Biohazardous Waste Disposal Fact Sheet

Northeastern University Procedure for Disposal of Medical or Biological Waste

Fact Sheet #14
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Revision: Seventh

Definition: The State of Massachusetts under the amended State Sanitary Code (105 CMR 480.000) defines infectious waste (biohazardous) in the following manner: Waste that because of its characteristics may cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible or incapacitating reversible illness; or pose a substantial present potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed. The following six types of waste are identified and defined as medical or biological waste:

- **Blood and Blood Products.** Discarded bulk human blood and blood products in free draining, liquid state; body fluids contaminated with visible blood; and materials saturated/dripping with blood. Blood products shall not include feminine hygiene products.

- **Pathological Waste.** Human anatomical parts, organs, tissues and body fluids removed and discarded during surgery, autopsy, or other medical or diagnostic procedures; specimens of body fluids and their containers; and discarded material saturated with body fluids other than urine. Pathological waste shall not include: teeth and contiguous structures of bone without visible tissue, nasal secretions, sweat, sputum, vomit, urine, or fecal materials that do not contain visible blood or involve confirmed diagnosis of infectious disease.

- **Culture and Stocks of Infectious Agents and Associated Biologicals.** All discarded cultures and stocks of infectious agents and associated biologicals, including culture dishes and devices used to transfer, inoculate, and mix cultures, as well as discarded live and attenuated vaccines intended for human use, that are generated in: (a) Laboratories involved in basic and applied research (b) Laboratories intended for educational instruction or (c) Clinical laboratories.

- **Contaminated Animal Waste.** Contaminated carcasses, body parts, body fluids, blood or bedding from animals known to be:
(a) Infected with agents of the following specific zoonotic diseases that are reportable to the Massachusetts Department of Agricultural Resources, Bureau of Animal Health pursuant to 105 CMR 300.140:

- African Swine Fever
- Anthrax
- Avian Influenza – H5 and H7 strains and any highly pathogenic strain
- Bovine Spongiform Encephalopathy (BSE)
- Brucellosis
- Chronic Wasting Disease of Cervids
- Eastern Equine Encephalitis Virus
- Foot and Mouth Disease
- Glanders,
- Exotic Newcastle Disease
- Plague (Yersinia pestis)
- Q fever (Coxiella burnetti)
- Scrapie
- Tuberculosis
- Tularemia (Francisella tularensis)
- West Nile Virus

(b) Infected with diseases designated by the State Epidemiologist and the State Public Health Veterinarian as presenting a risk to human health

(c) Inoculated with infectious agents for purposes including, but not limited to, the production of biologicals or pharmaceutical testing.

- Sharps. Discarded medical articles that may cause puncture or cuts, including, but not limited to, all needles, syringes, lancets, pen needles, Pasteur pipettes, broken medical glassware/plasticware, scalpel blades, suture needles, dental wires, and disposable razors used in connection with a medical procedure.

- Biotechnology By-product Effluents. Any discarded preparations, liquids, cultures, contaminated solutions made from microorganisms and their products including genetically altered living microorganisms and their products.

Storage:
(A) Waste generators are responsible for containing and storing medical or biological waste (except sharps) in a primary containers which are red, fluorescent orange or orange-red and are impervious to moisture and have sufficient strength to resist ripping, tearing, or bursting under normal conditions of use and handling. Each primary container shall:
1. Be marked prominently with the universal biohazard warning symbol and the word “Biohazard” in a contrasting color; and
2. Be secured so as to prevent leakage and to preclude loss of contents during handling, storage, and/or transport.

(B) All areas for on-site storage of containers of medical or biological waste shall be in an uncarpeted room or area with impervious, cleanable, non-absorbent flooring and used exclusively for waste storage.

(C) All on-site storage areas shall:

• Have prominent signage indicating the space is used for the storage of regulated medical or biological waste.
• Be designed or equipped to prevent unauthorized access.
• Be designed or located to protect the waste from the elements and prevent access by vermin.
• Provide sufficient space to allow for clear separation of regulated medical or biological waste from any other waste, when applicable.
• Be adequate to accommodate the volume of regulated medical or biological waste generated prior to removal of waste for either waste transport off-site or on-site treatment.
• Be maintained such that there is no putrescence or off-site odors, using refrigeration when necessary.

