



**University of Minnesota  
Infectious and Pathological Waste Management Plan**

**Revised December 2010**

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## I. INTRODUCTION

Infectious waste presents a potential health risk from communicable infectious agents. The procedures described herein are to ensure that infectious, pathological, and normal waste generated at the University of Minnesota is collected, stored, transported, and disposed of in such a manner as to minimize the health risk to patients, staff, students, and the public. This plan is in accordance with Minnesota Statutes 2007, Chapter 116.76 – 116.82 of the *Infectious Waste Control Act*.

## II. SCOPE

This plan applies to all University of Minnesota campuses.

## III DEFINITIONS

### Blood

“Blood” means waste human blood and blood products in containers, or solid waste saturated and dripping human blood or blood products. Human blood products include serum, plasma, and other blood components.

### Decontamination

“Decontamination” means rendering infectious waste safe for routine handling as solid waste.

### Infectious Agent

“Infectious agent” means an organism that is capable of producing infection or infectious disease in humans.

### Infectious Waste

“Infectious waste” means laboratory waste, blood, regulated body fluids, human derived product, sharps, and research animal waste that have not been decontaminated.

### Laboratory Waste

“Laboratory waste” means waste cultures and stocks of agents that are generated from a laboratory and are infectious to humans; discarded contaminated items used to inoculate, transfer, or otherwise manipulate cultures or stocks of agents that are infectious to humans; wastes from the production of biological agents that are infectious to humans; human cells, human cell lines, human tumor lines, and human tissues used in research; primate cells, primate cell lines, and primate tissues used in research; and discarded live or attenuated vaccines that are infectious to humans.

### Normal Waste

“Normal waste” is non-infectious and non-pathological material. This includes waste that has been properly decontaminated by an approved process (e.g. autoclaving) authorized by the Biological Safety Officer in the Department of Environmental Health and Safety.

### Pathological Waste

“Pathological waste” means human tissues and body parts removed by trauma, during surgery, autopsy or studies and which is intended for disposal. Pathological waste does not include teeth, hair, or nails.

### Regulated Human Body Fluids

“Regulated human body fluids” means cerebrospinal fluid, synovial fluid, pleural fluid, peritoneal fluid, pericardial fluid, and amniotic fluid that are in containers or solid waste items that drip body fluid (i.e. bandages, dressings, etc.).

### Research Animal Waste

“Research animal waste” means carcasses, body parts, and blood derived from animals knowingly and intentionally exposed to agents that are infectious to humans for the purpose of research, production of biologicals, or testing of pharmaceuticals.

### Sharps

“Sharps” means: (a) discarded items that can induce subdermal inoculation of infectious agents, including needles, scalpel blades, pipettes, and other items derived from human or animal patient care, blood banks, laboratories, mortuaries, research facilities, and industrial operations; and (b) discarded glass or rigid plastic vials containing infectious agents.

## IV. TYPES OF WASTE GENERATED

The following types of infectious and pathological waste may be generated and/or handled at the University of Minnesota:

- All types of laboratory waste as defined above
- Recombinant DNA waste

**NOTE: Wastes generated in research using recombinant DNA will be handled, stored, treated, and disposed of in the same manner as other comparable forms of infectious laboratory waste (i.e. contaminated solid or liquid waste, sharps, and animal waste).**

- Blood and regulated body fluids
- All types of pathological waste as defined above
- Research animal waste
- Sharps

## V. INFECTIOUS WASTE SEGREGATION, LABELING, AND CONTAINERS

**NOTE: Waste generators are responsible for all handling of waste until after the waste is properly segregated, containerized, labeled, and if appropriate, decontaminated and placed in normal waste stream.**

#### A. Segregation and Labeling

1. Infectious waste, including sharps, will be segregated from other waste, properly containerized, and labeled by the generator at the point of generation (e.g., laboratory, patient exam room, animal facility, etc.). Custodial staff will not collect waste that is not properly segregated, containerized, and labeled.
2. Infectious waste bags and sharps disposal containers will be handled in such a manner that containers will not break, spill, or otherwise cause contamination.

#### B. Containers for On-Site Decontamination

1. Infectious waste that will be decontaminated on site by autoclaving will be collected in sturdy, leak-proof, outer containers that can be easily decontaminated. All infectious waste collection containers must have a lid that can be fastened in such a way as to prevent spillage. Containers will be labeled "Autoclavable Infectious Waste" in letters no less than one inch in height. Proper labeling of containers will ensure that waste intended for decontamination is not inadvertently discarded into the normal waste stream or removed by custodial staff before decontamination.
2. Collection containers will be lined with clear autoclavable bags, without biohazard symbols. After decontamination by autoclaving, clear waste bags will be disposed of in the "normal waste" stream.

