stored, treated, transported or disposed of. Persons packaging regulated medical waste shall wear heavy gloves of latex (22 mil gauge minimum) or equivalent material and other items consistent with level of hazard.

### **PACKAGING**

This section refers to waste accumulated at the site of generation.

- All bags containing regulated medical waste shall be red in color and leakproof, including bags used in steam sterilization. Any waste contained in red bags shall be considered regulated medical waste and handled as such.
- Free liquids shall be contained in sturdy highly leak resistant containers that resist breaking.
- Sharps shall be placed directly in rigid puncture resistant containers at the point of generation.
- All bags and containers shall be labeled according to the labeling section below.
- Bags and containers shall be placed in a fiberboard disposal box immediately once full or treated via steam sterilization.

This section refers to waste prepared for transportation to the University's contracted disposal facility.

- Regulated medical waste shall be placed in the red bags and corrugated fiberboard boxes that are provided by the University's regulated medical waste disposal contractor. One bag shall be used to line the box. 3
- Liquids may be placed in the box; however free liquids in excess of 20cc shall be contained in sturdy highly leak resistant containers that resist breaking, prior to being placed in the box.
- Sharps containers shall be closed and placed inside a plastic bag prior to being placed in the box.
- The contents of the box shall not exceed 40 lbs.
- When the bag is full, it shall be sealed by lapping the gathered open end and then binding it with tape or a closing device such that no liquid can leak. The box shall be closed and all seams shall be taped with clear packaging tape to prevent leakage.
- The label on the box shall be completed according to the labeling section below.

## **LABELING**

This section refers to labeling bags and containers at the site of generation.

- All bags and containers shall display a label with the biological hazard symbol and the words "regulated medical waste," "biohazard," "biohazardous waste" or "infectious waste."
- The label shall be securely attached to the outer layer of packaging and be legible. The label may be a stick-on or tied-on tag affixed to the package or pre-labeled package.

This section refers to labeling the disposal boxes.

- The disposal boxes come pre-printed with the applicable labeling required for transport. Indelible ink shall be used to complete the generator information section on the box.
- Prior to putting any waste in the box, the following generator information shall be completed: generator ID#, name, address, city, state, zip code and phone number. The date of shipment and manifest number will be completed by the contractor when the waste is picked up.

## **V. Waste Storage**

### **GENERAL**

Storing small quantities (less than 64 gallons) of regulated medical waste awaiting transportation to a collection area or disposal site is permissible as long as the packaging and labeling requirements of section four and conditions of this section are met.

## **VI. Treatment and Disposal**

### **GENERAL**

Regulated medical waste shall be disposed of only by 1) steam sterilization (autoclaving) followed by placement in the solid waste stream or 2) incineration by a licensed regulated medical waste disposal facility.

### **STERILIZATION**

Whenever regulated medical waste is treated in a steam sterilizer, the waste shall be subject to the following operational standards (at one hundred percent steam conditions and all air evacuated):

- Temperature of not less than 250 degrees Fahrenheit for 90 minutes at 15 pounds per square inch of gauge pressure,
- Temperature if not less than 272 degrees Fahrenheit for 45 minutes at 27 pounds per square inch gauge pressure, or
- Temperature of not less than 320 degrees Fahrenheit for 16 minutes at 80 pounds per square inch gauge pressure.

Note: In the event that an autoclave unit does not operate at optimum temperatures the device shall not be used, and will clearly and legibly tagged "DO NOT USE" and state the reason, along with the signature of person placing tag.

### **STERILIZATION CONTROLS AND RECORDS**

- Each package of waste sterilized must have a tape attached that will indicate if the sterilization temperature has been reached. Waste is not satisfactorily sterilized if the indicator fails to indicate proper temperature was achieved during the process.
- Steam sterilization units shall be evaluated under full loading for effectiveness with spores of *B. stearothermophilus* no less than once per month. (Appendix D.)
- A log shall be kept at each steam sterilization unit that is complete for the proceeding three-year period. Entries shall include date, time, and operator of each usage; the type and approximate amount (pounds) of waste treated; the

post sterilization reading of the temperature sensitive tape, dates and result of calibration and monthly effective testing with *B. stearothermophilus*.

Note: Waste shall not be compacted or subjected to violent mechanical stress before sterilization. After sterilization, it may be compacted in a closed container.

## **DISPOSAL**

- The Office of Safety and Risk Management will establish an annual contract with a vendor to remove regulated medical waste generated on campus.
- Regulated medical waste shall only be transported for disposal by transporters registered with the Virginia Department of Waste Management and to incineration facilities permitted by the State Air Pollution Control Board.
- Treated waste contained in red bags and steam sterilized shall be placed in orange plastic bags, sealed and disposed of via the solid waste stream. The bag shall have a label placed on it with the following message in indelible ink and legible print of a 21 point or greater typeface stating:

“The generator certifies that this waste has been treated in accordance with the Virginia Regulated Medical Waste Management Regulations and is no longer regulated medical waste.

