

Ebola Waste Management Guide

Ebola Virus Disease (EVD) is an infectious disease that is spread through humans when blood or bodily fluids (urine, saliva, sweat, feces, vomit, breast milk, and semen) from a person infected with Ebola come into direct contact (through broken skin or mucous membranes such as eyes, nose, or mouth) with another person.

Ebola is NOT transmitted through the air. However, objects such as needles, syringes, personal protective equipment, or textiles that have been exposed to the virus may transmit it to another person. Therefore, proper disinfection and waste disposal practices are vital when healthcare workers are caring for a suspected or confirmed Ebola patient.

NOTE: Handling suspected or confirmed Ebola-associated waste should be done with strict guidelines to handling, transport, and disposal. However, if a treated patient is no longer considered an Ebola 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 EBOLA-CONTAMINATED SOLID MEDICAL WASTE

Medical waste contaminated with Ebola virus and any waste comingled with Ebola-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 Ebola patient should be collected in the patient's room or designated area, and identified as Ebola 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 Ebola 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 Ebola 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 Ebola virus.

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ONSITE TREATMENT OF EBOLA-CONTAMINATED SOLID MEDICAL WASTE

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

- Onsite inactivation: Ebola-associated waste may be inactivated through the use of appropriate autoclaves.
- Onsite incineration: Ebola-associated waste may be inactivated through the use of appropriate incineration; however no hospitals in Indiana currently utilize incinerators.
- Link to CDC guidance on disinfection and sterilization in healthcare facilities:
http://www.cdc.gov/hicpac/disinfection_sterilization/13_Osterilization.html
- **Ebola-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 Ebola-associated waste can be transported and disposed of in accordance with state/local regulations and standard protocols for hospital waste disposal.**

OFFSITE TRANSPORT OF EBOLA-CONTAMINATED SOLID MEDICAL WASTE

Ebola 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 Ebola-associated waste to an offsite that has not been inactivated onsite.

Prior to transport offsite, a Category A infectious substance must be triple 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 Ebola 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

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- 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 Ebola 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 Ebola or other infectious viral hemorrhagic fever.
 - Indiana waste disposal and processing facilities must have a permit from the Indiana Department of Environmental Management to accept and process infectious wastes - including an explicit provision authorizing the facility to dispose or treat waste contaminated with Ebola or other viral hemorrhagic fevers.
 - If the waste disposal or processing facility is located outside Indiana, the vendor must ensure the facility has their state's approval to receive and treat Ebola-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 in the event that they may need to transport a Category A infectious substance from the healthcare facility.

IMPORTANT: There are four requirements in order 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.

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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 Ebola 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 Ebola virus.

ADDITIONAL INFORMATION

For additional information, see the following links:

www.StateHealth.in.gov/ebola

www.cdc.gov/vhf/ebola

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

<http://www.phmsa.dot.gov/hazmat/transporting-infectious-substances>

CDC Ebola-Associated Waste Management

<http://www.cdc.gov/vhf/ebola/hcp/medical-waste-management.html>

CDC Interim Guidance for Environmental Infection Control in Hospitals for Ebola Virus

<http://www.cdc.gov/vhf/ebola/hcp/environmental-infection-control-in-hospitals.html>

The Indiana Department of Environmental Management contributed content to this document.