**NOTE: Red biohazard bags or other bags with a biohazard symbol, even if autoclaved, can not be disposed of as "normal waste".**

#### C. Containers for Off-Site Infectious Waste Disposal

1. Infectious waste that will not be decontaminated on-site will be collected in sturdy, leak-proof outer containers that can be easily decontaminated. These outer containers must have a lid that can be fastened in such a way as to prevent spillage.
2. Outer collection containers will be lined with red plastic biohazard bags. These bags must not be used for any other purpose.
3. Both the outer collection containers and the biohazard bag will be clearly labeled with a biohazard symbol or the words "Infectious Waste" written in letters no less than one inch in height.
4. Prion waste will be placed in yellow barrels lined with yellow biohazard bags.

#### D. Sharps Containers

1. Sharps disposal containers may never be placed in the normal waste stream. Sharps containers will be collected with red bad waste only.
2. Sharps containers will not be used for any other purpose than sharps disposal.
3. Sharps containers will be:
  - Puncture resistant
  - Clearly marked with a biohazard symbol
  - Within easy reach of the work station
  - Filled to no more than  $\frac{3}{4}$  capacity
  - Sealed (i.e. capped or taped) prior to transport

**NOTE: Needles are not to be recapped or removed from syringes prior to placing into sharps container.**

## VI. PROCEDURES FOR HANDLING INFECTIOUS WASTE

### NOTES:

**Waste generators are responsible for all handling of waste until after the waste is properly segregated, containerized, labeled, and if appropriate decontaminated and placed in normal waste stream.**

**Infectious waste bags and sharps disposal containers will be handled in such a manner that containers will not break, spill, or otherwise cause contamination.**

#### A. On-Site Decontamination of Infectious Waste

##### 1. Solid Waste

Autoclaving of infectious waste will follow the procedures described in the [Autoclaving Biological Waste](#) Fact Sheet posted on the Environmental Health and Safety web site. Subsequent to decontamination, the waste can be handled as normal waste and discarded in the normal waste stream.

**NOTE: Any solid waste decontamination method other than autoclaving for 60 minutes must be approved by the Biosafety Officer.**

##### 2. Liquid Culture Waste

Liquid waste will be autoclaved or chemically decontaminated following procedures described in the [Biohazards and Toxin Decontamination & Spill Clean-up](#) Fact Sheet posted on the Environmental Health and Safety web site.

#### B. Waste Handling for Off-Site Disposal

1. Waste generators will tightly seal red biohazard bags when bags are no more than  $\frac{3}{4}$  full and place them in a designated laboratory area for pick-up. Bags will not be placed in hallways or other public areas.
2. "Burn Boxes" are not to be used. The University of Minnesota does not incinerate waste.
3. Custodians trained in infectious waste handling will transfer red biohazard bags and sharps containers from laboratories to a designated infectious waste storage area for hauler pick-up.
4. Infectious or pathological waste must be segregated from other wastes in storage containers designed to prevent the entry of vermin. Storage areas for infectious or pathological waste must be secured to deny access by unauthorized persons and must be prominently marked with the international biohazard symbol and with the words "Infectious Waste" on or adjacent to the exterior of entry doors and access gates.
5. Interior surfaces of storage areas must be constructed of materials that are easily cleaned.

#### C. Spill Clean-Up and Accidental Exposures

1. Spills will be cleaned and decontaminated as described in the [Biohazards and Toxin Decontamination & Spill Clean-up](#) Fact Sheet posted on the Environmental Health and Safety web site.
2. For personal contamination and/or injury the employee will report immediately to [HealthPartners](#) Occupational and Environmental Medicine (M/F day time or Urgent Care after hours), or [UMMC-Fairview Hospital](#) (24 hrs). You may seek medical attention at the closest available medical facility or your own healthcare provider. Follow-up must be done by HealthPartners Occupational and Environmental Medicine. Spills from infectious waste bags or sharps disposal containers and employee

contamination/injuries resulting from handling infectious waste or sharps, will be reported to the employee's supervisor and the [Office of Occupational Health and Safety](#) (contains links to worker's compensation and first report of injury).