(D) Sharps shall be segregated from other wastes and aggregated immediately after use in red, fluorescent orange or orange-red leakproof, rigid, puncture-resistant, shatterproof containers that resist breaking under normal conditions of use and handling, and that are marked prominently with the universal biohazard warning symbol and the word “Biohazard” in a contrasting color. These containers are available from the Office of Environmental Health and Safety (EHS) or can be purchased by the individual(s) producing the waste. Containers used for collection cannot exceed 20 inches in height and 16 inches in width. This restriction is necessary because sharp containers are transferred intact into another box prior to disposal. Other types of waste must be contained and stored in containers provided by the generators. Only authorized persons working in the lab shall have access or contact with such waste.

(E) Free draining blood and blood products and biotechnology by-product effluents shall be stored at all times in leakproof containers that are securely sealed.

(F) Compactors or grinders shall not be used to process medical or biological waste until it has been rendered noninfectious and safe for disposal.

(G) All medical or biological waste, except from home sharps users, must be treated on-site or transported off-site for treatment at a minimum once per
calendar year.

**Disposal.** The following methods of treatment and disposal are currently acceptable for the handling of infectious waste at Northeastern University:

- Steam sterilization
- Chemical disinfection
- Incineration at an approved incineration facility
- Any other method approved in writing by the Massachusetts Department of Public Health

EHS will provide labels with the University's name, address and phone number, for all infectious waste that is treated on campus. These labels will be used to identify the material as noninfectious and will meet all the labeling requirements in the regulation. The black bags are not autoclavable. Generators will still be required to provide their own autoclave bags when handling and treating the waste on site. These bags must be clear, three mil thick and must not have a biohazard symbol or the word “biohazard” written on them. All wastes not treated on campus and to be sent out for treatment and disposal will be placed in shipping containers provided by EHS. Generators authorized to ship out containers on their own must receive special training from EHS. The Regulated Medical Waste Shipping Training is provided as an online course available from our website: [http://www.northeastern.edu/ehs/training/](http://www.northeastern.edu/ehs/training/). A procedure for shipping these containers is outlined in section six. In addition, the following wastes identified below must be handled in the following manner:

**Blood and Blood Products**

Since Northeastern University is connected to a municipal sewerage system, free draining blood and blood products except blood-saturated materials may be disposed of into this system. This method is not presently restricted by the Massachusetts Water Resources Authority (MWRA). If the above method is not practical or it should become prohibited by the MWRA, blood and blood products, except blood saturated materials, shall be placed in a 3 mil red/orange biohazard bag and transferred into an infectious/biohazard box provided by EHS. Once properly packaged and manifested they will be scheduled by EHS to be sent to an approved treatment facility. They may also be rendered noninfectious by chemical or steam disinfection/autoclaving and placed in a disposal bag, labeled with an autoclave waste label provided by EHS and discarded as regular rubbish. This method is preferred, as it will limit disposal costs for the University.

**Sharps**

Containers of sharps will be disposed of at an approved treatment and disposal facility. The sharps disposal site coordinator will handle scheduling or requests
for disposal. Properly containerized sharps may be dropped-off at the designated sharps drop-off location. A list of designated sharps container disposal locations can be found on our website: http://www.northeastern.edu/ehs/ehs-programs/biosafety/biohazardous-waste/. Detailed information for disposing of sharps can be obtained in the "Northeastern University Procedure for the Disposal of Sharps" (Fact Sheet #6) available on the EHS website (ehs.neu.edu). For answers to your questions, contact ehs@neu.edu.

**Blood Saturated Materials, and Cultures and Stocks of Infectious Agents and Associated Biologicals**

These wastes shall either be rendered noninfectious on site by steam sterilization, incineration, or in the case of liquids, chemical disinfection. Once this waste has been treated as above they must be put into an additional labeled, four mil black disposal bags provided by EHS. If on-site treatment is not available, wastes should be placed in a second three-mil red/orange biohazard bag and transferred into a biohazard box provided by EHS or the medical/biological waste vendor. Once properly packaged, labeled and the site coordinator is notified, arrangements will be made to transport the material to an approved treatment and disposal facility.

