Regulated Medical Waste Management Plan

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Appendices

This Plan addresses administrative controls, engineering controls, work practices and procedures implemented to designate, segregate, treat and dispose of Regulated Medical Wastes (RMW) at the University of Colorado Denver campuses and off-site locations.

NOTE: There is no epidemiologic evidence that current RMW disposal practices have caused disease in any community. The inappropriate designation of general wastes as infectious or regulated medical wastes results in substantial and unnecessary costs, disparity, and confusion in the correct management of infectious and regulated medical wastes.

All University of Colorado Denver | Anschutz Medical Campus Employees, Faculty, Exempt Professionals, Students and Classified Staff must adhere to this Plan for activities conducted on behalf of the University and must follow any site-specific Standard Operating Procedures as required.

The responsible office for this Plan is the Biosafety Office, Dept. of Environmental Health and Safety. This Plan shall be reviewed not less than annually and revised as needed. When concerns or issues not addressed in this manual arise, contact the Biosafety Office, 303-724-0345.

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Biosafety Officer
Department of Environmental Health and Safety
I. Introduction

A. Purpose

1. Regulated Medical Wastes--also referred to as biomedical, infectious, or potentially infectious wastes--must be managed in accordance with State of Colorado laws, statutes and regulations as well as other local and federal requirements, to minimize the risk of infection or injury during the handling, transportation, treatment or final disposal of Regulated Medical Wastes (RMW).
2. The State of Colorado promulgates regulations to enforce federal and state laws, at the state level. The Colorado Department of Public Health and Environment (CDPHE) promulgates rules for the appropriate management of Regulated Medical Wastes.
3. In accordance with State laws and regulations, each entity generating Regulated Medical Waste (RMW) must have a Regulated Medical Waste Management Plan (Plan).
4. In accordance with State laws and regulations, each entity generating Regulated Medical Waste (RMW) must conduct appropriate training on the Plan for all personnel involved in the generation, segregation, transport, treatment and disposal of RMW.
5. The Management Plans outlines the responsibilities, policies and practices to segregate, manage and dispose of RMW generated from research and educational laboratory operations, and from clinical and patient care activities of the University of Colorado Denver and Anschutz Medical Campuses (CU Denver), and any off-site activities conducted under the auspices of CU Denver.
6. Individual entities are required to document compliance with a Regulated Medical Waste Management Plan and appropriate training of all personnel involved in the generation, transport, treatment and disposal of RMW.
7. All CU Denver regulated medical wastes will be appropriately segregated, transported, and treated, prior to final disposal in a sanitary landfill. For this purpose, the CU Denver Department of Environmental Health and Safety, via the Biosafety Office contracts with an appropriate vendor to provide autoclaving and final disposal services or incineration and final disposal of regulated medical wastes.

B. Scope

1. Regulated Medical Wastes (RMW) are those wastes generated from the diagnosis, treatment or immunization of human beings or animals. Regulated medical wastes are also those wastes generated by research associated with studies of infectious or other diseases and recombinant DNA materials.
2. All CU Denver regulated medical wastes will be appropriately segregated, transported, and treated, prior to final disposal in any sanitary landfill. For this purpose, the CU Denver Department of Environmental Health and Safety, via the Biosafety Office contracts with an appropriate vendor to provide autoclaving and
final disposal services or incineration and final disposal of regulated medical wastes.

3. The hierarchy of controls includes federal, state and local mandates and regulations. These regulations are enforced by the state, county health departments, municipalities or local special districts.

4. For the Denver metro area, and our Anschutz and Downtown campuses, the Metropolitan Waste Water District is the local Publically Owned Treatment Works (POTW) for all sanitary sewer discharges. Certain liquid wastes cannot be discharged or otherwise disposed of without treatment.

5. The Environmental Protection Agency (EPA) regulates discharges into air and bodies of water through the Clean Air Act and Clean Water Act, respectively. The Clean Air Act governs all incinerators, to include those licensed with EPA for incineration of medical wastes. The EPA further regulates the labeling of disinfectants for cleaning of surfaces that may be contaminated with infectious agents or pathogens.