D. Mixed Infectious/Radioactive Waste - Infectious radioactive waste is radioactive laboratory waste, blood, regulated body fluids, or research animal wastes that are infectious to humans and have not yet been disinfected by an approved process (e.g. autoclaving) authorized by the Biosafety Officer of the Department of Environmental Health and Safety.

1. Solid Infectious/Radioactive Waste Disposal procedures:

- Solid infectious/radioactive waste containing short half-life (<90 days) radioisotopes (e.g.,  $^{32}\text{P}$ ,  $^{33}\text{P}$ ,  $^{35}\text{S}$ ,  $^{41}\text{Cr}$ ,  $^{125}\text{I}$ , etc) will be bagged separately and autoclaved prior to radioactive disposal. Once disinfection has been completed, autoclave bags will be placed into the appropriate solid radioactive waste container.
- Solid infectious/radioactive waste containing long half-life (>90 days) radioisotopes (e.g.,  $^{14}\text{C}$ ,  $^3\text{H}$ ,  $^{45}\text{Ca}$ , etc) will be placed in a long half-life radioactive waste container.
- Radioactive waste disposal will follow the appropriate steps outlined in the university's Radioactive Waste Manual, see Environmental Health and Safety's Web site.

2. Liquid Infectious/Radioactive Waste Disposal procedures:

- Liquid radioactive waste will be placed in a liquid handling container and labeled radioactive waste. **BE SURE TO KEEP LIQUID RADIOIODINE LABELED COMPOUNDS SEPARATE FROM NON-RADIOIODINE LABELED COMPOUNDS.**
- Waste that does *not* include radioiodine will be disinfected with 1 part bleach to 9 parts liquid.
- For radioiodine liquid waste, waste will be disinfected in 1 part phenol to 10 parts liquid.
- After disinfection, waste will be placed in a liquid radioactive waste disposal container. Radioactive waste disposal will follow the appropriate steps outlined in the university's Radioactive Waste Manual, (e.g. keep radioiodine liquid waste separate from other radioactive liquid waste).

E. Procedures for Specific Areas or Departments - All of the above procedures for waste segregation, containers/labels, the handling of sharps, decontamination, and spill clean-up/accidental exposures will be followed. In addition, the following area-specific procedures will be followed.

1. Out-Patient Clinics

- All waste material contaminated with blood or other body fluids which drip freely from the material will be discarded in a red biohazard bag.
- An infectious waste collection container will be lined with a red biohazard bag. Both collection containers and biohazard bags must be clearly labeled with a biohazard symbol or the words "Infectious Waste" written in letters no less than one inch in height
- Laboratories working with infectious agents will either decontaminate all samples, cultures, stocks, and materials used in the manipulation of infectious agents before disposal into the normal waste stream or dispose of materials in a red biohazard bag.
- All blood bags will be handled as infectious waste even if they are empty.

- Body fluids will be disposed of in an infectious waste collection container. Exceptions will be made for diagnostic labs that sewer urine samples or dispose of sputum samples in the normal waste stream.
  - Fluids not in a leak-proof container will be decontaminated with an appropriate disinfectant.
2. Custodial Staff
- Infectious waste bags will be collected daily.
  - Bags and sharps containers will be handled carefully to prevent breakage or spillage.
  - Infectious waste may not be transferred from one bag to another bag.
  - Bags will be closed securely prior to transportation.
  - Bags will be grasped and lifted by the top and held away from the body to avoid potential contamination or injury to the handler.
  - Infectious waste will not be compacted or mixed with other waste materials.
  - Infectious waste bags and sharps containers will be placed directly into the proper transport cart for transfer to a grey barrel in the waste pick-up area.
  - Research animal waste in red biohazard bags will be placed in a grey barrel.
  - Bags and sharps containers will remain in the transport carts if a barrel is not unavailable.
  - All transport carts must be cleaned and disinfected on a daily basis.
  - The cart cleaning room will be kept neat and orderly. The floors will be cleaned and disinfected on a daily basis. Walls will be cleaned and disinfected when soiled.
3. Infectious Waste Storage Areas
- Storage area access will be restricted to authorized personnel and have a pest control plan.
  - Infectious waste will be removed from storage by the hauler on a daily basis.
  - At no time may waste be kept in storage areas for more than 4 days.
  - All containers and equipment (e.g., refrigerators) used for storage shall be labeled with a biohazard sticker or the words Infectious Waste not less than one inch in height.
4. Animal Facilities
- Small animal carcasses/tissues are placed in red biohazard bags. Biohazard bags are placed in red biohazard barrels in designated animal coolers. Waste is transported from coolers to waste hauler pick-up areas by trained university custodians. Carcasses are disposed of by the State of Minnesota's Infectious (Biomedical) Waste Disposal Contract holder.
  - Large animal carcasses/tissue are disposed of in the tissue digester on the St. Paul campus by prior arrangement. This includes carcasses/tissue from research, Veterinary Necropsy, and Veterinary Diagnostic labs.
  - Bedding and other waste from caged infected animals will be treated on-site by autoclaving.
  - Body waste from large animals under observation at the diagnostic centers is not considered to be infectious waste. It is handled the same as human waste - flushed into the sanitary sewer with copious amounts of water.
  - Research protocols using large infected animals are reviewed by the Institutional Biosafety Committee to determine if body waste and bedding need to be handled as infectious waste. If it is determined that the waste needs to be handled as infectious waste, it will be collected and treated on-site by autoclaving.

