UF Biomedical Waste Training

Biological Safety Office
Environmental Health & Safety
352-392-1591
www.ehs.ufl.edu
bso@ehs.ufl.edu
Overview

- What is biomedical waste (BMW)?

- What are the regulations concerning BMW?
  - Identification, segregation, handling, storage, transport, treatment

- Disinfection/spill handling for biological/biomedical waste
Biological Waste

Solid or liquid waste that may present a threat of infection to humans, animals, crops, or the natural ecosystem

- **Animal pathogens**
- **Plant pathogens**
- **Biomedical waste**
  - **Recombinant/synthetic nucleic acids**
  - **Biological toxins**

* Non-liquid tissue & body parts from humans & other primates
* Blood, blood products and body fluids from humans & other primates
* Wastes containing human disease-causing agents
* Discarded sharps (medical items intended to cut or puncture skin)

*Waste containing or contaminated with these items also included*
State Regulations for Biomedical Waste

Segregation, handling, labeling, storage, transport & treatment of waste are regulated.

Training – initial & annual
  ◦ Training records must be kept a minimum of 3 years

Site-specific Biomedical Waste Plan
  ◦ UF BMW plan @ EH&S Biosafety (call 352-392-1591)

Permits req’d to generate, store, treat, & transport BMW

Inspections by the state

Enforcement
  ◦ Suspend/revoke permits
  ◦ Fines of up to $2500/day/violation

http://www.doh.state.fl.us/environment/community/biomedical/pdfs/64E16_1.pdf
How is BMW identified?

- International biological hazard symbol on the container

- The phrase “Biomedical Waste”, “Biohazardous Waste”, “Biohazard”, “Infectious Waste” or “Infectious Substance” must be on the container

- Bagged waste must be in red bags.
Segregation of BMW

- Segregated at *point of origin* into its proper container
  - “Point of origin” is the area where the BMW is generated
  - BMW containers should be available where needed
Segregation of BMW

- Choices for proper BMW container:
  - Red benchtop biohazard bag
  - Leak-proof, covered container lined with a red autoclavable biohazard bag – *for infectious/potentially infectious waste*
  - Labeled fiberboard box lined with a properly stamped red biohazard bag – *only for noninfectious waste or previously autoclaved waste!*
  - Sharps container – puncture resistant container specifically designed for sharps
Segregation: Do not mix BMW with radioactive or chemical waste!

- Gloves, tubes, etc. contaminated with chemicals or radioactive materials do not go into a biomedical waste box. They go into their appropriate waste container.

- Call EH&S (352-392-1591) before putting hazardous (chemical) or radioactive warning stickers on biomedical waste containers.

- Remember – the biomedical waste box is not a universal disposal container!
Handling/Containing BMW

- BMW by definition is “waste that poses a threat of infection to humans”

- Always use universal precautions when handling non-inactivated waste
  - Wear appropriate PPE (gloves, clothing cover, safety glasses/face shield), wash hands after removing gloves
Supplies for Handling and Containing BMW

- Labs must furnish their own PPE and red autoclave bags
  - Fisher #01-828E (Medical Action Industries) → **these bags can no longer be used to line the biomedical waste box (more later)!**
  - VWR bags (#14220-098, 38x48 in to fit 30g boxes)

- Sharps containers, BMW boxes and Stericycle red liner bags are available from Building Services custodians (in the HSC). Call 294-5500 for routine scheduled biowaste box delivery, pickup or problems. Labs not on routine delivery, call 392-4414 for occasionally needed supplies.

- Outside of the HSC, call 392-5775 to arrange to pick supplies up at the Health Science Center Storeroom, AG133.

- 15 gallon boxes will be available upon request through Building Services custodians in HSC areas (if outside of the HSC, contact us for information on how to obtain them). Best for labs that do not generate large amounts of waste but must dispose of boxes every 30 days to comply with regulations.
What do we do with sharps?

- Discard directly into a **leak-proof, puncture resistant container**

- Never Re-Cap Needles or Scalpels
  - Don’t bend, break, or detach from syringe

- Replace container when ¾ full

- Never attempt to re-open a closed sharps container

- Label container with the date, PI name, location (building/room #), and phone #
Sharps

- Medical sharps must always go into approved sharps containers
  - Needles, syringe/needle combos, lancets, scalpels

- Other sharp items that can cut or puncture a person’s skin or the red bag may also be disposed of in the sharps container.
  - Broken glass, Pasteur pipets, serological pipets, pipet tips, glass slides/cover slips, razor blades

- Soft items quickly overfill containers and may cause sharps to stick out of the top of the box.

