

# Location, Location, Location! Environmental Services

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# Disclosures

- ▶ Nothing to disclose

# Learning Objectives

- ▶ Formulate effective strategies to protect healthcare providers and staff

# Specific Protocols for Solid Waste Management

- ▶ Anteroom
- ▶ Patient room
- ▶ End of shift
- ▶ Spill clean up
- ▶ Moving waste from patient room to autoclave

# Solid Waste Management

## In patient room:

- ▶ Solid waste is collected in red biohazardous waste bag; the bag should not be more than HALF FULL
- ▶ 200 mL to 300 mL of water inside the bag; tie the bag closed
- ▶ Bag is wiped down with bleach wipes and disposed in waste bag
- ▶ Bag is placed in another red biohazardous waste bag; tie the bag closed
- ▶ Second bag is wiped down with bleach wipes
- ▶ Bag is transferred into the anteroom





# Solid Waste Management (cont.)

## In the anteroom:

- ▶ Bags of solid waste coming out of the patient room are immediately placed into an autoclave bag and secured
- ▶ Bag is wiped down with bleach wipes
- ▶ Bag is then placed in roller drum located directly outside of the anteroom
- ▶ Roller drum is then moved to staging area or the autoclave room as appropriate
- ▶ A new empty roller drum is then placed outside the anteroom
- ▶ Roller drums are wiped down once bags are removed for autoclaving



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# Solid Waste Management (cont.)

## **Autoclave:**

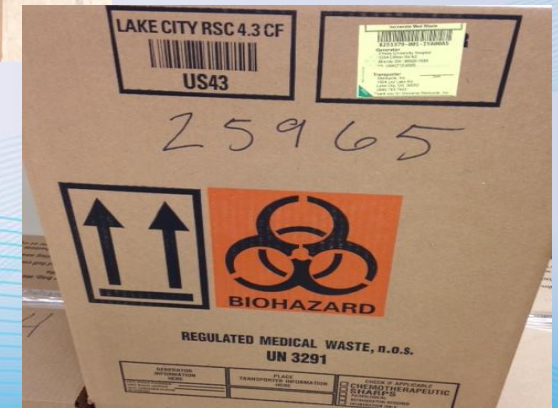
- ▶ Bags are placed in the autoclave
- ▶ A 3M ATTEST test pack is used with every run
- ▶ Autoclave is run on the GRAVITY setting (1 hour)



# Solid Waste Management (cont.)

## Unloading the Autoclave:

- ▶ Once autoclave cycle is complete and has cooled, waste bags are removed and placed in a lined Regulated Medical Waste box
- ▶ 3M test pack is analyzed.
- ▶ All runs are validated and documented



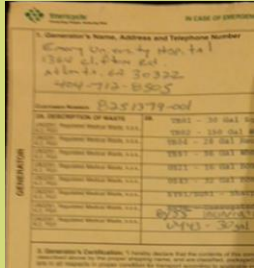


# Solid Waste Management (cont.)

- ▶ The boxes picked up weekly or as needed by a dedicated truck and transported as regulated medical waste for incineration



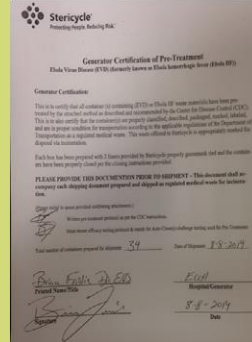
# Autoclave Validation



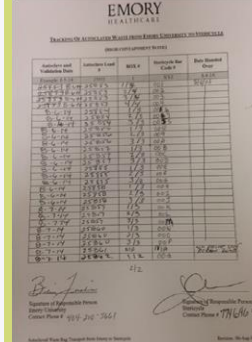
**Stericycle  
manifest  
(yellow  
sheet)  
signed by  
driver/pick-  
up contact**



**Printout of  
bar code  
details  
affixed to  
boxes that  
were picked  
up**



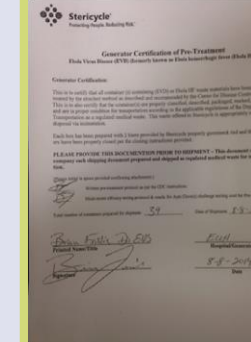
**Stericycle  
"Generator  
Certificate  
of Pre-  
Treatment"  
signed by  
both  
parties**



