**Central**

**Minnesota Healthcare System Preparedness Program**

**CMHPC Handling of Solid Waste Contaminated with a Category ‘A’ Infectious Substance – Guidance for Healthcare Facilities and Emergency Medical Services (EMS)**

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This document serves as a reference for handling Category ‘A’ infectious substances safely in both the hospital setting as well as for EMS. Hospitals and EMS are required to have a waste management plan that addresses the handling of highly infectious substances.

**What Constitutes Category ‘A’ Agents**

 The Centers for Disease Control (CDC) defines Category ‘A’ agents as high-priority organisms that may pose a risk to national security because they can be easily transmitted from person to person, have the potential to result in high mortality rates and public health impact, and can cause public/social panic and/or disruption. Category ‘A’ agents include:

* Anthrax (*Bacillus anthracis)*
* Botulism (*Clostridium botulinum* toxin)
* Plague (*Yersinia pestis)*
* Smallpox (variola major)
* Tularemia (*Francisella tularensis)*
* Viral hemorrhagic fevers (filoviruses [e.g., Ebola, Manburg] and arenaviruses [e.g., Lassa, Machupo])

<https://www.cdc.gov/phpr/publications/2008/appendix6.pdf>

**Healthcare Facility Guidance**

Category A infectious waste products contain highly infectious agents, contained within blood or bodily fluids (urine, saliva, sweat, feces, vomit, breast milk, and semen) from an infected person. Contact via direct contact (through broken skin or mucous membranes such as eyes, nose, or mouth) with another person can spread the infection to others.

Objects such as needles, syringes, personal protective equipment, or textiles that have been exposed to the highly infectious agent, may transmit the disease to another person. Therefore, proper disinfection and waste disposal practices are vital when healthcare workers are caring for a patient with a suspected or confirmed highly infectious disease.

NOTE: Handling suspected or confirmed highly infectious disease-associated waste should be done with strict guidelines to handling, transport, and disposal. However, if a treated patient is no longer considered a highly infectious disease risk patient, then any waste generated for the remainder of the patient's care should be treated as regulated medical waste as set forth by the healthcare facility’s guidelines for waste disposal.

**Isolation and Management of Highly Infectious Disease-Contaminated Solid Medical Waste**

Medical waste contaminated with highly infectious disease contaminants and any waste comingled with highly infectious disease-contaminated waste must be kept isolated from and disposed of separately from other regulated medical waste.

• Waste generated during the treatment of a suspected or confirmed highly infectious disease patient should be collected in the patient's room or designated area, and identified as highly infectious disease waste.

• All contaminated waste should be disposed of in a leak-proof bag that is initially placed in a rigid container to provide support and decrease contamination to the exterior of the waste bag.

• This bag should be considered full when the waste receptacle has reached 75% capacity. • Prior to closure, treat the bagged waste with a non-aerosol liquid solution of U.S. EPA-registered hospital disinfectant with a label claim for a non-enveloped virus (e.g., norovirus, rotavirus, adenovirus, poliovirus) that is recommended by the CDC for use as a disinfectant for the highly infectious disease virus. Use a small amount sufficient to coat the surface of the materials contained within the bag without creating free liquids in the bottom. Do not attempt to stir or mix contents.

• Tie off the top of the bag with a knot or equally effective means such as heat sealing, tape, or adhesive to ensure any liquid cannot leak from the packaging.

• Disinfect the exterior of the bag using bleach wipes or other non-aerosol liquid solution of U.S. EPA-registered hospital disinfectant with a label claim for a non-enveloped virus (e.g., norovirus, rotavirus, adenovirus, poliovirus) that is recommended by the CDC for use as a disinfectant for the Highly infectious disease virus.

• Place this bag in a secondary packaging and tie off the top of the bag with a knot or equally effective means such as heat sealing, tape, or adhesive to ensure any liquid cannot leak from the packaging.