6. The U. S. Department of Transportation (DOT) regulates the transportation of hazardous materials, to include regulated medical wastes. The DOT specifies standards for transportation containers for RMW; training for those “preparing for transport” and those transporting RMW; completion of paperwork for transport, destruction and final disposal of RMW; and spill and emergency response, as well as security plan measures for RMW.

7. Federal funding agencies, including the centers and institutes of the National Institutes of Health (NIH) require CU Denver, as a recipient of federal funds, to remain in compliance with all federal, state and local regulations for health, safety and environmental protection as stated in the NIH Grants Policy Statement. The NIH Grants Policy Statement specifically calls for compliance with OSHA mandates. The OSHA Bloodborne Pathogens, Exposure Control & Needlestick Safety Standard, has specific information on how to dispose of human blood, bodily fluids, sharps, and other regulated medical waste.

8. The NIH Guidelines for Research Involving Recombinant or Synthetic Nucleic Acid DNA Molecules (NIH Guidelines) requires the segregation and destruction of all recombinant DNA materials to prevent damage to the public health or environment. The Biosafety in Microbiological and Biomedical Laboratories, a joint publication of NIH and the Centers for Disease Control & Prevention (CDC), provides a framework of best management practices for safe work in the laboratory environment.
C. Policy Statement

1. The administration of CU Denver is committed to protecting the environment and the health and safety of its students, faculty, staff, and the general public in the conduct of all research, clinical and academic missions. The Regulated Medical Waste Management Plan, (hereafter the “Plan”) if followed, satisfies applicable safety, health, and environmental regulations and concerns for the CU Denver operations that generate such wastes.

2. Each of us in turn has a responsibility for the proper identification, segregation and disposal of regulated medical wastes to protect the environment and general public health.

NOTE: Improper disposal practices also present a risk of regulatory non-compliance actions against the University. Improper disposal practices may be investigated, violations determined and fines assessed by local state and federal agencies: Metropolitan Waste Water District (MWWD), the Colorado Department of Public Health and Environment (CDPHE) and the U. S. Department of Transportation (DOT). Civil and criminal fines and penalties may be assessed by those agencies. Civil fines and penalties can be assessed at $2000 per day per incident by the state agency and $52000 per day per incident by the federal agency. If you have any further questions about proper segregation and disposal of regulated medical wastes, please contact the Biosafety Office, Dept. of Environmental Health and Safety, at 303-724-0345, before commencing work.

II. References

A. U. S. Department of Transportation 49 CFR Parts 170-180
B. U. S. Environmental Protection Agency, to include: Clean Air Act, Clean Water Act, Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)
C. NIH Guidelines for Research Involving recombinant DNA Molecules
D. NIH Guidelines, Appendix B, Risk Groups
E. NIH-CDC Biosafety in Microbiological and Biomedical Laboratories
G. Colorado Revised Statutes (CRS) Title 25-Article 15-Part 4
H. Colorado Code of Regulations 6 CCR 1007-2
I. Metropolitan Waste Water District Commission Rules & Regulations
J. CU Denver Biosafety Manual
K. CU Denver Exposure Control Plan
L. CU Denver Hazardous Waste Generator Manual
M. CU Denver Radiation Waste Disposal Procedure Manual
III. Glossary of Terms and Definitions

See Appendix A of this document for a current glossary of terms and definitions.

IV. Roles and Responsibilities

NOTE: It is the responsibility of all employees, staff and students of CU Denver, generating regulated medical wastes--infectious, potentially infectious or otherwise identified regulated medical wastes--to comply with this Plan and related regulations.

Important Exceptions:

Personnel working in those properties owned and operated by the University of Colorado Hospital Authority, must follow UCH policies and procedures. Contact UCH Safety Office for additional information and instruction on their policies and procedures for Regulated Medical Wastes.

Personnel working at the Clinical Trials Research Center in the Leprino Building. Personnel working in Department of Pathology diagnostic laboratories (e.g. Surgical Pathology, Histology, Cytology, etc.) housed at UCH.

Personnel working at the Children’s Hospital Colorado must follow those policies and procedures. Contact the Children’s Hospital Colorado Safety Office for information and instruction on their policies and procedures for Regulated Medical Wastes.

