Introduction

Welcome to the Medical Waste Management for Labs (BIO301L) Course.

Hospital medical waste training is conducted at orientation and via classroom setting. Contact Hospital Safety for the schedule.

This course meets US DOT training requirements for person who offer medical waste to a contractor for transport from UAB facilities.

Training

Training, Because it’s the law!

We toss trash in garbage cans all day long – sometimes without thought of where it goes or how some garbage should be handled differently. You are required to complete the training on how to handle medical waste appropriately. Why? Because it’s the law!

Medical Waste

ADEM Definition

ADEM’s Solid Waste Program Chapter 335-13-7 defines medical waste as:

- animal related waste
- microbiological waste
- pathological waste
- renal dialysis waste
- sharps
- surgical waste
Medical Waste Management for Labs (BIO301L) – Course Material

For more detailed definitions, see Appendix J in the Biosafety Manual.

**US DOT Definition**

US DOT defines regulated medical waste, aka clinical waste, or biomedical waste as:

- waste or reusable material derived from the medical treatment or biomedical research of an animal or human
- Hazardous Materials Regulation 49 CFR173.134 Class 6, Division 6.2 Infectious substance
  - assigned proper name – *Regulated Medical Waste, n.o.s.*
  - assigned identification number – *UN 3291*

US DOT further defines infectious substances under Class 6, Division 6.2 Infectious Substance as “...a material known or reasonably expected to contain a pathogen.” Those pathogens are divided into two categories – Category A and B.

**Infectious Substance – Category A**

- The definition is “...an infectious substance in a form capable of causing permanent disability or life-threatening or fatal disease in otherwise healthy humans or animals when exposure to it occurs.”

- **Examples:**
  - HIV cultures
  - Hepatitis B cultures
  - MTb cultures
  - Smallpox virus
  - Dengue virus cultures
  - West Nile virus cultures

*Category A Substances cannot be classified, packaged, or accepted as regulated medical waste.*
**Biological Substances, Category B**

The definition is “...an infectious substance that is **not in a form generally capable of causing** permanent disability or life-threatening or fatal disease in otherwise healthy humans or animals when exposure to it occurs.”

- **Examples:**
  - Strep pneumo
  - Staphlacoccus aureus
  - HIV in patient sample
  - Hepatitis B in patient sample
  - Pseudomonas aeruginosa
  - Proteus mirabilis

A complete list of Category A and B pathogens can be found on the OH&S website.

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**Category B waste is considered regulated medical waste.**

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**Bulk Liquid Medical Waste**

Free-flowing material or items saturated to the point of dripping liquids containing visible blood or blood components would be treated or handled as bulk blood and bulk blood components.

This means if you are handling bulk blood, the materials can be solidified. If they can’t be solidified then enough absorbent material must be placed in the load in order to capture the liquid should the container rupture during handling. The contractor cannot accept free flowing liquids placed loosely in the medical waste transport containers.
Waste that is NOT Regulated as Medical Waste

Below is a list of items found in medical areas, but they are not considered regulated medical waste.

- Drugs
- Food/drink containers
- Fixatives & preservatives
- Compressed gas cylinders
- Radioactive material
- Resource Conservation and Recovery Act (RCRA) Hazardous or chemical waste
- Non-contaminated broken glass

Sharps

**ADEM Definition**

“...any used or unused discarded article that may cause punctures or cuts and has been or is intended for use in animal or human medical care, medical research or in laboratories using microorganisms” is the definition used by ADEM for sharps.

**Examples:**

- needles
- IV tubing with needles attached
- scalpel blades
- syringes (with or without a needle)
  - glassware, blood vials, pipettes and similar items – **IF** contaminated with blood or body fluids
US DOT Definition

“...any object contaminated with a pathogen or that may become contaminated with a pathogen through handling or during transportation and also capable of cutting or penetrating skin or a packaging material” is the definition used by the US DOT.

