

Chapter 7

Waste Management

Chapter 7: Waste Management

Objectives

After completing this chapter, participants should be able to:

1. Describe the role of the Department of Transportation's Hazardous Materials Regulations that apply to infectious diseases and regulated medical waste management.
2. Explain on-site and off-site decontamination of regulated medical waste.
3. Describe regulations related to management of Category A infectious wastes, including the storage, transportation, and disposition of these materials.
4. List at least five best practices for protecting worker safety and health while handling infected materials and regulated medical waste.
5. List at least three engineering controls used to avoid hazards while handling waste.
6. List at least three administrative controls used to avoid hazards while handling waste.
7. Describe how the OSHA HAZWOPER Standard is applied to the transportation of regulated medical waste.
8. List at least three topics covered in a waste-handling plan.
9. Describe best practices for working with mechanical devices while handling waste containers.
10. Describe proper lifting techniques for manual handling of waste containers.
11. Describe proper packaging procedures for regulated medical waste.
12. Describe proper procedures for loading regulated medical waste for transport.

Introduction

Infectious or regulated medical waste handling can be done safely. Recent experiences with the handling of contaminated waste generated by patients with Ebola virus disease (either before or after hospital admission) revealed a lack of universal understanding as to how to decontaminate or dispose of infectious or regulated medical waste, and acceptance that these activities can be done safely.

In January 2017, the document *Planning Guidance for the Handling of Solid Waste Contaminated with a Category A Infectious Substance* was published through the joint efforts of the U.S. Department of Transportation (DOT), the U.S. Environmental Protection Agency (EPA), the U.S. Department of Labor (DOL), the Centers for Disease Control and Prevention (CDC), and the Assistant Secretary for Preparedness and Response (ASPR). Since no single agency in the United States regulates or guides the handling, transport, and treatment of Category A infected waste, this document provides an invaluable tool for managing these tasks.

An infectious substance is considered Category A if it is in a form capable of causing permanent disability or life-threatening or fatal disease in otherwise healthy humans or animals upon exposure to the substance. The Ebola virus is one such pathogen, given its ability to cause severe – often fatal – illness in humans.

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HMR: Hazardous
Materials Regulations

DOT's Hazardous Materials Regulations (HMR) regulates infectious substances and regulated medical waste as a hazardous material. The HMR apply to any material that DOT determines is capable of posing an unreasonable risk to health, safety, and property when transported in commerce. An infectious substance and regulated medical waste must conform to all applicable HMR requirements when offered for or actually transported by air, highway, rail, or water, but the overall handling of infectious or regulated medical waste begins with the creation of the waste, includes waste transportation, and ends at final disposition.

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Waste Treatment

Inactivation of Contaminated Waste

Once a patient is suspected to have or has been diagnosed with an infection caused by one of the Category A infectious substances, the facility treating the patient should activate their Facility Emergency Waste Management Plan. This plan will indicate whether the facility will be using on-site inactivation (e.g., autoclaving, incineration, or other validated methods) or if it will need to follow all the necessary requirements for transporting the waste off-site for inactivation.

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inactivate: When an infectious disease is no longer infectious.

On-site Inactivation

Facilities may inactivate contaminated waste using an autoclave operating within permitted parameters. Use of an autoclave cycle heats materials to a high enough temperature for a long enough period of time to inactivate the organism(s) of concern in the waste. Such time/temperature/pressure conditions will ensure that the waste material is no longer infectious, does not pose a health risk, and is not considered regulated medical waste or a hazardous material under federal law.

Another method of on-site inactivation is incineration. Incinerators run at extremely high temperatures, well above the relatively low temperatures needed to kill most Category A organisms. Incineration would be the best method for large or bulky items, such as mattresses. A waste management plan that considers on-site incineration should include a method for disposing of residuals. Residuals from Category A wastes that have been inactivated, either through autoclaving as described above or through incineration, are no longer infectious and should be disposed of in accordance with the applicable state and local regulations.