A. The Department of Environmental Health and Safety (EHS).

1. The Department of Environmental Health and Safety (EHS), via the Biosafety Office, will make the determinations for and designate those materials, which must be segregated, transported, treated and disposed of as Regulated Medical Wastes for the CU Denver campuses and off-site facilities.

2. The Department will provide appropriate Regulated Medical Waste Training to all personnel who handle or generate regulated medical waste as part of their job duties or who supervise personnel that handle or generate such wastes.
B. The Biosafety Office, EHS

1. The Biosafety Office, EHS, will make determinations of the legal, ethical and most cost effective means of classification, segregation, decontamination and final disposal of regulated medical wastes (RMW) and disseminate this information to all campus entities.
2. Further, The Biosafety Office will:
   a. Develop and implement the Regulated Medical Waste Management Plan in accordance with all federal, state and local regulations.
   b. Communicate to all campus entities the contents of this Plan.
   c. Develop, implement and communicate contingency plans for spills or loss of containment of regulated medical wastes.
   d. Assure the appropriate training and other tools for campus entities to comply with all applicable federal, state and local regulations and this Plan.
   e. Consult with investigators, supervisors and others as necessary for addressing regulated medical waste segregation issues.
   f. Provide for appropriate on- and off-site treatment and final disposal of RMW for research, clinical and academic operations.
   g. Contract with an appropriate vendor to provide containers (tubs) lids and liners, for autoclaving and final disposal or incineration and final disposal of regulated medical wastes, as appropriate.
   h. Schedule the routine pick up of filled, closed, labeled regulated medical waste containers from all main campus laboratories and deliver them to the holding area identified for each building.
   i. Implement plans to assure all transportation of regulated medical waste will be conducted in accordance with the U. S. Dept. of Transportation regulation 49 CFR Parts 170 et seq.
   j. Provide a copy of this Plan to any vendors handling or transporting RMW, the disposal facility and any licensing or regulatory agencies, as well as to all CU Denver employees.

C. Principal Investigators, Faculty and Supervisors

1. It is the responsibility of all Principal Investigators (PI), faculty and supervisors to assure that all students and employees, throughout CU Denver are aware of and comply with this Plan.
2. It is the responsibility of all Principal Investigators, faculty and supervisors to provide appropriate on-the-job training to all students and employees in their laboratories for the proper segregation and labeling of wastes, for compliance with this Plan.
3. Each Principal Investigators, faculty and supervisors, in consultation with the Biosafety Office, shall make the risk assessment and determination of the segregation of their medical waste stream, and shall instruct students and staff in the appropriate procedures to follow.
4. Each PI, faculty member or supervisor should develop the appropriate written Standard Operating Procedure (SOP) for their waste for their staff and students to follow.

D. Individual Responsibilities

1. All students, faculty, staff and employees will comply with instructions from their supervisor, or PI, the Biosafety Office, EHS staff and/or the vendor, regarding proper segregation, packaging, sealing and labeling of biomedical waste for treatment and disposal.
2. Personnel must successfully complete the EHS-provided Regulated Waste Management Training (online in Employee Learning & Development module) within 30 days of the date of hire, or the assignment to tasks involving the generation of RMW.
3. Training also applies to PIs and all supervisors who supervise individuals who handle or generate regulated medical wastes.
4. Refresher training will be conducted, as necessary, as directed by the State of Colorado.

V. Training

A. A program of training shall be developed and maintained by the Department of Environmental Health and Safety for all students, faculty, staff and employees who are generators of RMW.

B. Training will cover the topics as determined by EHS staff to comply with elements of state, federal and local regulations, as well as the topics covered by the University Regulated Medical Waste Management Plan.

C. Personnel must successfully complete the EHS-provided Regulated Waste Management Training, within 30 days of the date of hire, or the assignment to tasks involving the generation of RMW.

D. Training also applies to PIs and all supervisors who supervise individuals who handle or generate regulated medical wastes.