5. Biosafety Level 3 (BSL3) Laboratories - All waste generated in BSL 3 laboratories is considered to be infectious.
  - All solid waste is decontaminated via pass-thru autoclaves within the BSL 3 containment area before removal.
  - Liquid waste generated in BSL3 containment area may be either decontaminated via pass-thru autoclaves or liquid disinfected with bleach (1 part bleach to 9 parts liquid waste with a minimum contact time of 30 minutes) and sewered in the BSL3.
  - Each laboratory has facility and project specific protocols for waste decontamination, load verification, and autoclave effectiveness testing.
  - As an added precaution, decontaminated waste removed from a pass-thru autoclave is disposed of in red biohazard bags the same as described in Section VI B above.
6. University of Minnesota Duluth (UMD) - Infectious waste handling specific to the Duluth campus can be found on UMD's [Environmental Health and Safety Web](#) site.

## VII. PROCEDURES FOR HANDLING PATHOLOGICAL WASTE

All human pathological waste will be handled by the university's Bequest Program. Material will be cremated by a crematory contractor and returned to the university for final disposition. The contractor must be a "final disposition service" provider with a human only crematory.

Fixed tissue will be removed from preservative before transfer to the Bequest Program. Chemical preservatives will be disposed of as hazardous chemical waste.

The Bequest Program should be called (612-625-1111) for delivery and storage procedures. Material storage will be in a locked walk-in freezer in a secure room that is accessible only to authorized Bequest Program individuals. Material will be transported to the crematory by the crematory contractor.

## VIII. NORMAL (NON-INFECTIOUS) WASTE

Normal (non-infectious) waste presents a minimal health risk from communicable infectious agents. These generally consist of materials that either have not been in contact with infectious agents or have been properly decontaminated before disposal. The following procedures used to collect, handle and dispose of normal waste promote general safety and sanitation conditions.

### A. Accepted Material in Normal Waste Stream

- I.V. bags and tubing
- Urine bags and containers after contents have been emptied into the sanitary sewer
- Glass which has not been in contact with communicable infectious agents
- Properly decontaminated biological waste

**NOTE: Non-contaminated broken glass and large sharp items will be placed in sturdy containers, such as a cardboard box, prior to discarding in normal waste. Box will be sealed and labeled "Broken Glass".**

### B. Procedures for Handling Normal (Non-infectious) Waste

- Approved containers for the disposal of normal waste will be lined with plastic bags other than those designated for infectious waste. Approved containers for normal waste must not be red in color nor have a red biohazard symbol on them. Approved bags for normal waste will not be red in color nor have the biohazard symbol on them.
- All waste bags shall be handled carefully in a way that prevents injury to bags and handlers. Waste bags will be picked up by the neck of the bag and held away from the body. They should never be thrown or kicked.
- Normal waste may be emptied from one container into another. This practice will be limited to offices and other non-critical areas.
- Cardboard boxes or other large packing materials may be transported in carts, without being contained in bags.
- Sturdy, leak-proof transport carts will be used to transport waste to the appropriate loading dock area. Elevators designated for freight or waste transport will be used between floors.
- Normal waste will be carefully placed into the compactor trucks at the loading dock.
- Transport carts will be cleaned and disinfected on a daily basis.
- If normal waste is stored prior to shipping, it must be kept in containers and located in an approved storage facility (i.e., a room or facility that prevents access to weather, unauthorized persons and/or animals).
- Loading and storage areas will be properly maintained and cleaned.