Some medical waste may be inactivated through incineration

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Other validated methods of waste treatment (for example, chemical disinfection) may be necessary when operational constraints, such as those associated with patient care activities outside of fixed hospital facilities, preclude the use of autoclaves or incinerators. However, such alternative methods should be supported by objective data that demonstrate their effectiveness at inactivating waste and that are acceptable to appropriate regulatory authorities, including at the state and local levels. Users of these alternative methods may need to consider worker health and safety issues, as well as the potential for triggering other Federal environmental (e.g., under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)), safety and health regulations.

Additionally, inactivation or incineration of infectious or regulated medical waste may be subject to state, local, and OSHA regulations. For instance, employers may be required to provide training and implement controls, including PPE, to protect workers operating autoclaves.

It is critical that staff handling Category A waste be made aware of the ultimate treatment method for the waste. Such training could be part of an overall waste management plan or a facility-specific training plan. Staff should be cognizant of the materials being sent for on-site inactivation, since the operators of the on-site inactivation equipment will be unable to perform any waste segregation operations on waste streams from a healthcare setting involving Category A infectious substances.

Materials that might cause problems with on-site inactivation processes (for example, batteries or electronics) should be separated from the remaining waste at the point of generation, and staff can select alternate treatment/disposal pathways for such components. During an event, there should be routine communication among staff and the operators of on-site treatment to ensure they are following the best procedures for managing wastes.

Off-site Inactivation

If Category A wastes cannot be inactivated on-site, then the wastes will need to be transported off-site. Off-site transportation requires additional steps and compliance with specific regulations as described below. In most circumstances, off-site transportation will likely be for incineration. Incineration of contaminated waste may be subject to federal, state and/or local laws or regulations.

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*PHMSA: Pipeline and
Hazardous Materials Safety
Administration*

Beyond the act of incinerating the waste (and disposing of the residuals), the transportation of the waste materials is subject to the HMR (discussed more in the next section). For any movement off-site, a detailed agreement or contract should be in place with an entity that has party status to a DOT/PHMSA special permit. Facility and local government leadership, as well as waste transportation and treatment facilities, should work closely with state and local health departments, environmental agencies, and other appropriate entities and officials to ensure that the waste management plan does not conflict with any state statutory or regulatory prohibitions related to the inactivation and disposal of Category A infectious substances.

PACKAGING AND TRANSPORTATION OF WASTE

Regular trash or regulated medical waste management (handling and inactivation) from healthcare facilities is generally managed under state environmental regulations. This waste does not typically pose the same level of risk as a Category A infectious substance; thus the requirements for handling these wastes are different. Category B infectious substances that are discarded become regulated medical waste under both the federal DOT HMR and applicable state regulations. Standard packaging that is available through regulated medical waste companies, such as compliant bags, single use corrugated containers and other plastic reusable containers, can be used to safely package and transport regulated medical waste off site to be inactivated or “treated”. States and local regulations may stipulate the proper treatment method depending on the types of materials in the regulated medical waste stream. Some states have more specific requirements than others, so it is critical to check with the healthcare operations and make sure they identify their wastes appropriately for transport and disposal.

Because of the hazards posed by Category A infectious substances, these materials have more stringent packaging requirements than other infectious substances and regulated medical waste (RMW) as described above.

The transport of medical equipment, sharps, and used healthcare products (such as soiled absorbent pads or dressings, emesis pans, portable toilets; used PPE, including gowns, masks, gloves, goggles, face shields, respirators, booties, etc.; and byproducts of cleaning) contaminated or suspected of being contaminated with a Category A infectious substance must comply with the packaging requirements for infectious substances in the DOT HMR and, if applicable, the OSHA Bloodborne Pathogens standard.

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Materials that are suspected or known to be contaminated by Category A infectious substances may only be transported in two scenarios: in full compliance with classification and packaging requirements of the HMR, or under the terms of a special permit. Because of the relatively large quantity of contaminated waste generated when treating patients with known or suspected Ebola virus disease in 2014, the available packaging authorized under the regulations governing the transport of Category A infectious substances were not large enough to meet the need. Alternative packaging designs were needed to meet safety requirements and to accommodate the large volume of waste. DOT/PHMSA issued a special permit, DOT-SP 16279, which authorizes transportation of these Ebola contaminated wastes in the alternative packaging designs.