**Emory  
autoclave  
tracking  
document  
signed by  
both  
parties**



**Copies of  
autoclave  
load  
printouts**



**"Certificate  
of  
Destruction"  
from  
Stericycle**

# Solid Waste Management

## Documentation is key!

**EMORY HEALTHCARE**

TRACKING OF AUTOCLAVED WASTE FROM EMORY UNIVERSITY TO STERICYCLE  
(HIGH CONTAINMENT SUITE)

Autoclave and Validation Date	Autoclave Load #	BOX #	Stericycle Bar Code #	Date Handed Over
Example: 8-3-14	25853	1	XYZ	8/3/14
8-7-14	25853	1/1	001	
8-7-14	25853	2/1	002	
8-7-14	25853	3/1	003	
8-7-14	25853	4/1	004	
8-7-14	25853	5/1	005	
8-7-14	25853	6/1	006	
8-7-14	25853	7/1	007	
8-7-14	25853	8/1	008	
8-7-14	25853	9/1	009	
8-7-14	25853	10/1	010	
8-7-14	25853	11/1	011	
8-7-14	25853	12/1	012	
8-7-14	25853	13/1	013	
8-7-14	25853	14/1	014	
8-7-14	25853	15/1	015	
8-7-14	25853	16/1	016	
8-7-14	25853	17/1	017	
8-7-14	25853	18/1	018	
8-7-14	25853	19/1	019	
8-7-14	25853	20/1	020	
8-7-14	25853	21/1	021	
8-7-14	25853	22/1	022	
8-7-14	25853	23/1	023	
8-7-14	25853	24/1	024	
8-7-14	25853	25/1	025	
8-7-14	25853	26/1	026	
8-7-14	25853	27/1	027	
8-7-14	25853	28/1	028	
8-7-14	25853	29/1	029	
8-7-14	25853	30/1	030	
8-7-14	25853	31/1	031	
8-7-14	25853	32/1	032	
8-7-14	25853	33/1	033	
8-7-14	25853	34/1	034	
8-7-14	25853	35/1	035	
8-7-14	25853	36/1	036	
8-7-14	25853	37/1	037	
8-7-14	25853	38/1	038	
8-7-14	25853	39/1	039	
8-7-14	25853	40/1	040	
8-7-14	25853	41/1	041	
8-7-14	25853	42/1	042	
8-7-14	25853	43/1	043	
8-7-14	25853	44/1	044	
8-7-14	25853	45/1	045	
8-7-14	25853	46/1	046	
8-7-14	25853	47/1	047	
8-7-14	25853	48/1	048	
8-7-14	25853	49/1	049	
8-7-14	25853	50/1	050	

Signature of Responsible Person  
Emory University  
Contact Phone # 404-210-3661

Signature of Responsible Person  
Stericycle  
Contact Phone # 774-696-4641

Autoclaved Waste Bag Transport from Emory to Stericycle  
Revision: 06-Aug-14

CYCLE COUNT 29907  
OPERATION 446 40  
STERILIZED 446 40

CYCLE TIME = 180.00  
CONTROL TEMP = 132.00  
STOP TIME = 00.00  
REV TIME = 0.00

U-Line  
Process

TIME 7:48

TIME	U-Line	Process
7:48:00	150.2	00
7:48:15	150.2	00
7:48:30	150.2	00
7:48:45	150.2	00
7:49:00	150.2	00
7:49:15	150.2	00
7:49:30	150.2	00
7:49:45	150.2	00
7:50:00	150.2	00
7:50:15	150.2	00
7:50:30	150.2	00
7:50:45	150.2	00
7:51:00	150.2	00
7:51:15	150.2	00
7:51:30	150.2	00
7:51:45	150.2	00
7:52:00	150.2	00
7:52:15	150.2	00
7:52:30	150.2	00
7:52:45	150.2	00
7:53:00	150.2	00
7:53:15	150.2	00
7:53:30	150.2	00
7:53:45	150.2	00
7:54:00	150.2	00
7:54:15	150.2	00
7:54:30	150.2	00
7:54:45	150.2	00
7:55:00	150.2	00
7:55:15	150.2	00
7:55:30	150.2	00
7:55:45	150.2	00
7:56:00	150.2	00
7:56:15	150.2	00
7:56:30	150.2	00
7:56:45	150.2	00
7:57:00	150.2	00
7:57:15	150.2	00
7:57:30	150.2	00
7:57:45	150.2	00
7:58:00	150.2	00
7:58:15	150.2	00
7:58:30	150.2	00
7:58:45	150.2	00
7:59:00	150.2	00
7:59:15	150.2	00
7:59:30	150.2	00
7:59:45	150.2	00
8:00:00	150.2	00

TEMP REQUEST OF  
TEMP. REASON: IF

CONDITION = 00121  
STERIL. EFF = 100.00  
STARTUP = 0406475  
TOTAL CYCLE = 1040491

A SET READY 3:58:35A  
DOOR UNLOCKED

STERICYCLE  
PROTECTING PEOPLE. REDUCING RISK.

