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Ebola Virus Disease (EVD) Medical Waste Management – Interim Guidelines Revised October 2022

This guideline serves to update the previous version released on February 1, 2017

Waste Management Considerations

The California Department of Public Health (CDPH), Medical Waste Management Program regulates the generation, handling, storage, and treatment of medical waste by providing oversight under the authority of the Medical Waste Management Act (MWMA). This section provides both general and specific guidance for the management of Ebola Virus Disease (EVD) contaminated medical waste based on federal guidelines and standards including specific guidance regarding packaging, labeling, and treatment.

CDPH recommends that all health care facility Environmental Services personnel and Infection Control staff work together to develop facility-specific protocols for the safe handling and management of EVD contaminated medical waste.

General Guidance

[Ebola medical waste management guidance](https://www.cdc.gov/vhf/ebola/clinicians/cleaning/waste-management.html) provided by the federal Centers for Disease Control and Prevention (CDC) (<https://www.cdc.gov/vhf/ebola/clinicians/cleaning/waste-management.html>) should be reviewed closely and checked regularly, including [appropriate infection control practices](http://www.cdc.gov/vhf/ebola/hcp/infection-prevention-and-control-recommendations.html) (<http://www.cdc.gov/vhf/ebola/hcp/infection-prevention-and-control-recommendations.html>) for the handling and packaging of medical waste. Facilities may also consult with their Local Enforcement Agency (LEA), County Health Director, and CDPH on EVD waste management issues.

Personal Protection Equipment (PPE)

The Occupational Safety and Health Administration (OSHA) has standards for PPE (29 CFR 1910.132) including respiratory protection (29 CFR 1910.134) to use during the handling, related cleaning, transportation and treatment of EVD contaminated waste. PPE guidelines can be found on the [CDC Webpage](https://www.cdc.gov/vhf/ebola/healthcare-us/ppe/) (<https://www.cdc.gov/vhf/ebola/healthcare-us/ppe/>)

Disinfecting Agents

CDC provides [guidance for the disinfection of environmental surfaces](https://www.cdc.gov/vhf/ebola/healthcare-us/cleaning/hospitals.html) (<https://www.cdc.gov/vhf/ebola/healthcare-us/cleaning/hospitals.html>). CDC recommends the use of a U.S. Environmental Protection Agency (EPA)-registered hospital disinfectant with a label claim for a non-enveloped virus (e.g., norovirus,

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rotavirus, adenovirus, poliovirus). Enveloped viruses such as EVD are susceptible to a broad range of hospital disinfectants used to disinfect hard, non-porous surfaces. In contrast, non-enveloped viruses are more resistant to disinfectants. As a precaution, selection of a disinfectant product with a higher potency than what is normally required for an enveloped virus is being recommended at this time. EPA-registered hospital disinfectants with label claims against non-enveloped viruses are broadly antiviral and capable of inactivating both enveloped and non-enveloped viruses. A list of appropriate products effective against EVD can be found in EPA's List L: [Disinfectant for use Against the Ebola Virus](https://www.epa.gov/pesticide-registration/list-l-disinfectants-use-against-ebola-virus) (https://www.epa.gov/pesticide-registration/list-l-disinfectants-use-against-ebola-virus)

Packaging EVD Contaminated Waste

Place waste into a red biohazard bag that meets the MWMA Section 117630 requirements for impact and tear resistance. Do not overfill the biohazard bag. It is suggested that the biohazard bag only be filled with EVD contaminated waste no more than half of its total volume. This will ensure that there is adequate room for staff to securely close the bag with a knot or other equally effective positive means of closure that will not tear or puncture the outer bag and ensure that any liquid contents (if present) will not leak from the packaging. After securely tying off the bag, disinfect the exterior surface of the bag with an EPA-registered hospital disinfectant with a label claim against non-enveloped viruses, place it into a second red biohazard bag, tie off the second biohazard bag, disinfect the exterior surface of the second bag, and place the combination package into a properly labeled, rigid container with a tight-fitting lid. Transport immediately to a dedicated, locked, or secure storage/treatment area that is not accessible to the public or other unauthorized personnel. **Do not store this waste in an intermediate storage area.**