The specific requirements for authorized packaging and materials for transporting a Category A infectious substance are listed in DOT/PHMSA 49 CFR 173.196. In general, a Category A infectious substance must be triple packed in a:

- primary watertight receptacle,
- watertight secondary packaging, and
- rigid outer packaging.

There may be additional HMR packaging requirements for Category A infectious substances, depending on the physical state and other characteristics of the material, such as whether they are shipped:

- at ambient temperatures or higher;
- refrigerated or frozen; and
- in liquid nitrogen.

It is important to note that the special permit provides for an exception from the regulations but must still meet the intent and the safety of the regulations. The special permit allows for different sizes of packaging to accommodate larger volumes of contaminated waste. This special permit is only for Ebola. At this point there is no generic Category A special permit and it is likely that with each individual infectious substance there will be unique challenges so it is likely there will be a specific special permit for other infectious substance transportation in the future.

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Waste Handling Protocols

Facilities should have protocols to package, store and transport waste. Such protocols may address:

- Using a pre-identified route to a secure storage location within the facility that serves as a secured waste holding area, either prior to inactivation on-site or for holding prior to transport for off-site inactivation.
- Transporting Category A waste from the point of generation within the generating facility to a secure holding area with the use of covered push carts or bins or other leak-proof containers to ensure that there is no release or spillage of the waste.
- If applicable, storing packed Category A waste containers prior to waste vendor transport. Holding areas for Category A waste storage should be separate from other waste, located on impermeable surfaces and provide protection and security against spillage, weather, putrescence, pest infestation, and trespassers. The waste holding area should adequately accommodate the volume of packaged waste that may develop between waste transport vendor pickups (for example, 24-hour, 48-hour or 72-hour intervals), and should be secure at all times with access limited to authorized employees only. When contaminated waste and other solid wastes (for example, other regulated medical waste) are mixed together, manage the waste as contaminated waste.

In addition, local public health officials and facility staff should contain and package contaminated waste as close as possible to the point of generation. If this cannot be accomplished due to space limitations, specific protocols should be followed. Once primary waste containment has taken place, staff should refrain from opening containers to manipulate waste.

DISPOSITION OF WASTE

Once an infectious waste has been properly inactivated (i.e., it is no longer infectious), it is considered a solid waste and is handled, transported, and disposed of according to the regular protocols for solid waste management in the state. This generally means that the waste is sent to a municipal solid waste landfill or to a municipal waste combustor (otherwise known as a municipal waste incinerator).

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putrescence: The state of being putrescent.
Synonyms include breakdown, decay, decomposition, spoilage, and rot.

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A facility that has generated and then inactivated waste on-site through its normal processes, should verify with its state/local regulatory official that the waste may be treated as a solid waste, and verify that its “usual” solid waste disposal facility can handle the waste, especially if there is a large volume. The generating facility also should understand and comply with any special conditions that may be imposed by a permit, by the receiving facility, or by a state or local authority; and should verify that the disposal facility received and properly processed the waste.

PROTECTING WORKER HEALTH AND SAFETY

Protecting workers during handling, treatment, transport, or disposal of suspected or known Category A contaminated waste begins before the waste is generated, through anticipation, assessment, identification, and planning for occupational exposure risk and appropriate control measures.

The first and best strategy for protecting workers is to control the hazard at its source: if possible, minimize the amount of waste generated, and ensure plans are in place to deal with waste before generating it. Once waste is generated (that is, the point of origin), implement protective measures that continue through final disposition of the waste. Under OSHA standards for bloodborne pathogens, personal protective equipment (PPE) and respiratory protection (i.e., respirators to prevent inhalation of infectious materials), as well as other OSHA requirements, employers must protect workers who handle contaminated waste.

A comprehensive protection program for waste workers relies on a Hierarchy of Controls; engineering, administrative controls and safer work practices; PPE; and training, medical exams and other elements that OSHA standards require. This guidance provides general strategies for protecting workers, though employers must assess their worksites and the job duties of their workers to implement appropriate controls.