## IX. EXPOSURE CONTROL TRAINING

Exposure control training requirements apply to all employees that generate and/or handle infectious or pathological waste. Training will be provided on initial assignment of the employee to a task involving the generation or handling of infectious waste and refresher training as often as necessary to assure compliance.

Each training program will be appropriate in context and language for the work area and contain a minimum of the following elements:

- An explanation of the infectious waste management plan.
- Procedures to ensure the proper segregation of infectious and pathological waste from other solid waste, labeling, transportation, and storage of infectious waste.
- When appropriate, training will include decontamination procedures.
- Waste handling procedures to prevent waste spills and accidental exposures.
- Any policies and procedures applicable to the employee's assigned roles and responsibilities.

Environmental Health and Safety provides the following infectious waste handling training tools:

- [Infectious Waste Disposal Chart](#)
- [Fact Sheet: Autoclaving Biological Waste](#)
- [Waste Disposal Procedures](#)
- [Preventing Employee Exposure to Bloodborne and Other Pathogens](#)

Training records must be maintained for three years from the date on which the training occurred. Training records must include the dates of the training sessions, the contents or a summary of the training session, the names and qualifications of persons conducting the training, and the name and job titles of all persons attending the training sessions.

## X. INCIDENT REPORTING

Any incident involving spillage of the contents of an infectious waste bag or sharps container will be reported to the employee's supervisor, the Office of Occupational Health and Safety and the Biosafety Officer (612-626-6002).

In addition, employees will be advised to seek medical care for any injury or potential exposure resulting from handling infectious waste and to report the incident according to [University Policy](#).

“University employees must promptly report on-the-job injuries/illnesses to the employee's supervisor. Within 24 hours of the employee's report the supervisor shall complete the First Report of Injury and the Employee Incident Report forms and forward these to the University's vendor and a copy to the University Workers' Compensation Department.”

**NOTE: You must report to the IBC as a near-miss if incident occurred in an IBC-approved protocol. Use the [incident report form](#) found under Reporting Research Related Incidents Form.**

## XI. OFF-SITE TRANSPORTATION, DISPOSAL, AND QUANTITY OF INFECTIOUS WASTE

The University of Minnesota participates in the State of Minnesota's Infectious (Biomedical) Waste Disposal Contract for off-site transportation and disposal of infectious waste and animal carcasses. The hauler is registered with the Minnesota Pollution Control Agency. The current contract holder is Healthcare Waste Solutions (HWS).

See appendix A for annual disposal amounts.

## XII. PLAN REVIEW, CONTACT, AND AVAILABILITY

A. The plan will be reviewed and updated at least every two years.

B. Responsible Individual for Generators and Contact:

University of Minnesota  
 Paul Allwood, Assistant Director Public and Occupational Health  
 Department of Environmental Health and Safety  
 W-140 Boynton Health Service  
 Minneapolis, MN 55455  
 612/626-6002

C. The Infectious Waste and Pathological Waste Management Plan is available to all University of Minnesota employees on Environmental Health and Safety's web site, <http://www.dehs.umn.edu/PDFs/infectwaste-plan.pdf>. Hard copies can be requested by calling the Biological Safety Officer at 626-6002.

**APPENDIX A**

No waste is incinerated on-site. The following table:

- does not include infectious waste decontaminated (via autoclave) on-site by the waste generator
- does not include animal carcasses that are disposed of on-site via a tissue digester.

Fiscal Year	Type of Waste	Amount in Pounds
2009	Infectious Waste *	447,560
2009	Human Pathological Waste **	5
2008	Infectious Waste *	490,445
2008	Human Pathological Waste **	5
2007	Infectious Waste *	425,236
2007	Human Pathological Waste **	60
2006	Infectious Waste *	480,000
2006	Human Pathological Waste **	5
2005	Infectious Waste *	687,636
2005	Human Pathological Waste **	5
2004	Infectious Waste *	769,379
2004	Human Pathological Waste **	5
2003	Infectious Waste *	791,902
2003	Human Pathological Waste **	5

\* Infectious Waste includes solid infectious waste in red biohazard bags, sharps in approved sharps containers, and animal carcasses generated in research laboratories. This waste is disposed of via the state infectious waste contractor.

\*\* Human Pathological Waste is disposed of via the Academic Health Center's Bequest Program. Contact the director of the Anatomy/Bequest Program for additional information.