**Biotechnology By-product Effluents**

The Northeastern University Institutional Biosafety Committee has oversight over all recombinant DNA use on campus. These wastes shall not be removed from Northeastern University unless the viable organisms containing recombinant DNA molecules have been rendered noninfectious by a validated method. The following methods have been approved for this material:

- Steam sterilization
- Chemical disinfection

Autoclave users will evaluate the methods that rely on heat mechanically and biologically by using a recording thermometer and indicator microorganisms with defined heat susceptibility pattern. A separate fact sheet (Fact Sheet #8) is available for information on conducting autoclave testing and can be obtained on the EHS website. If these wastes are rendered noninfectious by chemical disinfection, the chemical used shall be of demonstrated efficacy against the target or indicator organism and must be an EPA registered disinfectant. Once rendered noninfectious, biotechnology by-product effluents may be disposed of directly into the waste generator's connection to the municipal sewerage system unless such disposal is otherwise restricted at a later date. EHS should be contacted to determine whether treatment has rendered the material appropriate
for this manner of disposal. If the generator of the waste becomes prohibited from disposing of biotechnology by-product effluent through the municipal sewerage system, then the waste will be rendered noninfectious and disposed of in a manner designated by EHS.

**PATHOLOGICAL WASTE AND CONTAMINATED ANIMAL CARCASSES**

These wastes must be doubled bagged in red, labeled biohazard bags and placed in a box provided by our approved vendor for incineration at an approved treatment and disposal facility. EHS will assist with scheduling of disposal activities and assure generators fill out manifests correctly.

**Labeling**

Every container or bag of waste, which has not been rendered noninfectious, shall be distinctly marked with the international biohazard symbol and colored red to indicate that it contains potentially biohazardous waste. Sharps waste must be distinctly labeled to indicate that it contains sharp waste capable of inflicting punctures or cuts. Information on what type of sharp containers to purchase will be provided on the EHS website. Every container or bag of waste which has not been rendered noninfectious and which will be transported off the premises of the waste generator shall in addition to the requirements of this section be placed in boxes, which are:

a) rigid  
b) leak resistant  
c) impervious to moisture  
d) of sufficient strength to prevent tearing or bursting under normal conditions of use and handling  
e) sealed to prevent leakage during transport

Each box shall bear a label that states the name, address and telephone number of the generator. The label shall be affixed in a manner, which ensures that it cannot be easily removed. Boxes meeting these requirements will available through EHS. In addition to the labeling on the box, the outer bag inside the box is required to have a label with the same information. A hazardous waste disposal label used in our chemical waste program will be appropriate to meet this requirement. Prior to transport for off-site disposal, waste, which has been rendered noninfectious by a method other than incineration, shall be placed in a black four-mil disposal bag so as to clearly identify it as non-biohazardous and to identify the waste generator responsible for the treatment. Once clearly signed, bagged and sealed, such waste may be disposed of in the same manner as regular rubbish handled by the Building Services Department. The generator will be required to clearly sign the disposal bag in the appropriate area.
Record Keeping

The generator shall maintain records of temperature and dwell times used in each instance where waste has been rendered noninfectious by gas or steam sterilization. There will be a log sheet at each autoclave for the generator to fill out to record this information. Each department utilizing an autoclave to render waste noninfectious in order to verify efficiency of the autoclave will routinely do biological spore tests. The Northeastern University fact sheet for autoclave testing outlines this procedure in detail. The above records must be stored and retained for at least three years. The generator shall also maintain records of volume and type of waste rendered noninfectious on-site which shall be available for EHS review. EHS will provide a standard form for all generators to use. Again such records shall be retained for at least three years. EHS will accept such records for storage.

Shipping Infectious Waste

Only personnel trained and approved by EHS are allowed to ship out biohazardous waste from Northeastern University. Shipping boxes are limited to eighty pounds maximum capacity. All boxes must be lined with bags provided by our approved vendor. Sharps placed into these shipping containers must be contained in sharps containers. These bags must be tied off before closure and the outer bag must be labeled with the generators name, address and telephone number. The vendor will refuse unlabeled, bulging, crushed, or leaking boxes. Manifests must be filled out for all shipments and a copy must be sent to EHS.

Manifests

EHS will assist generators in preparing manifests when necessary. The generator shall appoint a designee to prepare and sign the manifest. Original copies must be sent to EHS so that they are available for various record keeping needs. Manifests provided by EHS will include the following information:

   a) Description of waste to be shipped;
   b) Total quantity of waste; and
   c) Type of container in which waste is transported

The Massachusetts Department of Public Health off-site treatment record-keeping log will be maintained at EHS.

Waste Minimization

The U.S. Congress has made waste minimization a national policy and goal of
each waste generator. The generator of biohazardous waste has the responsibility to minimize the amount of waste generated. Waste minimization has benefits such as decreasing exposure to biohazardous materials, protection of the environment, and the overall reduction in the cost of disposal, which continues to rise every year.

If you have any questions or would like assistance with ideas for waste minimization, please contact the Office Environmental Health and Safety at 617.373.2769.