In all stages of the waste lifecycle, employers and workers should:

- Limit the number of workers who handle Category A waste to essential staff. For example, instruct and train healthcare workers generating contaminated waste during care of an infectious patient, to package the waste properly instead of requiring an environmental services, waste collection, or waste hauling workers to also handle the waste.

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- Whenever gloves are removed or changed, wash hands with soap and water for at least 20 seconds, or use alcohol-based hand rubs if soap and water are not immediately available. Always wash with soap and water if hands are visibly soiled.
- Avoid touching the face or other exposed parts of the body while wearing gloves or before washing/sanitizing bare hands.
- Change clothing and shower as soon as possible if work clothing becomes soiled.
- Discard soiled work clothing and PPE with other contaminated waste.
- Wear dedicated washable footwear while on the job.
- Train workers to notify a supervisor immediately if exposed to potentially infectious material or waste on the job, including on work clothing or exposed skin or through mucous membranes (e.g., eyes, nose or mouth).
- Consider vaccination to protect workers from diseases for which a vaccine exists. Although OSHA's Bloodborne Pathogens (BBP) standard at 29 CFR § 1910.1030 only requires the hepatitis B vaccine series be made available to workers with occupational exposure, as defined in the standard, employers may consider offering additional vaccines to their workers.



Workers on infectious disease sites may need to shower before leaving the worksite.

Engineering Controls

The work environment should be designed to eliminate or otherwise reduce worker exposure to hazards while handling waste. Engineering controls in waste operations serve as physical barriers between workers and pathogens, reducing the likelihood and amount of worker exposure to sources of infectious substances. Equipment that functions without worker actions (for example, continuous operation of a negative-pressure ventilation system in areas where waste is handled) provides the best protection.

Other engineering controls include using:

- Barriers (with windows or closed-circuit television monitors) between areas where

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waste processing equipment operates and where workers may control or observe the equipment.

- Needleless I.V. systems, retractable syringes and other devices designed to prevent needlestick injuries. These systems protect healthcare and waste workers.
- Rigid containers to package waste, including puncture-proof containers for sharps. Packaging must meet the requirements of OSHA's Bloodborne Pathogens Standard and DOT's HMR (or exceptions outlined in a special permit, if applicable).
- Equipment that ventilates outside the work area when treating contaminated waste.
- Suitable shelves, straps, or other equipment - especially in transport vehicles, where containers may move or shift - to secure stacked contaminated waste containers.



Retractable syringes can help prevent needle-stick injuries.

SAFER WORK PRACTICES AND ADMINISTRATIVE CONTROLS

Protocols should be developed for handling, transporting, treating and disposing of waste that, when properly followed, reduce the likelihood of worker injury and illness. Workers should be trained in how to perform their jobs safely, following appropriate work practices and administrative controls:

- Package waste in accordance with OSHA's Bloodborne Pathogens standard, CDC guidelines, and DOT's HMR. Proper packaging from the outset minimizes repackaging or additional handling. If DOT has issued a special permit for the waste, follow its provisions.
- To prevent toppling and spillage, place containers of waste as low as possible on dollies, hand trucks, or carts and when stacking (including in transport vehicles). Be sure to follow instructions provided by the local health officials and/or DOT special permit. Additional regulatory limitations may apply.
- Select waste processing techniques that minimize worker exposure to pathogens, including by minimizing the need for workers to handle waste (including in packaging).

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- Incinerate or autoclave entire unopened waste containers to eliminate exposure associated with handling and opening containers. For Category A waste, avoid reusable containers that must be emptied into an incinerator or autoclave and/or processed for reuse.
- Do not use open burning techniques, which could expose workers and other individuals to harmful air contaminants.
- Do not use waste management processes that involve shredding suspected or known contaminated waste, as these techniques may result in generation of bio-aerosols (aerosolized droplets containing infectious particles that can be inhaled). Shredders also may become clogged or jammed by atypical, porous waste materials (for example, linens, carpet, curtains, or other textiles) that must be discarded when decontamination is not possible.
- If workers use shredding equipment despite this guidance recommending otherwise, and if the shredding equipment becomes clogged, avoid entering clogged shredding machines to resolve mechanical problems. If a worker must do so, always ensure the machine is off, the worker correctly uses appropriate PPE, and the worker follows proper lockout/tagout procedures for controlling hazardous energy. To prevent worker exposure to infectious material in equipment that becomes clogged prior to completing treatment, use chemical decontamination methods prior to servicing equipment in addition to PPE.
- Handle inactivated, non-infectious waste as though it may continue to pose a hazard from sharps or other puncture injuries. In particular, autoclaved waste may contain needles, broken glass and other hazards, even though these items are sterile after treatment (assuming use of an effective inactivation protocol).