E. Refresher training will be conducted, as necessary, as directed for compliance with State of Colorado and other regulations, at the discretion of the University.
VI. Designation of Regulated Medical Wastes

A. Designating Regulated Medical Waste Streams

1. Designation of regulated medical wastes (RMW), definitions for regulated medical wastes and acceptable practices for segregation, treatment and disposal are determined by individual States.
2. The Colorado Department of Public Health and Environment (CDPHE) is the rule-making body for Regulated Medical Wastes for the State of Colorado.
3. Locally, the regulations governing landfill disposal or sanitary sewer system disposal may be regulated by the municipality or a special district. In the Denver metro area (including Downtown Campus and Anschutz Medical Campus), the Metropolitan Waste Water District (MWWD) further defines wastes that may be disposed into the sanitary sewer system and those which are prohibited.
4. Additional materials unique to the University research laboratory setting are included in this Plan to assure compliance with all local, state and federal regulations.
5. Specific topics that are generally applicable for all CU Denver facilities are discussed under Section V. General Procedures.
6. A full glossary of terms and definitions is at Appendix A of this document.
7. In the event you have questions or concerns about these definitions, contact the Biosafety Office, Department of Environmental Health and Safety (EHS), 303-724-0345.

B. University-Specific Regulated Medical Waste Streams

1. All materials known to contain recombinant DNA, to include all transgenic organisms, are designated as Regulated Medical Wastes to assure compliance with the stipulations for treatment and disposal of such materials per the NIH Guidelines for Research Involving Recombinant or Synthetic Nucleic Acids Molecules.
2. All human pathological wastes generated from University activities are designated as RMW. This includes those tissues, organs and body parts generated from basic or clinical activities at the campuses or off-site facilities. “Pathological” wastes must be treated by incineration in an EPA-licensed biomedical waste incinerator.
3. Certain animal pathological wastes generated are designated as RMW. This includes those tissues, organs and body parts generated from basic or clinical activities at the campuses or off-site facilities. “Pathological” wastes must be treated by incineration in an EPA-licensed biomedical waste incinerator.
4. Stocks and cultures of any animal, plant or human pathogen and any associated liquid or solid wastes, generated from work with animal, plant or human pathogens.
   a. “Category A Infectious Materials” are specific human or animal pathogens which present an extreme risk of morbidity or mortality or extreme risk if released to the environment, with further restrictions on possession, use,
storage or transport, under Federal law. Research or clinical laboratories working with any Category A materials (see Appendix A, Definitions) will be identified in advance by the submission of a Biosafety Application Form for Institutional Biosafety Committee review and approval prior to the initiation of that research or clinical work.

b. “Category B Infectious Materials” are specific human or animal pathogens which present a high risk of illness or a high risk if released to the environment, with further restrictions on their management under Federal law. Generally these will be listed by the NIH, CDC, the USDA and/or the State Health Department. Further references are found in the NIH Guidelines (Appendix B), on the USDA-APHIS website and on the list of Notifiable Diseases, as well as elsewhere on the Biosafety website for the campus.

5. Other Infectious or Potentially Infectious Materials including:
   a. All liquids generated from work with human or animal subjects (blood, bodily fluids, serum, plasma, bronchoalveolar lavage, etc.), which may or may not contain pathogens or recombinant DNA.
   b. All liquid media used to culture cell lines, with or without rDNA, or infectious agents.

6. Trace Chemotherapy wastes: those waste materials containing less than 3% by volume of any chemotherapy, anti-neoplastic or cytotoxic drug or pharmaceutical, which must be treated off-site by incineration in an EPA-permitted biomedical waste incinerator.

7. Sharps wastes: all those glass or metal items, or other items that can easily puncture the skin whether or not they have been in contact with anything infectious. All sharps must be handled and disposed in a manner that protects you and others from exposure and possible injury. See Section V, General Procedures for additional information on disposal of unused needles.

8. Mixed wastes.
   a. Mixed wastes generally fall into two categories: those which are regulated medical wastes, also containing or otherwise labeled with radioisotopes; or those which are regulated medical wastes, also containing or otherwise labeled with a chemical or pharmaceutical compound.
   b. Such wastes generally cannot be autoclaved and may not be suitable for other chemical decontamination methods. Each laboratory that will generate such wastes will need to consult with EHS before generating such wastes to assure an appropriate SOP.

Note: if your mixed waste contains radioactive materials, all SOPs will be documented with the approval of the Committee on Ionizing Radiation, the Radiation Safety Office (EHS) and the Biosafety Office (EHS).