- **Suction canisters** - Unsolidified suction canister waste may be treated onsite or at a permitted offsite treatment location. **Do not use reusable suction canister systems.** Seal/close the suction canister and disinfect the outside surface of the canister. Place the sealed canister into a red biohazard bag, securely tie off the bag, disinfect the exterior surface of the bag, and place into a rigid container with a tight-fitting lid. **Do not add a solidifier to the liquid contents of a suction canister and agitate to mix because of the potential to create aerosols.** If the suction canister is already pre-filled with a solidifying agent, seal the canister and follow the same waste management /containment procedure as outlined for solidified suction canisters. Solidified suction canister waste shall be managed as an incinerable waste. Disinfect the outside surface of the solidified suction canister. Place the sealed suction canister into a red biohazard bag. Securely tie off the bag, disinfect the exterior surface of the bag, and place into a DOT approved container labeled for incineration (follow DOT packaging requirements Category A waste for offsite transportation). Do not store this waste in an intermediate storage area.
- **Sharps Waste** – EVD contaminated sharps waste shall be placed into a single use sharps waste container. **Do not use reusable sharps waste container systems.** When the sharps waste container is ready for disposal, close and

securely lock the container, disinfect the exterior surface of the sharps waste container, and place into a red biohazard bag. Securely tie off the biohazard bag, disinfect the exterior surface of the biohazard bag, and place into a rigid container with a tight-fitting lid for transportation to the dedicated, locked and secure storage/treatment area. Do not store this waste in an intermediate storage area.

- **Sharps/Pharmaceutical combined waste containers** - For facilities that choose to combine EVD contaminated sharps and pharmaceutical waste into a single waste container, the combined waste container shall be single use. **Do not use reusable sharps waste container systems.** When the sharps/pharmaceutical waste container is ready for disposal, close and securely lock the container, disinfect the exterior surface of the waste container, and transport immediately to a dedicated, locked and secure storage area that is not accessible to the public or other unauthorized personnel. Do not store this waste in an intermediate storage area. The combined EVD sharps and pharmaceutical waste shall be transported to an offsite treatment facility for treatment by incineration (follow DOT packaging requirements Category A waste for offsite transportation).
- **Linens** - Sheets, curtains, pillows, and other linens contaminated with or suspected to be contaminated with the EVD should also be handled as Category A waste and contained in primary and secondary red biohazard bags, whose respective outside surfaces have been disinfected and placed into a properly labeled rigid container with a tight fitting lid. Do not store this waste in an intermediate storage area. Transport the waste immediately to a dedicated, locked, and secure storage/treatment area that is not accessible to the public or other unauthorized personnel.

Transportation from the Isolation Room to the Onsite Storage Area

Facility operations and logistics differ among health care facilities and therefore each facility should develop and implement an EVD waste management plan specifically tailored to address their own waste management situation during an EVD event. CDPH has some general suggestions or considerations for the safe handling and management of EVD contaminated waste from the patient Isolation Room.

- Facilities should develop a detailed waste management plan/procedure for the safe collection of EVD contaminated waste at the patient's bedside and managing it from the isolation area to the designated storage area. The detailed waste management plan/procedure should also specify the type of personal protection equipment (PPE) required based on the activity performed.
- Careful consideration should be given to the size or volume of the waste container(s) to be used because of the volume and/or weight of the waste that will be placed into it and the mechanics/manual activity associated with the use of multiple waste bag containment, external surface disinfection, and the possible removal/transfer of the waste bags from the original waste container into a subsequent waste container.

- Disinfection procedures should be developed, which include identifying the type of disinfectant to be used and the specific instructions as to its proper application.
- A specific logistics plan should be included as an integral part of the overall waste management plan/procedure that details the exact path within the facility that the waste will be transported to the designated secure storage area.