Hazardous Waste Operations and Emergency Response

Routine contaminated waste handling, transport, treatment, and disposal operations typically do not fall under OSHA's HAZWOPER standard (29 CFR 1910.120). However, HAZWOPER requirements may apply to incidents that release, or substantially threaten to release, a hazardous substance, including biological agents, into the environment, which may occur during a transportation accident involving contaminated waste.

Employers, such as those with contracts to transport contaminated waste under a DOT special permit, should be familiar with the provisions of the HAZWOPER standard, including paragraph (q), and be prepared to comply, as needed. For emergency response operations

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that fall under HAZWOPER, employers must have a written emergency response plan with certain basic and critical elements. They must appropriately train workers who will respond to an emergency before participation in an actual incident, implement medical surveillance for workers potentially exposed to hazardous substances during work, maintain exposure records, and provide appropriate PPE to workers.

Employers providing waste transportation services under a DOT special permit generally must have a spill response plan and provide hazardous materials training to workers, as required by 49 CFR § 172.704. Employers can plan and train for emergency response operations involving spills in a way that complies with the OSHA and DOT requirements at the same time. Specifically, employers must train workers on the special permit and its conditions.

Although not every employer's operations fall under the scope of the HAZWOPER standard, developing emergency plans can ensure a safe, effective response when emergencies, including releases or substantial threats of releases of hazardous substances, do occur. Employers should evaluate their risk and develop plans for emergency events. Such plans should address worker safety and health considerations, State and local requirements, DOT/PHMSA training and security plan requirements, and the requirements of any DOT-issued special permits.

PLANNING FOR HANDLING OF WASTE

Every step of a waste-handling operation should be carefully planned. Potential hazards and procedures should be examined and evaluated to minimize danger. Other guidance includes the following:

- Containers should not be reopened once they have been closed.
- Ensure that you have proper markings on the containers.
- If there were other potential hazards in the container (such as batteries or air filters, etc., that could contain hazardous waste), it should be noted on the outside of the outermost container.

With this information, a preliminary waste-handling plan is typically developed and can include the following information:

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- Amount of handling required.
- Handling equipment necessary.
- Workers selected for the job and the PPE required.
- Appropriate handling procedures to be used.

HANDLING HAZARDOUS MATERIALS

Handling Different Types of Waste Containers

On a Category A waste site, you might encounter different types of waste containers, based on the DOT requirements or Special Permit conditions for managing this waste. Be sure to be familiar with the conditions of the special permit prior to preparing any waste for shipment. This is critical so that the proper containers are used from the beginning to minimize material handling. As a general rule, when handling waste containers, you should always do the following:

- Work in teams of at least two people (buddy system).
- Stay in visual range of your team members at all times.
- Be able to communicate with your other team members and the site safety and health officer (S&HO).

Note: You should always perform a visual inspection before touching any container.

MECHANICAL DEVICES

You should always use mechanical devices whenever possible for lifting, moving, and managing waste that is too heavy to manually handle. This may include the use of hand trucks/dollies, forklifts or jacks. You must be properly trained and authorized to operate these mechanical devices. Additional decontamination procedures should also be considered if these devices are used in contaminated areas.

Inspecting Mechanical Devices

All mechanical lifting and moving devices must be inspected regularly and repaired when necessary.

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As a safety precaution, you should always check for faulty or defective parts before lifting a load that is near the load capacity of the equipment. Tags must clearly state the rated load capacity on all lifting devices and you should never lift more than the equipment can handle.