Note: if your mixed waste contains chemical or pharmaceutical materials, all SOPs will be documented with the approval of the Biosafety Office (EHS) and the Chemical Hazardous Materials Section (EHS).
9. Any debris or residue material resulting from a spill or release of regulated medical wastes.

10. HEPA Filters. HEPA filters removed from Biological Safety Cabinets (BSC) and exhaust systems are unique waste streams. Specific steps must be in place to handle them correctly if they become a Regulated Medical Waste or a Hazardous Waste.
   a. When used only with animal, plant or human pathogens, the HEPA filters may be decontaminated onsite, via gas (chemical) decontamination methods or autoclaving as appropriate. Some may need to be further segregated, transported, treated and disposed of as Regulated Medical Wastes.
   b. Some of these HEPA filters may be used in systems for the preparation of chemotherapy, anti-neoplastic or cytotoxic drugs, and thus may be classified as a Hazardous Waste. A filter, which is deemed a Hazardous Waste, must always be treated as a Hazardous Waste.
   c. Consult the Biosafety Office prior to removing any HEPA filter from any BSC or exhaust system for appropriate Standard Operating Procedures for decontamination or disinfection.

11. Further classification of dry solid wastes and liquid wastes are as follows:
   a. Dry, solid waste: those dry materials/wastes, paper or plastic, that are appropriately disinfected or treated by steam sterilization or autoclaving. This includes plastic ware generated during culture or other laboratory activities that do not have any standing liquid.
   b. Liquid waste: those liquids generated in tissue culture work, from work with human or animal subjects (blood, bodily fluids, serum, plasma, bronchoalveolar lavage, etc.), which may or may not contain pathogens or recombinant DNA, which can be effectively and appropriately treated by steam sterilization or autoclaving. Some liquid biological wastes, particularly the media used to culture cell lines, (with or without rDNA) or infectious agents, will require sterilization or disinfection to inactivate the agent before disposal to the sewage system.

NOTE: This waste stream does not include the clean or sterile outer wrappers or packaging materials. Those materials should be segregated into the “regular” trash receptacle in the laboratory for disposal as Municipal Solid Waste. The inappropriate disposal of clean or sterile packaging materials increases the cost to the University.

VII. General Procedures

NOTE: Certain pathogens or infectious agents may only be possessed, stored or used in accordance with other federal permits and regulations, which may have more explicit requirements for disinfection, decontamination or destruction than described in this Plan. Those laboratories shall be required to document individual regulated medical waste management plans to the satisfaction of the Biosafety Office, the Department of Environmental Safety, the Institutional Biosafety Committee and the federal agency issuing the permit. Such plans are subject to inspection.
A. Appropriate Transport Containers

1. All Regulated Medical Waste containers for the transport of RMW are color-coded and labeled for compliance with US DOT and other regulatory requirements.

2. Liners (bags) and containers used to contain medical waste must meet applicable United States OSHA Bloodborne Pathogens Standards, 29 CFR 1910.1030 and containment and labeling requirements U.S. DOT Division 6.2 Infectious Substances (49 CFR Parts 171-180).

3. Transport containers, lids and liners are provided to campus entities by a third party vendor under a contract managed by the Biosafety Office, EHS. These transport containers are a shared resource in our laboratories, and are not Point of Use containers for widespread use at each laboratory bench. They are staged for use in the linear equipment corridors (LEC) in our research towers.

4. When determined to be full, liners must be tied shut by laboratory personnel and lids secured on tubs. Full tubs will be picked up routinely by EHS staff and transported to a secure location for transportation off-campus by the contractor.

B. Segregation of RMW

1. Regulated Medical Wastes must be segregated by the known characteristics at the point of generation, per the categories listed below.