- If any soft items are placed in the container, it must be dated and disposed of within 30 days!
Alternative disposal options for *non-medical sharps*

http://webfiles.ehs.ufl.edu/Options_Collecting_Bio.pdf

- Examples: broken glass, Pasteur pipets, serological pipets, pipet tips, glass slides/cover slips, razor blades
- Collect in a manner that minimizes their puncture potential
  - Bench top biohazard bag or empty media bottle for pipet tips.
  - Sturdy cardboard box.
  - Purchase pipet keepers for serological pipets or bundle them in a plastic bag.
BMW box must be lined with a red bag that meets certain documented standards and is stamped with those certifications.

- Red liner bags from Stericycle provided by custodians - these bags cannot be autoclaved!
- VWR bags (#14220-098, 38x48 in to fit 30g boxes) - can be autoclaved.
This is what happens to the liner bags if you autoclave them...
Non-sharp BMW

- No liquid waste in red bags!

- Transport waste in leak-proof containers
  - Bags being transported to autoclave should be contained in a leak-proof secondary container.
  - Do not leave bags sitting directly on the floor.
Non-sharp BMW

- Each bag, including the liner bag, must be securely closed before sealing the biowaste box. Per federal DOT regulations, “The bag must be capable of being held in an inverted position with the closed end at the bottom for a period of 5 minutes without leakage”.

- Seal containers/bags at point of origin. Ruptured or leaking containers/bags must be placed in a larger leak-proof bag or container without disturbing the original seal.
1. Assemble the biomedical (BMW) box by folding opposite flaps and taping bottom in an “H” pattern using clear packing tape. Do not interlock flaps and do not use colored tape (black tape is for illustration purposes only).

2. Flip box right side up and fold flaps down to the outside of the box.

3. Line the box with a red biohazard LINER bag that is marked and certified as having passed the tests prescribed for tear resistance in ASTM D1922 and for impact resistance in ASTM D1709. Label the bag with the date, PI name, location and phone.

4. All infectious/potentially infectious waste must be stored in a covered, leak-proof container lined with a red AUTOCLAVE bag (Fisher or VWR – the liner bags provided by Stericycle cannot be autoclaved!). This waste must be autoclaved prior to placing it in the red bag lined biomedical waste box. Best practice is to autoclave this waste at the end of each work day but at a minimum, it should be autoclaved at the end of each week.

5. Do not put sharp or “pointy” items directly in the red bag as they can easily puncture the bag, potentially causing injury.
Packaging Biological Waste

6. Medical sharps (needles, lancets, scalpels) must always be disposed of in an approved sharps container. Once containers are 3/4 full, they should be closed and labeled with the PI name, location, phone number and date. If any non-sharp items are placed in the sharps container (i.e. Kimwipes, gloves, wrappers from syringes/needles), the container must be dated when the non-sharp item is placed inside of it and disposed of within 30 days.

7. Other sharp items that can cut or puncture skin and/or the red bag (i.e. pipet tips, serological pipets, glass slides/cover slips, razor blades) should be placed in a sturdy secondary container prior to disposal in the red bag. This may be a sharps container, a sturdy cardboard box lined with a red bag, an empty media bottle, etc.

8. Do not overfill boxes (maximum weight is 55 lbs) and do not use feet or hands to compress contents. This may cause injury and/or generate potentially infectious aerosols.

9. When the box is ready to be closed (when bag is full or within 30 days of the first waste item being placed in the bag), twist the red bag and tape it shut. Twist it again, double it over and tape it again. The bag should already have a label (step 3).

10. Tape the box in an “H” pattern as in step 1 and label the box with the PI name, location, phone number and date. Remember to use clear tape!
BMW Storage

- BMW storage area must be:
  - Labeled with biohazard sticker
  - Secure (locked/restricted access)
  - Easily cleanable & tidy

- Do not store waste longer than 30 days
  - “The 30 day period shall commence when the first non-sharps item of biomedical waste is placed into a red bag or sharps container, or when a sharps container containing only sharps is sealed.”