MANUAL HANDLING

When manually lifting and handling material, you should always work in a way that ensures your safety and avoids damaging the material being handled or the equipment being used. You should never attempt to lift objects that are either too heavy or bulky to handle safely. Whenever possible, you should push loads rather than pull them. Pushing uses your strong leg muscles, while pulling uses the easily strained muscles in your back.

Therefore, it is important for you to follow safe work practices such as the following:

- You should stay alert and find out about possible new hazards as you do the job.
- There should be a supply of storage containers or overpack drums and specialized dedicated spill response kit specific for highly infectious substances. Overpack drums are larger drums into which leaking or damaged drums are placed for handling. Some circumstances may require the use of overpack drums due to the final end disposal restrictions.
- If there is a potential for a spill or leak, a berm or dike should be built around the containers to contain spilled liquid.

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overpack: To place a drum that is in bad condition into a larger drum so that any leakage will be contained inside the second drum; an overpack is a container that is made to hold a 55-gallon drum.

Guidelines for Lifting and Carrying Heavy Objects

- Inspect the load for sharp edges, deterioration, and wet or greasy spots in contaminated areas.
- Wear the right kind of gloves when lifting or handling highly infectious substance packaging.
- Wear appropriate PPE when lifting or handling waste containers.
- Inspect the area where you have to carry the load. The area should be free of obstructions that could cause you to trip, slip, or spill the load.
- Ensure you know where the load needs to go in advance and know your route.
- Specialized secure areas will be provided for storage of the packaged highly infectious substances.

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Safe-lifting Procedures

1. Firmly place your feet about 10" to 15" apart. Place one foot alongside the object being lifted and the other foot behind the object.
2. Use the knee-bend (*Figure 1*) or squatting position. Keep your back straight (straight does not mean vertical). Tuck in your chin so that your neck and head continues the straight back line.
3. Grab the object using the Palmer grip. Palmer grip is a grip where your fingers and hand are extended around the object to be lifted using the full palm.
4. Tuck your arms and elbows into the side of your body and position your body so that the total weight of the object and your body is centered over your feet.
5. Start lifting with a thrust of your rear foot, keeping the object close to your body. Lift with your legs (*Figure 2*). Do not lift with your back.
6. Carry the load close to your body – not with extended arms. To turn or change position, shift your feet. Do not twist your back. Be sure to inspect the container for contamination prior to lifting and carrying the load close to your body.
7. To set an object on the ground, follow the same steps in the reverse order.



Figure 1. Safe lifting (1)



Figure 2. Safe lifting (2)

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PACKAGING FOR INFECTED WASTE

Packaging of infected waste may differ depending on whether the waste has been inactivated, or if it is confirmed to contain Category A infectious substances (Figure 3). Regulated Medical Waste (RMW) that is negative for Ebola or other Category A infectious diseases requires special packaging and labeling. In addition to this special packaging, overpack drums are required for confirmed cases of Category A waste. Overpacked drums should follow the instructions by the manufacturer or the special permit as applicable and as required.

Note: Different types of packaging may be required depending on the stipulations of the transport permit, once it has been issued.