Generator Certification of Pre-Treatment  
Ebola Virus Disease (EVD) (formerly known as Ebola hemorrhagic fever (Ehola HFF))

Generator Certification:

This is to certify that all container(s) containing (EVD) or Ebola HF waste materials have been pre-treated by the attached method as described and recommended by the Center for Disease Control (CDC). This is to also certify that the container(s) are properly classified, described, packaged, marked, labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation as a regulated medical waste. This waste offered to Stericycle is appropriately marked for disposal via incineration.

Each box has been prepared with 2 liners provided by Stericycle properly gossneck tied and the containers have been properly closed per the closing instructions provided.

PLEASE PROVIDE THIS DOCUMENT PRIOR TO SHIPMENT - This document shall accompany each shipping document prepared and shipped as regulated medical waste for incineration.

(Please bring in space provided confirming attachments.)

Written pre-treatment protocol as per the CDC instructions.  
Most recent efficacy testing protocol & results for Auto Clave(s) challenge testing used for Pre-Treatment.

Total number of containers prepared for shipment: 34 Date of Shipment: 8-8-2014

Brian Frisler, D.D.S.  
Printed Name/Title  
Signature  
Date: 8-8-2014  
Hospital/Generator

August 2014



# Liquid Waste Management

- ▶ **All liquid waste materials are pre-treated before disposal**
  - ▶ Commode was pretreated with MicroChem (for final concentration of 5%)
  - ▶ If patient is nonambulatory, bedside/autoclavable commode pretreated with MicroChem was used; solidifier was then added before disposal by solid waste disposal waste stream
  - ▶ If patient used a bag for vomitus, solidifier added to bag and then disposed by solid waste disposal process



# Facility Decon

## Patient Room Example:

- ▶ Personnel don with complete PPE
- ▶ Patient belongings to be gathered and placed on the bed
- ▶ All surfaces, drawers, bathrooms to be wiped with microchem
- ▶ Equipment to be wiped according to manufacturer's instruction
- ▶ Waste is double bagged, wiped, and handed over to anteroom personnel
- ▶ Anteroom personnel place the waste in autoclave bag, tie, and place in the waste drum in hallway
- ▶ Room is then ready for VHP decontamination



# CDC Guidance for Safe Handling of Human Remains of Ebola Patients in US Hospitals and Mortuaries

## According to CDC Guidelines:

- ▶ The body should be wrapped in a plastic shroud and placed in a leak-proof bag, then placed in another leak-proof bag
- ▶ Care for potential contamination and disinfection at every point along the way
- ▶ The CDC does not recommend embalming or washing the body
- ▶ Remains should not be removed from the bags
- ▶ Remains should be cremated or buried promptly in a hermetically sealed casket
- ▶ **See CDC Web site for detailed guidance**

[www.cdc.gov/vhf/ebola/hcp/guidance-safe-handling-human-remains-ebola-patients-us-hospitals-mortuaries.html](http://www.cdc.gov/vhf/ebola/hcp/guidance-safe-handling-human-remains-ebola-patients-us-hospitals-mortuaries.html)

# Be Prepared

## Minimum supplies consist of the following:

1. 50 Stericycle boxes
2. 3 cases of red bags
3. 1 case of autoclave bags
4. 1 bag of autoclave bag rubber bands
5. 1 incubator
6. 1 case spore testing pack
7. 2 cart covers
8. 1 spill kit
9. 1 pair heat-resistant gloves
10. Policies and procedures
11. 2 binders (1) autoclave (1) waste packaging
12. 12 Rubbermaid® barrels with lids and casters

**After patient has been discharged, clean supplies are shrink-wrapped and sent to our offsite distribution center**





# Regulations, Guidelines, and Recommendations Related to Waste Management

- ▶ CDC Guidelines for Ebola in Healthcare Workers and Settings
- ▶ DOT Hazardous Materials Regulations (Division 6.2 Biological Agents)
- ▶ Georgia EPD