Examples:

- Contaminated:
  - needles
  - syringes
  - scalpels
  - broken glass
  - culture slides or dishes
  - broken capillary tubes
  - broken rigid plastic
  - exposed ends of dental wires

UAB Definition

While ADEM and US DOT have slightly different definitions, UAB defines a sharp as “...any used or unused discarded article that is capable of cutting or penetrating the skin or can cut or puncture packaging material during transportation and has been or is intended for use in animal or human medical care, medical research, or in laboratories using microorganisms."

Examples include:

- needles
- IV tubing with needles attached,
- scalpel blades,
- syringes (with or without a needle),
- contaminated glassware, glass blood vials, pipettes and similar items

See Table 1, Section 11, UAB Biosafety Manual for more information.
Medical waste must be separated from non-medical waste at the point of generation.

**Sharps Separation**

Sharps must be placed in approved sharps containers as close to the work area as possible. Seal the container when sharps reach the fill line and place in medical waste transport container. Approved sharps containers are leak proof under *normal handling procedures*.

**For Incineration**

Further separate waste destined to be incinerated from the regular medical waste stream.

Place the waste in containers labeled "**Incinerate Only.**"

**Jurisdiction**

Who is in charge of regulating medical waste?

Both the **Alabama Department of Environmental Management Land Division (ADEM)**, and the **United States Department of Transportation (US DOT)** are in charge of regulations regarding medical waste at UAB.

**Regulations**

You may exceed both ADEM and the US DOT’s minimum requirements after consulting with OH&S. However, you must at the very least meet their minimum requirements for handling medical waste.

For more information, see Table 1 & 2 of the Biosafety Manual.
And Now a Word About Our Contractor

The U.S. DOT requires that you know a little about your medical waste contractor – Stericycle, Inc.

Stericycle, Inc.:

- collects, treats and disposes of medical waste
- provides boxes, bins, and carts for the disposal of medical waste
- is a permitted transporter of medical waste
- is the largest medical waste company in the United States

Treatment Methods

Stericycle autoclaves solid medical waste generated in hospitals, clinics, and research labs. A large grinder renders the waste unrecognizable for disposal in landfills.

Stericycle incinerates:

- pathological waste
- animal carcasses
  - Please note: Animal carcasses must be placed in ASTM-D red bags and then into either a Stericycle fiberboard transport container or plastic transport cart labeled “Incinerate only.”
- animal bedding
- trace chemo waste

Check out Stericycle’s online services

Please review the Waste Acceptance Policy for Regulated Medical Waste.
Records

Stericycle will produce a paper record of the waste picked-up. **ONLY** people who have successfully completed this training **can sign** the pickup record. In addition the record (**MUST** have the name printed on it) as well as the individual’s **BlazerID**. These records are periodically checked against training records to verify UAB is in compliance.

Markings

Special Markings

Materials requiring incineration as the final treatment method by Stericycle must be:

- placed in a red bag* and a Stericycle fiberboard transport container **OR**
- placed in a red bag* and a Stericycle plastic transport container labeled “Incineration Only”

*Red bag liners for transport containers must meet ASTM-D criteria-see Supplies List.

ASTM-D Bags

ASTM-D bags must be:

- able to withstand dropping while full
- correctly tied and secured
- of sufficient thickness to completely contain the contents under normal handling procedures

The verbiage on the outermost bag the waste is placed in must contain the initials “ASTM-D.” Also, there are other markings the bag must have. Those additional markings are at least the universal biohazard symbol and the words “medical waste”, biological waste,” or a combination thereof.
**Exception to Special Marking**

Select agents or Creutzfeldt-Jakob disease (CJD) waste requiring incineration as the final treatment method by UAB must be labeled as:

- “SA for Incineration by UAB Support Facility” or “CJD for Incineration by UAB Support Facility” and placed in a UAB yellow barrel with a biohazard label.