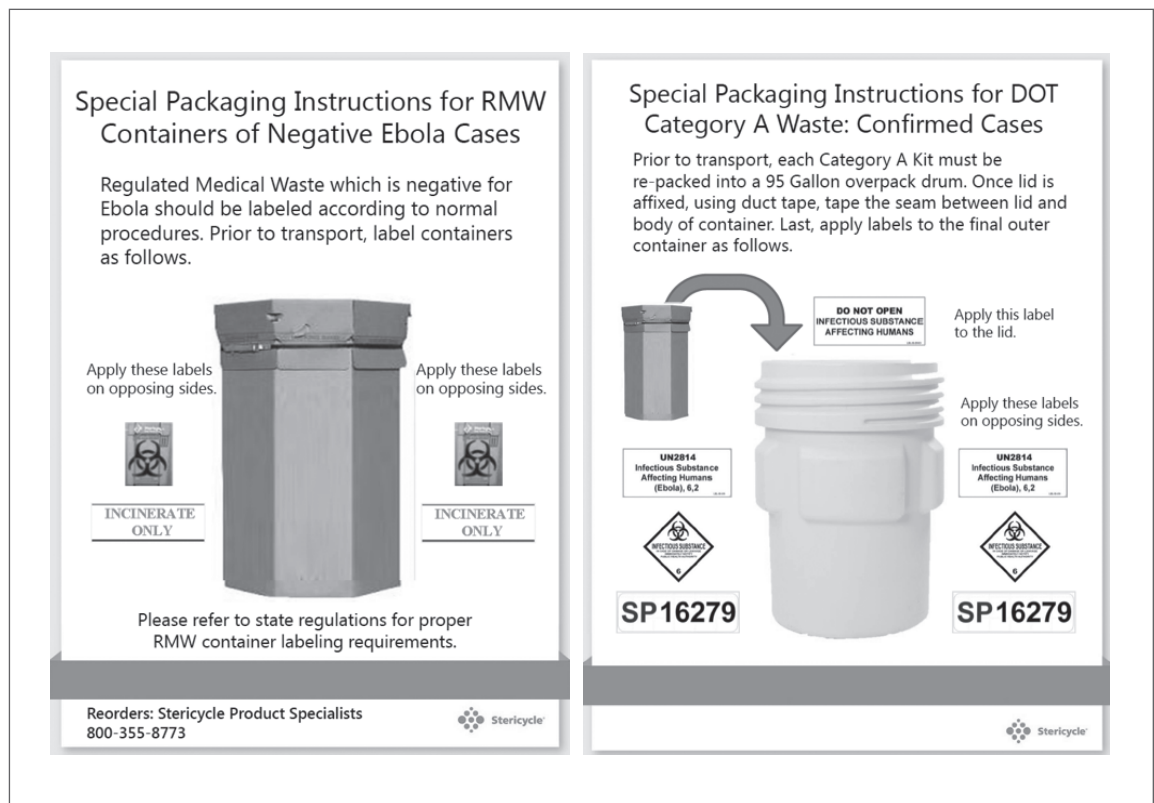


Figure 3: Examples of packaging for inactivated and confirmed Category A waste.

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HOW TO OVERPACK

There are two primary methods for packing a smaller drum into an overpack drum:

Method 1: V-shape

1. Place the smaller drum on its side.
2. Slide the smaller drum into the overpack drum using pieces of cardboard as a sliding surface, or place the smaller drum and the overpack drum in a V-shape (Figure 4) and roll them together to insert the smaller drum in the overpack drum.



Figure 4. V-shape overpack method

Method 2: Upside-down

1. Lay the lid of the overpack drum upside down on a pallet.
2. Place the body of the overpack drum over the smaller drum (Figure 5) and tighten the body into the lid.
3. Once the body of the overpack drum is tightened into the lid, flip the entire overpack drum into its normal upright position.
4. Check to make sure that the lid is completely tightened.



Figure 5. Upside-down overpack method

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WASTE STORAGE AND TRANSPORTATION

You should try to handle drums and containers as little as possible. Sometimes containers may be stored in a load-out area (see Chapter 6). This temporary storage helps ensure security of the waste. It also protects drums and containers from contamination or exposure to the highly infectious materials. Storage areas should be free of vectors, extreme temperatures, or unauthorized access.

Storage Practices

It is very important to properly store hazardous materials on site, to ensure the safety and health of workers handling them.

The following safe-work practices should be used when storing hazardous materials:

- **Labeling:** Labeling hazardous materials for storage and shipping should be done within the appropriate regulations or guidelines established by the CDC, OSHA, DOT and specifically within the Special Permit.
- **Securing and authorizing access:** Once materials are properly labeled, they can be stored on site in a load-out area that is secured against entry by unauthorized personnel. This security procedure protects those who are unaware of the hazards associated with the stored materials. It also ensures that materials can't be tampered with or altered.