• Disinfect the exterior of the secondary packaging using bleach wipes or other non-aerosol liquid solution U.S. EPA-registered hospital disinfectant with a label claim for a non-enveloped virus (e.g., norovirus, rotavirus, adenovirus, poliovirus) that is recommended by the CDC for use as a disinfectant for the Highly infectious disease virus.

**Onsite Treatment of Highly Infectious Disease-Contaminated Solid Medical Waste**

Waste generated during the care of a suspected or confirmed highly infectious disease patient can be treated onsite through inactivation or incineration.

*Onsite inactivation*:

* Highly infectious disease-associated waste may be inactivated using appropriate autoclaves.

*Onsite incineration*:

* Highly infectious disease-associated waste may be inactivated using appropriate incineration.

Link to CDC guidance on disinfection and sterilization in healthcare facilities: <https://www.cdc.gov/infectioncontrol/guidelines/disinfection/index.html>

Highly infectious disease-associated waste that has been appropriately incinerated, autoclaved, or otherwise inactivated is no longer infectious, does not pose a health risk, and is not considered to be regulated medical waste or a hazardous material under Federal law. Products of incineration of highly infectious disease-associated waste can be transported and disposed of in accordance with state/local regulations and standard protocols for hospital waste disposal.

**Offsite Transport of Highly Infectious Disease-Contaminated Solid Medical Waste**

Highly infectious disease is regulated as a Category A infectious substance and is considered a hazardous material under the U.S. Department of Transportation's Hazardous Materials Regulation (HMR; 49 C.F.R. Parts 171-180). Therefore, certain disposal protocols set forth by this regulation must be met prior to transporting highly infectious disease-associated waste to an offsite that has not been inactivated onsite.

Prior to transport offsite, a Category A infectious substance must be tripled packed in a primary watertight receptacle, a watertight secondary packaging, and a rigid outer packaging.

*Individual plastic film packaging*

* Must weigh no more than 10kg (22lbs) when full
* Must be 175 liters (46 gallons) or smaller
* Must be marked and certified by its manufacturer as having an impact resistance of 165 grams and a tearing resistance of 480 grams in both parallel and perpendicular planes with respect to the length of the bag when tested in accordance with ASTM D 1709 and ASTM D 1922
* Must be compatible with the non-aerosol liquid solution EPA-registered hospital disinfectant with a label claim for a non-enveloped virus (e.g., norovirus, rotavirus, adenovirus, poliovirus) that is recommended by the CDC for use as a disinfectant for the Highly infectious disease virus.

*Rigid outer packaging*

* Must be either a United Nations (UN) Standard or DOT approved non-bulk packaging − Drums made of plastic, or triple wall corrugated fiberboard (authorized under approval) − Boxes made of plastic or triple wall fiberboard.
* Must be certified and tested to the PG II Level for medium danger
* Must have a minimum of a 6 millimeter polyethylene plastic liner if the outer packaging is fiberboard
* Must be marked and labeled in accordance to U.S. DOT Hazardous Materials Regulation.

After outer packaging has been closed as specified by the manufacture of the packaging, disinfect the exterior surface of the outer packaging with a non-aerosol liquid solution EPA-registered hospital disinfectant with a label claim for a non-enveloped virus (e.g., norovirus, rotavirus, adenovirus, poliovirus) that is recommended by the CDC for use as a disinfectant for the Highly infectious disease virus.

NOTE: It is important that healthcare facilities coordinate with their current waste management vendor to discuss their protocol on disposal of waste contaminated with infectious viral hemorrhagic fever. Be sure to include questions such as:

1. Whether the vendor has an arrangement with a waste disposal or processing facility that holds the required permits to receive waste contaminated with highly infectious disease or other infectious viral hemorrhagic fever. Waste disposal and processing facilities must have the state's approval to receive and treat highly infectious disease-associated waste.

2. Whether the vendor can properly package a U.S. DOT regulated Category A infectious substance according to Hazardous Waste Regulations for transportation offsite.

3. Whether the vendor knows the proper protocol for requesting the Special Permit from U.S. DOT if they may need to transport a Category A infectious substance from the healthcare facility.