Treated: \_\_\_\_\_ (include date treatment performed)

Generator: \_\_\_\_\_ (include name, address, and telephone number of generator ”

## **VII. Transporting Waste on Campus**

### **GENERAL**

Regulated medical waste shall only be transported from point of generation to a storage area or to designated steam sterilized for treatment. Prior to transporting, the red bags must be placed in an outer container, such as polyethylene bucket or corrugated fiberboard box and labeled in accordance with section four.

## **VIII. Training**

### **GENERAL**

Departments and laboratories generating regulated medical waste shall instruct assigned personnel in packaging, labeling, storage and disposal requirements of this guide. Additionally, individuals assigned to treat regulated medical waste by steam sterilization shall attend bloodborne pathogen training and shall be aware of autoclave temperature, pressure, time, and performance testing and record keeping requirements.

Records of training shall be maintained by each generator for verification.



## **IX. Management of Waste Spills**

### **GENERAL**

Spills of regulated medical waste must be cleaned up immediately to prevent further contamination of the area. This shall be handled only by personnel who have met all training and vaccination requirements of the University's Bloodborne Pathogens Program. Departments and laboratories shall maintain a supply of the following materials:

Material designed to absorb liquids, such as absorbent pads or blankets, depending on quantity of liquid waste likely to be present.

One gallon of hospital grade disinfectant effective against mycobacteria, with a spray bottle capable of discharging its content in a mist and stream.

Red plastic bags, sealing tape and biohazard labels or tags. The bags shall be large enough to over-pack containers normally used to store regulated medical waste.

Note: These materials should be kept within the vicinity of any area where regulated medical waste is managed; however, the materials may be kept in a central location in a building as long as the materials are easily accessible and a rapid and efficient cleanup of spills can be accomplished.

### **SPILL CONTAINMENT AND CLEAN UP**

Upon spilling waste or finding regulated medical waste that has been spilled, take immediate steps to prevent further loss of material by establishing a barrier around the material to prevent its spread. Then take the following steps:

Leave the area until the aerosol settles (if applicable).

Clean up crew shall don personnel clothing and secure the spill area.

Spray the broken containers of regulated medical waste with disinfectant.

Place broken containers and spillage inside over-pack bags, minimizing exposure.

Disinfect the area and take over steps deemed appropriate.

Clean and disinfect non-disposable items.

Clean and disinfect protective clothing before removing.

Remove protective clothing and place disposable items in waste bag.

Replenish containment and cleanup kit.

Prepare a waste report documenting the date, location, nature of regulated medical waste involved, and describe the incident, cleanup procedures and disposition of wastes. Forward on copy to the Safety and Risk Management Office and keep the original.

## **Appendix A**

### **Standard Operating Procedures**

#### Handling and Disposal of Infectious Waste

- Treat all microbes as infectious waste
- Autoclave all infectious waste prior to disposal
- Record all necessary information on autoclave log sheet. Also, record any problems on log sheet.

#### Liquid Cultures in Tubes, Flasks, or Bottles, or Contaminated Glassware:

1. Label containers with autoclave indicator tape.
2. Autoclave at 15 lb. pressure, 121°C, 20 min. minimum time.
3. Dispose of liquid, wash containers.

#### Solid Waste:

1. Double package in 2 orange biohazard autoclave bags.
2. Label/seal bags with autoclave indicator tape.
3. Autoclave at 15 lb. pressure, 121°C, 20 min. minimum time.
4. After autoclaving, deface the biohazard symbol or cover with lab tape.
5. Dispose of bags in trash.

#### Autoclave Procedures:

1. Review the operating procedures posted on each autoclave.
2. Refer to the manual located near each autoclave for further information (maintenance, troubleshooting, etc.)
3. Be thoroughly familiar with the operating procedures before using each autoclave.
4. If you have any questions, contact Mary Farrell, Biology Lab Manager.

Please sign and date below after reviewing these procedures.

## **Appendix B**

### **Standard Operating Procedures**

#### Handling and Disposal of Infectious Waste

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Autoclave location:











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## **Appendix E**

University of Richmond  
Biology Department  
Infectious Waste Management Program

### Autoclave Maintenance

Location: S-211

Castle Model 3522, #681034, installed 1988.

Location: E-103

Castle Model 3522, #56106, installed 1994.

Location: E-306

Getinge/Castle Model 122, #98H59443, installed 1999.

Quarterly Preventive Maintenance Inspections; repair as necessary:

Getinge/Castle

1777 East Henrietta Road

Rochester, NY. 14623