PREPARING FOR TRANSPORTATION

Once materials have been properly classified, packaged and labeled, they can be prepared for transport off site. If you are loading drums or containers onto trucks, they must be firmly secured to prevent them from shifting or breaking during transit. The wheels of trucks being loaded or unloaded should be blocked (chocked) to prevent movement of the truck. The packages should be loaded and secured in accordance with any additional requirements per the special permit (for example it may prohibit stacking of containers or limit the number of containers, etc.)

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Summary

Handling infectious or regulated medical waste can be done safely. Recent experiences with the handling of contaminated waste generated by patients with Ebola virus disease revealed a lack of universal understanding as to how to decontaminate or dispose of infectious or regulated medical waste. An infectious substance is considered Category A if it is in a form capable of causing permanent disability, or life-threatening or fatal disease in otherwise healthy humans or animals, upon exposure to the substance.

The DOT's Hazardous Materials Regulations (HMR) regulate infectious substances and regulated medical waste (RMW) as a hazardous material. The HMR apply to any material that DOT determines is capable of posing an unreasonable risk to health, safety, and property when transported. An infectious substance and regulated medical waste must conform to all applicable requirements when offered for or actually transported by air, highway, rail, or water. But the overall handling of infectious or regulated medical waste begins with the creation of the waste, includes waste transportation, and ends at final disposition.

Once a patient is suspected to have, or has been diagnosed with, an infection caused by one of the Category A infectious substances, the facility treating the patient should activate their facility emergency waste management plan. This plan will indicate whether the facility will be using on-site activation (autoclaving or incineration, for example), or if it will need to follow all necessary requirements for transporting the waste off-site for inactivation. Off-site transportation requires additional steps and compliance with specific regulations. In most circumstances, off-site transportation will likely be for incineration. Incineration of contaminated waste may be subject to federal, state and/or local laws or regulations. Facilities should have protocols to package, store and transport waste.

Regular trash or regulated medical waste management (handling and inactivation) from healthcare facilities is generally managed under state environmental regulations. Requirements for handling these wastes are different, because this waste does not typically pose the same level of risk as a Category A infectious substance. Category B infectious substances that are discarded become RMW under both the federal DOT HMR and applicable state regulations. Because of the hazards posed by Category A infectious substances, these materials have more stringent packaging requirements than other infectious substances and RMW.

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Once an infectious waste has been properly inactivated and is no longer infectious, it is considered a solid waste and is handled, transported, and disposed of according to the regular protocols for solid waste management in the state. This generally means that the waste is sent to a municipal solid waste landfill, or to a municipal waste combustor (otherwise known as a municipal waste incinerator). Protecting workers during handling, treatment, transport, or disposal of suspected or known Category A contaminated waste begins before the waste is generated, through anticipation, assessment, identification, and planning for occupational exposure risk and appropriate control measures.

The work environment should be designed to eliminate or otherwise reduce worker exposure to hazards while handling waste. Engineering controls include barriers, needless I.V. systems, ventilation equipment, and rigid containers for packaging waste. Administrative controls include protocols for handling, transporting and disposing of waste. Routine contaminated waste handling, transport, treatment, and disposal operations typically do not fall under OSHA's HAZWOPER standard. However, HAZWOPER requirements may apply to incidents that release, or substantially threaten to release, a hazardous substance, including biological agents, into the environment.

On a Category A waste site, you might encounter different types of waste containers, based on the DOT requirements or special permit conditions for managing the waste. You need to familiarize yourself with the conditions of the special permit prior to preparing any waste for shipment. This is critical so that the proper containers are used from the beginning to minimize material handling. You should always use mechanical devices whenever possible for lifting, moving and managing waste that is too heavy to manually handle. This may include the use of hand trucks/dollies, forklifts, or jacks.

Packaging of infected waste may differ depending on whether the waste has been inactivated, or if it is confirmed to contain Category A infectious substances. RMW that is negative for Ebola or other Category A infectious diseases requires special packaging and labeling. Overpack drums are also required for confirmed cases of Category A waste. Drums and containers should be handled as little as possible. A load-out area can provide temporary storage and help ensure security of the waste. Safe work practices like labeling materials and securing and authorizing access to materials should be used when storing hazardous materials. Once materials have been properly classified, packaged and labeled, they can be prepared for transport off-site.

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