**Packing**

**Packing Requirements**

There are risks associated when handling and transporting medical waste. These risks can be reduced by:

- getting the approved training and having it documented
- knowing about and understanding how to handle the contents of the medical waste packages
- using ASTM-D approved liners
- having a UN approved outer package
- using an ADEM permitted transporter

Call OH&S to schedule a pickup. The number is (205) 934-2487.
## Transporting

### Transporting Containers

<table>
<thead>
<tr>
<th>Container</th>
<th>Packing Instructions</th>
<th>Image</th>
</tr>
</thead>
<tbody>
<tr>
<td>A TB01 container</td>
<td>To properly pack a TB01 container:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Place the medical waste in ASTM-D</td>
<td></td>
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<tr>
<td></td>
<td>bags or liner.</td>
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<tr>
<td></td>
<td>- Secure using a US DOT approved knot.</td>
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<tr>
<td></td>
<td>- Place it in a transport container.</td>
<td></td>
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<tr>
<td></td>
<td>- Close the lockable lid.</td>
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<tr>
<td></td>
<td>- Place in the pickup location.</td>
<td></td>
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</tbody>
</table>

A TB01 container should:
- Hold 30 gallons,
- Be 4.0 Cu Ft in size,
- Be hinged with a lockable lid,
- Constructed of polyethylene,
- Have seamless, leak-proof base, and
- Not exceed a limit of 64 pounds gross weight (weight including the container and waste).

Users must supply ASTM-D red bags or liners for the container.

Waste in this type of container is destined for Stericycle's autoclave unless it is labeled “Incineration Only.”

Flip-top lids and dollies are available through Stericycle.
### Container Specifications and Packing Instructions

<table>
<thead>
<tr>
<th>Container</th>
<th>Packing Instructions</th>
<th>Image</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A TB02</strong> container should:</td>
<td>To properly pack a TB02 container:</td>
<td>![Image of TB02 container]</td>
</tr>
<tr>
<td>- Hold 130 gallons,</td>
<td>- Place the medical waste in ASTM-D bags or liner.</td>
<td></td>
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<tr>
<td>- Be 17.4 Cu Ft in size,</td>
<td>- Secure using the US DOT approved knot.</td>
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<tr>
<td>- Constructed of polyethylene,</td>
<td>- Place in the transport container.</td>
<td></td>
</tr>
<tr>
<td>- Have a hinged, lockable lid,</td>
<td>- Close lockable lid when the container is at capacity.</td>
<td></td>
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<tr>
<td>- Have a seamless, leak-proof base, and</td>
<td>- Label “Incinerate Only.”</td>
<td></td>
</tr>
<tr>
<td>- Not exceed a limit of 250 pounds gross weight (weight including container and waste.)</td>
<td>- Place in the pickup location.</td>
<td></td>
</tr>
<tr>
<td>A TB02 container is used for large animal waste destined for Stericycle’s incinerator.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Users must supply ASTM-D red bags or liners for the container.</td>
<td></td>
<td></td>
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<tr>
<td>Waste in this type of container is destined for Stericycle’s autoclave unless it is labeled “Incineration Only.”</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| **A US43** container should: | To properly pack a US43 container: | ![Image of US43 container] |
| - Hold 31 gallons, | - Tape all the bottom seams of the US43 container securely using packing tape. | |
| - Be 18” x 18” x 22” in size, | - Place the medical waste in ASTM-D bags or liner. | |
| - Be 4.3 Cu Ft in size, | - Tie the bag or liner in a US DOT approved knot. | |
| - Be constructed of sturdy fiberboard, and | - Place the bag or liner in the approved transport container. | |
| - Have a 64 pound limit. | - Tape the lid when the box is at capacity, | |
| Users must supply ASTM-D red bags or liners for the container. | - Place the container in the pickup location. | |
A BX05 container should:
- Hold 15 gallons,
- Be 12” x 12” x 22” in size,
- Be 2.0 Cu Ft in size, and
- Be constructed of sturdy fiberboard.

Users must supply ASTM-D red bags or liners for the container.

Waste in this type of container is destined for Stericycle’s autoclave unless it is labeled “Incineration Only.”

To properly pack a BX05 container:
- Securely tape the bottom seams of BX05 container.
- Place the medical waste in ASTM-D bags or liners.
- Tie the bag or liner in a US DOT approved knot or tape down.
- Place the medical waste in an approved transport container.
- Tape the lid when the transport container is at capacity.
- Place the container in a pickup location.