Labeling Waste Containers

Whether EVD contaminated waste is treated onsite or offsite, facilities may want to consider the use of additional warning labels on the EVD waste containers (in addition to the normally required biohazardous waste labels) to distinguish between the EVD special waste containers and the facility's other medical waste containers while the EVD contaminated waste is being accumulated and stored onsite. These additional warning labels could include the use of words or combination of words such as "Infectious Isolation Waste," "Infectious Isolation Waste, for Incineration Only," or other words that the facility deems appropriate. It should be noted that if EVD contaminated waste is to be packaged for transport offsite, DOT labeling requirements will apply to the outer packaging. (see Transportation requirements for Offsite Treatment)

Storage of Waste Containers

In the situation where a suspected or known case of EVD is occurring, health care facilities should be prepared to manage and store a large volume of EVD contaminated waste generated from patient treatment and management. Such a situation may generate as much as eight or more, 55-gallon drums of EVD contaminated waste per day.

Each health care facility should have a designated storage area with adequate capacity to accumulate and store the large volumes of waste generated in the management and treatment of an EVD patient. The designated storage area should be locked and/or secured in a manner that prohibits access by the public or other unauthorized personnel. Health care facilities could also consider bringing lockable storage units or containers onsite if needed. Health care facilities should work with their LEA or CDPH when identifying these designated storage locations and implementing the procedures and/or processes in their use. A procedure should also be in place to notify the LEA or CDPH if a temporary extension or variance is required for extended storage in excess of the storage time requirements.

Onsite Treatment

For autoclaving onsite:

- [Appropriate infection control measures are necessary prior to handling the waste](https://www.cdc.gov/vhf/ebola/healthcare-us/cleaning/hospitals.html) per CDC guidance. (<https://www.cdc.gov/vhf/ebola/healthcare-us/cleaning/hospitals.html>).
- Do not overfill the red biohazard bags. It is suggested that the biohazard bag only be filled no more than half of its total volume with EVD contaminated waste.

- Do not toss or compress (compact) the red biohazard bags when loading the autoclave chamber. The facility may consider filling the autoclave chamber less than its full capacity to allow for more efficacious treatment, especially when treating dense materials such as linens.
- Place the biological indicator into the center of the load.
- Observe the standard treatment time for autoclave treatment (steam sterilization) with a minimum of 30 minutes at 250°F.
- Direct efficacy questions for medical waste treatment to your LEA and/or CDPH, Medical Waste Management Program at (916) 449-5671.

Transportation Requirements for Offsite Treatment

If onsite treatment is not available or the health care facility chooses not to treat the Ebola contaminated waste onsite, the facility should package the waste appropriately for transport offsite to a permitted medical waste treatment facility authorized to handle and treat Ebola waste.

The federal Department of Transportation (DOT), Hazardous Materials Regulations (HMR; 49 CFR, parts 171 – 180) apply to any material that DOT determines is capable of posing an unreasonable risk to health, safety, and property when transported in commerce. Material contaminated or suspected of being contaminated with EVD is regulated as a Category A infectious substance under the HMR. The EVD contaminated materials or waste must be packaged in conformity with the applicable requirements in the HMR for Category A infectious substances. Refer to DOT website for [guidance on packaging EVD contaminated waste](https://www.phmsa.dot.gov/transporting-infectious-substances/packaging-ebola-contaminated-waste) (<https://www.phmsa.dot.gov/transporting-infectious-substances/packaging-ebola-contaminated-waste>).

The packaging authorized under the regulations governing the transport of Category A infectious substances are not large enough to contain the relatively large quantity of contaminated waste generated when treating patients with known or suspected EVD. Alternative packaging designs are needed to meet safety requirements and to accommodate the larger volume of waste. The Pipeline and Hazardous Materials Safety Administration (PHMSA) is the agency under DOT that has the authority to grant special permits that allow alternative packaging from the requirements of the HMR for transportation. In addition to the alternative packaging, the special permit outlines additional preparation and operational controls that must be met to ensure an equivalent level of safety.

PHMSA has issued a non-site-specific Special Permit (Special Permit DOT-SP 16279) to certain waste haulers, which authorizes the transportation of EVD waste for treatment. Other waste haulers not yet authorized under Special Permit DOT-SP 16279 may apply for a party status in accordance with 49 CFR 107 subpart B. Upon review and approval, special permits are issued to individual companies to ensure that each holder is fit to conduct the activity authorized. PHMSA has a search database where you can obtain [the list of entities](https://www.phmsa.dot.gov/approvals-and-permits/hazmat/special-permits-search) that have received a special permit authorization (<https://www.phmsa.dot.gov/approvals-and-permits/hazmat/special-permits-search>).