IMPORTANT: There are four requirements to be approved for the Special Permit as regulated by U.S. DOT:

* Waste must be triple packaged as instructed in the previous section
* Transport containers must be labeled as: UN number 2814 infectious substances affecting humans
* Transport must have a security plan and en-route security detail
* Facilities must develop an emergency response plan in the event of a spill or other emergency

U.S. DOT has confirmed that they will not issue the Special Permit in advance. This permit can only be issued once the regulated medical waste is suspected or confirmed to be a Category A infectious substance.

**Recommendations for Liquid Waste Disposal**

Wastewater treatment facilities are appropriately able to administer sewage handling processes that are designed to inactivate infectious agents. However, certain disinfection measures should be taken in the case of human exposure prior to delivery to the wastewater treatment facility.

• Any liquid generated by the patient or during treatment (i.e., blood transfusion, dialysis, used saline, irrigation procedures) should be delivered to a sanitary sewage receptacle and treated with 1 cup of bleach for 5-10 minutes prior to flushing.

CAUTION: EPA warns that this method may expose an individual without respiratory protection to chlorine gas. Please make sure to isolate sanitary sewer with standing bleach to prevent exposure to any generated chlorine gas during this disinfection process. Additional care is needed when adding any liquid treatment to sewage to ensure no splashing occurs

• While CDC guidelines state that liquid waste infected with Highly infectious disease virus can be flushed without disinfection treatment, disinfection measures are a precautionary measure against splashing, spills, or service required by public works staff, as well as for local wastewater operators

NOTE: Please be sure to contact your local wastewater treatment facility to notify them in advance of the intent to bleach incoming sanitary sewage infected with highly infectious disease virus.

**Additional Information**

For additional information, see the following links:

CDC Guideline for Disinfection and Sterilization in Healthcare Facilities:

[https://www.cdc.gov/vhf/ebola/healthcare-us/cleaning/waste-management.html](https://www.cdc.gov/vhf/ebola/healthcare-us/cleaning/waste-management.html%20)

U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration Transporting Infectious Substances

[https://cms.phmsa.dot.gov/transporting-infectious-substances/transporting-infectious-substances-overview](https://cms.phmsa.dot.gov/transporting-infectious-substances/transporting-infectious-substances-overview%20)

CDC Interim Guidance for Environmental Infection Control in Hospitals for Highly infectious disease Virus

[https://www.cdc.gov/vhf/ebola/healthcare-us/cleaning/hospitals.html](https://www.cdc.gov/vhf/ebola/healthcare-us/cleaning/hospitals.html%20)

**EMS Agency Guidance**

**Patient Assessment**

This assessment should take place before transport of the patient. To minimize potential exposure, only one EMS should approach the patient and perform the initial screening from at least 3 feet away. If this initial assessment provides the EMS provider with suspicions that the patient could have an infectious disease, such as Highly infectious disease, then Personal Protective Equipment should be put on before coming into close contact with the patient.

**Protection of EMS Personnel**

Protection begins during handling, treatment, transport, or disposal of suspected or known Category A contaminated waste. This begins before the waste is generated, and the best first strategy for protecting EMS personnel is to control the hazard at its source by minimizing the amount of waste generated and ensure that plans are in place to deal with waste before further generating it. Implement protective measures once waste is generated under OSHA standards for bloodborne pathogens by using personal protective equipment (PPE) and respiratory protection (i.e., respirators). (emailed document; OSHA Bloodborne Pathogens Standard. 29 CFR § 1910.1030 (2012), Occupational Safety and Health Administration, U.S. Department of Labor.)

Throughout the entire waste handling process, EMS personnel should:

* Limit the number of personnel that handle the waste
* When changing or removing gloves, hands should be washed with soap and water for at least 20 seconds; use alcohol-based scrubs if soap and water are not available
* Clothing must be changed as soon as it becomes soiled
* Do not touch face or other exposed parts of the body before washing properly
* Discard soiled clothing and PPE with other contaminated waste in a biohazard bag
* Wear washable footwear or disposable booties
* If blood, bodily fluids, secretions, or excretions from a patient under investigation (PUI) comes in direct contact with the EMS provider’s unprotected skin or mucous membranes, then the EMS provider should immediately stop working and wash affect skin.