Storage

Medical waste storage areas should be:
- labeled
- secured
- accessible only by authorized personnel

Examples of these areas:
- autoclave room
- laboratory
- waste holding area
- other designated areas
## Disposal

### Improperly Disposed of Medical Waste

What happens when you toss trash that doesn't belong into red medical bags or medical waste into regular garbage? It costs money – lots of it, and it can cause you and/or UAB unnecessary and unwanted problems.

Let's look at this from the beginning. What would happen if....

<table>
<thead>
<tr>
<th>Event</th>
<th>Crime Scene Pictures</th>
<th>So what? The results</th>
</tr>
</thead>
<tbody>
<tr>
<td>You tossed your trash into a red medical waste bag today.</td>
<td><img src="image1.png" alt="Image" /></td>
<td>Your &quot;trash&quot; must now be treated as medical waste.</td>
</tr>
<tr>
<td>Because that red medical waste bag was filled with common trash and not medical waste, it was tossed in with the regular garbage - outside.</td>
<td><img src="image2.png" alt="Image" /></td>
<td>Now it's considered medical waste, and must be treated as such.</td>
</tr>
<tr>
<td>That same red medical waste bag was then dropped into a nearby dumpster.</td>
<td><img src="image3.png" alt="Image" /></td>
<td>The dumpster must be treated as medical waste and decontaminated.</td>
</tr>
</tbody>
</table>
The dumpster was then delivered to a local landfill. The entire load (approximately 80 yards of garbage) must now be handled as medical waste!

What Happens Now

Your quick toss in the trash could cost financial and legal problems for you and UAB - all because of a little piece of trash handled the wrong way!

What happens to YOU and/or UAB if medical waste is mismanaged?

- Penalties
- Citations
- Fines or Worse!

Put trash in its proper place!

The Red Bag

Always wear the appropriate personal protective equipment (PPE) when handling medical waste.

- select a red bag that has passed ASTM-D tests.
- fill the bag to no more than ¾ full.
- gather the bag edges around the top.
- twist the medical waste bag at top and tie a knot in it if possible.
If you cannot tie a knot, flip down the twisted part of the bag and securely tape it with packing tape or lock tightly with a zip-lock tie.

Now the bag is properly sealed for transport.

**Does Your Bag Leak**

Your bag should be properly secured (tied and/or taped correctly). Your goal is to produce a seal that will not leak if the bag is held upside down for 5 minutes.

**Occupational Health Issues**

**Appropriate PPE**

The appropriate personal protective equipment must be worn when handling medical waste.

- eye and mucous membrane protection when handling materials that can splash or splatter
- enclosed shoes (no open toed or open heeled) in case of spills, splashes, and splatters
- a clean, buttoned lab coat
- appropriate gloves

**Handwashing**

Frequent and thorough hand washing is the single most effective practice to prevent transmission of disease.
Do you know when you should wash your hands? Most of us like to think that we do.

- before eating or drinking
- before and after using the restroom
- after handling medical waste
- after performing experiments
- after removing your gloves
- before exiting the lab

**Avoid needlesticks by:**

- never recapping needles
- using approved sharps containers
- closing and securing sharps containers before transport
- using puncture resistant liners in transport containers

If a needlestick occurs:

1. wash with soap & water immediately
2. contact the Needlestick Response Team at 934-3675

**Emergency Response**

**Splashes to the Face/Eyes**

If a splash occurs to the face and/or the eyes, flush for 15 minutes with water.

Make sure that your eyes are open. You may use both hands to hold them open if necessary.
Spills

In case of a biological spill:

- alert others.
- get the biospill kit.
- don the appropriate PPE.
- cover spill with disinfectant.
- allow adequate contact time.
- soak up spill with towels.
- wipe area with disinfectant.

For more detailed information on handling spills, download the OH&S PDF on Spills.

Conclusion

This concludes the Medical Waste Management for Labs (BIO301L) Course.

Remember, recertification is required every three (3) years or if regulations change!

The Assessment

If you have not taken the assessment, please do so now. You must score at least 85% on the test to receive a certificate of completion. Retain the certificate in your lab file. You may be asked to present proof of training (certificate).