# Appropriate Disinfectants

U.S. ENVIRONMENTAL PROTECTION AGENCY

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## Disinfectants for Use Against the Ebola Virus

This list of registered disinfectants meets the Center for Disease Control's (CDC) criteria for use against the Ebola virus on hard, non-porous surfaces. It is necessary to follow the specific use instructions on the label for each disinfectant in order for the disinfectant to be effective. The product label will not specifically mention effectiveness against the Ebola virus. Instead, it will mention effectiveness against a different virus, such as norovirus, rotavirus, adenovirus, and/or poliovirus.

CDC's guidance recommends:

1. The use of an EPA-registered hospital disinfectant with a label claim for use against a non-enveloped virus (e.g., norovirus, rotavirus, adenovirus, poliovirus); and
2. The product label use directions for the non-enveloped virus or viruses should be followed when disinfecting against the Ebola virus.

Note: The list below is not a comprehensive list. There may be additional disinfectants that meet the CDC's [Interim Guidance for Environmental Infection Control in Hospitals for Ebola Virus](#) and EPA will update this list with additional products as needed. Companies that wish to add their product(s) to the list, see [guidance below](#).

Product Information		Use Site		
Registration Number	Marketed Product Name	Hospital/Health Care Facilities (Y/N)	Institutional (including schools, office buildings) (Y/N)	Residential (Y/N)
10324-105	Maquat 128-PD	Y	Y	Y
10324-105-66243	Germ Control	Y	Y	N
10324-117	Maquat 710-M	Y	Y	Y
10324-117-670	Quick San 10	Y	Y	N
10324-170	Maquat 64-PD-X	Y	Y	Y
10324-198	Maquat 702.5-M	Y	Y	Y
10324-214-12120	Navigator 62 Perisept	Y	Y	N
10324-214-6186	Neutra-Guard	Y	Y	N
10324-214-8155	Husky 815 HCD Disinfectant	Y	Y	N
10324-58	Maquat 128	Y	Y	Y
10324-58-670	Sunburst No-Bac	Y	Y	N
10324-59	Maquat 750-M	Y	Y	Y
	Maquat 64	Y	Y	Y

[www.epa.gov/oppad001/list-l-ebola-virus.html](http://www.epa.gov/oppad001/list-l-ebola-virus.html)

# Contaminated Durable/Non Disposable Equipment

- ▶ Quaternary ammonium compound mat—MICRO CHEM
- ▶ Replaced daily
- ▶ Use disposable pads to cleanse the contaminated equipment
- ▶ Done by patient's nurse, if equipment is in patient room

# Decontamination of Unit After Patient Is Released

- ▶ Certified vendor—Safety Plus
- ▶ Use of hydrogen peroxide vapor generators
- ▶ Biological **and** chemical validators

# Waste Management

## Take home messages...

- ▶ **There will be a lot more waste than you anticipate**
  - ▶ **Be proactive:** Start talking to all those involved
  - ▶ **Communications:** Discuss with local authorities and your biomedical waste vendors—build your partnerships now
  - ▶ **Be very systematic**
  - ▶ **Think sustainable:** Have a plan, a back-up plan, and a back-up to the back-up plan
  - ▶ Know the rules, regulations, and guidelines
  - ▶ If you have access to **Biorisk Management** professionals, involve them in the process
  - ▶ **Document everything**



# Additional Resources

- ▶ Ebola Preparedness Protocols. Emory Healthcare. [www.emoryhealthcare.org/ebola-protocol/ehc-message.html](http://www.emoryhealthcare.org/ebola-protocol/ehc-message.html)
- ▶ Ebola-Associated Waste Management. Centers for Disease Control and Prevention. [www.cdc.gov/vhf/ebola/healthcare-us/cleaning/waste-management.html](http://www.cdc.gov/vhf/ebola/healthcare-us/cleaning/waste-management.html)
- ▶ Infection Prevention and Control Recommendations for Hospitalized Patients Under Investigation (PUIs) for Ebola Virus Disease (EVD) in U.S. Hospitals. Centers for Disease Control and Prevention. [www.cdc.gov/vhf/ebola/healthcare-us/hospitals/infection-control.html](http://www.cdc.gov/vhf/ebola/healthcare-us/hospitals/infection-control.html)