If the patient is not showing obvious signs of bleeding, vomiting, or diarrhea and there is no concern for this, EMS personnel should follow the PPE guidance for clinically stable PUIs: <https://www.cdc.gov/vhf/ebola/healthcare-us/ppe/guidance.html>.

* PPE should be put on before entering the scene and continue to be worn until providers are no longer in contact with patient.
* Limit the use of needles and other sharps and handle them with extreme care. Dispose in puncture-proof, sealed containers specific to the care of the patient, in accordance to OSHA’s bloodborne pathogens standard.
* If patient is vomiting, give them a large red biohazard bag.
* Wrap patient in an impermeable sheet to reduce contamination of other surfaces if patient has profuse diarrhea

**After Transport Clean-Up**

 The following are general guidelines per CDC regulations for cleaning or maintaining EMS transport vehicles and equipment after transporting a PUI:

* EMS providers should wear PPE if performing cleaning and disinfection where body fluids are present (vomit, diarrhea, sweat, urine, or blood). If not body fluids are present then minimal PPE can be worn:
	+ Face shield with surgical face mask
	+ Impermeable gown
	+ Two pairs of gloves
* Patient-care surfaces (including stretchers, railings, door handles, medical equipment control panels, and adjacent flooring, walls, and work surfaces) should be cleaned and disinfected thoroughly
* Contaminated reusable patient care equipment (i.e., blood pressure cuff) should be placed in a biohazard bag and labeled for cleaning and disinfection or disposal according to agency policies and manufacturer’s instructions by trained personnel wearing correct PPE

**Disposal of Waste**

 Treatment, storage, and disposal of hazardous waste is regulated under the Resource Conservation and Recovery Act (RCRA) and Minnesota Hazardous Waste Rules.

These are the numbers of the hazardous wastes offices in the state:

**Metro County Hazardous Waste Offices**

* Anoka County 763-422-7093
* Carver County 952-361-1800
* Dakota County 952-891-7557
* Hennepin County 612-348-3777
* Ramsey County 651-266-1199
* Scott County 952-496-8177
* Washington County 651-430-6655

**Minnesota Pollution Control Agency**

* Toll free 800-657-3864
* Brainerd 218-828-2492
* Detroit Lakes 218-847-1519
* Duluth 218-723-4660
* Mankato 507-389-5977
* Marshall 507-537-7146
* Rochester 507-285-7343
* St. Paul 651-296-6300
* Willmar 320-214-3786

Reference:

Minnesota Pollution Control Agency

<https://www.pca.state.mn.us/waste/hazardous-waste>

CDC - Procedures for Safe Handling and Management of Ebola-Associated Waste

[https://www.cdc.gov/vhf/highly infectious disease/healthcare-us/cleaning/handling-waste.html](https://www.cdc.gov/vhf/ebola/healthcare-us/cleaning/handling-waste.html)

CDC - Guidance on Personal Protective Equipment (PPE) To Be Used By Healthcare Workers during Management of Patients with Confirmed Ebola or Persons under Investigation (PUIs) for Ebola who are Clinically Unstable or Have Bleeding, Vomiting, or Diarrhea in U.S. Hospitals, Including Procedures for Donning and Doffing PPE

<https://www.cdc.gov/vhf/ebola/healthcare-us/ppe/guidance.html>

CDC - Interim Guidance for Emergency Medical Services (EMS) Systems and 9-1-1 Public Safety Answering Points (PSAPs) for Management of Patients Under Investigation (PUIs) for Ebola Virus Disease (EVD) in the United States

<https://www.cdc.gov/vhf/ebola/healthcare-us/emergency-services/ems-systems.html>

Interagency Board - Recommendations on Selection and Use of Personal Protective Equipment for First Responders against Ebola Exposure Hazards

<https://iab.gov/Uploads/IAB%20Ebola%20PPE%20Recommendations_10%2024%2014.pdf>