Autoclave treatment and incineration have both been shown to efficaciously treat items/waste contaminated with the Ebola virus. For incineration, facilities will have to work with their specific medical waste management companies to find a permitted medical waste treatment facility that is authorized and will accept EVD contaminated waste. If sending waste out of the State of California, check with the receiving State for their requirements on the treatment of EVD contaminated waste.

Once the EVD contaminated waste has been efficaciously treated by a permitted medical waste autoclave or incinerator, the waste is no longer considered a Category A infectious waste and may be managed as solid waste. Facilities shall coordinate and confirm that the final waste disposal facility (e.g. solid waste landfill) is willing to accept their treated EVD waste.

Safe Handling of Human Remains in Hospitals and Mortuaries

CDC has [guidance on the safe handling of human remains of Ebola patients in U.S. hospitals and mortuaries](https://www.cdc.gov/vhf/ebola/clinicians/evd/handling-human-remains.html) (<https://www.cdc.gov/vhf/ebola/clinicians/evd/handling-human-remains.html>).

Guidance for Handling Untreated Sewage

[Existing CDC and the World Health Organization guidance documents suggest that patient discharges/waste can be safely disposed of in sanitary sewers](https://www.cdc.gov/vhf/ebola/prevention/faq-untreated-sewage.html) (<https://www.cdc.gov/vhf/ebola/prevention/faq-untreated-sewage.html>). Nevertheless, the wastewater community in California has concerns for the safety of workers handling wastewater prior to its treatment at the wastewater plant.

Recognizing that a single statewide approach, as much as possible, would be helpful for the hospitals and the local wastewater agencies grappling with this issue, the California Association of Sanitation Agencies (CASA) and its constituents coordinated with the National Association of Clean Water Agencies, the State Water Board, and consulted with CDPH to develop a recommended approach for use by local sanitation districts and hospitals as they develop plans for the potential discharge of waste from a hospitalized Ebola patient into the sanitary sewer.

On June 2, 2016, CASA revised their previously released memorandum (dated: January 13, 2015) that detailed consensus recommendations. These [revised recommendations](#) can be found on the CDPH Medical Waste Management Program website or via the CASA Webpage (<http://casaweb.org/wp-content/uploads/2015/12/Ebola-hospital-wastewater-consensus-recommendation-060216.pdf>).

CASA prefers a zero-waste discharge; however, CASA understands that this would present significant challenges for hospitals, such as safety concerns and cost effectiveness. If a zero discharge is not feasible, pre-treatment of the wastewaters before it is discharged into the sewer is recommended. This will add an additional layer of precaution.

It should be noted that local sanitation districts may not allow the disposal of untreated or pre-treated sewage from a patient with EVD. Healthcare facilities should contact their

local wastewater agency to find out what requirements the local wastewater agency is placing on their customers with respect to wastewaters generated by patients with EVD. In addition to the current planning and coordination by healthcare facilities and wastewater agencies, healthcare facilities that actually receive patients suspected or known to be infected with EVD should notify their local wastewater agency immediately.

Summary

In summary, the safe management of EVD contaminated wastes can be achieved using robust protocols/procedures which are consistent with the above guidelines, protective of public health, and specifically outlined in the facility's waste management plan. EVD contaminated medical waste can be safely treated and disposed of using (1) onsite treatment, or (2) offsite treatment using steam sterilization (autoclave) or incineration depending on the type of medical waste. EVD contaminated wastes that has been appropriately treated by steam sterilization, incineration or otherwise inactivated by an alternative treatment is not infectious, does not pose a health risk, and is not considered to be regulated as a medical waste or a hazardous waste under federal (or state) law. Refer to the [Ebola-Associated Waste Management](http://www.cdc.gov/vhf/ebola/healthcare-us/cleaning/waste-management.html) on the CDC Webpage (<http://www.cdc.gov/vhf/ebola/healthcare-us/cleaning/waste-management.html>). Safe handling protocols and management of EVD contaminated waste should be outlined and implemented in the facility waste management plan. If you have any questions or need assistance, contact the Local Enforcement Agency for your location and/or the CDPH Medical Waste Management Program for assistance/guidance in developing a plan.