- Be sure boxes are appropriately labeled, not leaking and not overfilled (max weight 55lbs!)
  - If you transport your waste to the HSC trailer yourself, must move less than 25 lbs. at one time in a state vehicle to meet transportation laws.
Who Picks Up/Transports BMW for UF?

- Transportation of BMW is provided by the following registered transporter:
  
  Stericycle, Inc.
  4245 Maine Ave
  Eaton Park, FL 33840
  407-361-5454
  State of Florida Permit # 53-64-00911
Treatment of BMW

- BMW shall be treated by heat, incineration, or other equivalent method suitable for hazard inactivation acceptable to the State of Florida.

- Stericycle, Inc. treats UF’s waste in one of the following ways:
  - Autoclave - sterilizes the waste
  - Incineration - destroys the waste
Pretreatment of biological waste from UF labs prior to disposal by Stericycle

- Waste is handled by custodial staff, placed in hallways for transport to trailer, etc.

**UF Policy:**
- Laboratory waste containing infectious, potentially infectious or rDNA organisms must be inactivated prior to disposal
- Properly performed steam sterilization/autoclave or bleach treatment is acceptable
- Storage of all non-inactivated waste in this category is restricted to within the generating laboratory
- Specific requirements apply for waste containing biological toxins. See [http://webfiles.ehs.ufl.edu/AcuteToxinSOP_Template.docx](http://webfiles.ehs.ufl.edu/AcuteToxinSOP_Template.docx) or contact the Biological Safety Office at 352-392-1591
**Requirements:**
- Biological indicator testing every 40 hrs of use *(every 6 mos if autoclaving non-infectious material exclusively)*
- Log book
  - Date, time, operator’s name, contact information, indicate if biohazardous material
- Regular maintenance
- 250°F/121°C, minimum 15 lb pressure

- Large loads/resistant pathogens need more time
  - Typical bag of biowaste = **60-90 min for gravity cycles**
    - Pre-vacuum cycles should be used if available and will reduce sterilization times

- Proper training is important:
  contact the Biosafety Office at 352-392-1591 to schedule autoclave training.
Bleach Inactivation

- Acceptable for liquid material if done correctly
  - Add 1 part bleach (8.25% sodium hypochlorite) to 13 parts liquid.
  - **Contact time should be at least 30 minutes.**
  - Pour down drain to sanitary sewer.

- You may use another EPA-registered disinfectant that is effective against *Mycobacterium tuberculosis* if you follow the manufacturer’s instructions for concentration and contact time.
  - Beware that these other disinfectants may be considered “hazardous chemicals”, harmful to work with and can’t go down drain, solutions must be picked up by EH&S
Clean lab ware

- Lab ware (tips, tubes, flasks, etc.), gloves and other disposable PPE that is **not contaminated** with biological (pathogens, human cells, rDNA, or blood/OPIM), chemical or radioactive material (see [http://www.ehs.ufl.edu/programs/chemrad_waste/lab-chem-waste-mgmt/methods-for-managing-specific-laboratory-wastes/labware/](http://www.ehs.ufl.edu/programs/chemrad_waste/lab-chem-waste-mgmt/methods-for-managing-specific-laboratory-wastes/labware/))

- Two options for disposal:
  
  **Place in red bag lined biomedical waste box**

  **Place in clean lab ware box**

  Consider cost!!!
  More than 10x more expensive to dispose of biomedical waste vs. regular trash
BMW Spills & Surface Disinfection

- Proper spill handling:
  - Notify people in the area
  - Don appropriate PPE
  - Place absorbent material on spill
  - Apply appropriate disinfectant – allow sufficient contact time (30 min)
  - Pick up material (watch for glass – use tongs or dust pan); dispose of material into biomedical waste
  - Reapply disinfectant and wipe
  - For large/high hazard spills, call the Biosafety Office (352-392-1591)

- For routine disinfection of surfaces where BMW is handled, use a fresh solution of appropriately diluted bleach or a tuberculocidal disinfectant (ethanol evaporates too quickly!)
Do you have a bio-spill kit?

- Container of undiluted household bleach
- Several pairs of gloves
- Safety glasses
- Absorbent material
- Biohazardous waste (autoclave) bags
- Dust pan & scoop or tongs for broken glass

Place in a labeled bag or bucket and keep in areas where biohazards are used