2. “Incinerate Only” wastes: For wastes which must be treated and disposed of by incineration in a permitted biomedical waste incinerator, these wastes will be segregated into lined, marked and labeled YELLOW tub, as provided by the third party vendor.
   a. “Pathological” or “Trace Chemotherapy” wastes are those wastes that must be treated by incineration in an EPA-licensed biomedical waste incinerator. For further examples see Appendix C and Appendix F.
   b. Other materials may be identified which require incineration as the appropriate means of sterilization and destruction. Research or clinical laboratories working with any such materials identified by risk assessment and/or the submission of their Biosafety Authorization forms, will be instructed on the need for developing a laboratory specific Standard Operating Procedure for segregation of those wastes. This is a very limited waste stream.
3. “Autoclave Wastes”: designates wastes, which may be appropriately treated and
decontaminated by the method of steam sterilization or autoclaving. These
wastes will be segregated into a lined, marked and labeled RED tub, as provided
by the third party vendor. However, some materials may need to be treated on-
site prior to co-mingling with other RMW for transport, treatment and final
disposal.

a. “Category A Infectious Materials” Research or clinical laboratories working
with any Category A materials (see Appendix A, Definitions) will be identified
by risk assessment and/or the submission of a Biosafety Application Form for
Institutional Biosafety Committee review and approval prior to the initiation of
that research work.
   i. Each laboratory with Category A materials will develop a laboratory
      specific Standard Operating Procedure (SOP) for on-site autoclaving
      or other treatment of those wastes. Refer to the Appendices for further
      information to develop an autoclave validation plan and SOP.
   ii. For those Category A materials which can be treated by
       Autoclave/Steam Sterilization, there is a requirement for those
       laboratories to document and implement an autoclave validation plan
       prior to approval of the IBC for work to be conducted.
   iii. For those Category A materials which must be treated by other means
        (chemical inactivation, rather than autoclave), that treatment shall be
        documented in an SOP prior to the approval of the IBC for the work to
        be conducted. Those materials which must undergo chemical
        inactivation will be addressed on a case-by-case basis for final
        disposal.
   iv. Once these wastes have been adequately treated on-site, they will be
       co-mingled with other wastes for final disposal. These wastes will be
       segregated into red tubs, lined with red biohazard bags.
   v. Bags must be tied shut and lids secured on tubs. Full tubs will be
      picked up by EHS staff and transported to a secure location for
      transportation off-campus by the contractor, for final treatment and
      disposal
   vi. Each laboratory is also responsible for documenting all wastes are
       appropriately treated and retaining those treatment records for three
       (3) years.
b. “Category B Infectious Materials”
   i. Anyone working with Category B materials (see Appendix A, Definitions) or tissue culture materials shall use the autoclave waste stream as described in this Plan.
   ii. These wastes will be segregated from the point of generation, into red tubs, lined with red biohazard bags.
   iii. Bags must be tied shut and lids secured on tubs. Full tubs will be picked up by EHS staff and transported to a secure location for transportation off-campus by the contractor, for final treatment and disposal.

4. All other infectious materials
   a. These wastes will be segregated into red tubs, lined with red biohazard bags.
   b. Bags must be tied shut and lids secured on tubs. Full tubs will be picked up by EHS staff and transported to a secure location for transportation off-campus by the contractor, for final treatment and disposal.

5. Recombinant DNA materials
   a. These wastes will be segregated into red tubs, lined with red biohazard bags.
   b. Bags must be tied shut and lids secured on tubs. Full tubs will be picked up by EHS staff and transported to a secure location for transportation off-campus by the contractor, for final treatment and disposal.

6. Mixed Wastes:
   a. If a laboratory is generating biomedical wastes that have other contaminants, i.e. chemical or radioactive materials, the PI, faculty member or supervisor must consult with the appropriate EHS offices to assure all such wastes are appropriately identified, segregated into the appropriate waste stream, labeled and handled appropriately.
   b. For radioactive materials users, consult the most current Radioactive Waste Disposal Manual and consult with the Radiation Safety Office to assure your SOPs meet all requirements.

C. Point of use containers

1. Point of use containers are those suitable, rigid, leakproof containers used at the laboratory bench (point of generation) of wastes, to appropriately collect and contain regulated medical wastes.
2. Point of use containers must be purchased by the individual laboratory. They may be disposable (e.g. for solidification of liquid wastes) or reusable. If reusable, they must have an appropriate liner, clearly color-coded (red or yellow) for the wastes within and/or bearing a biohazard symbol. All containers must be, clearly marked and labeled for the wastes (i.e. a biohazard label) as illustrated below. Labels may be requested from the Biosafety Office.
D. Sharps Containers and Sharps Disposal

NOTE: All radioactive sharps must go to Radiation Safety for disposal.

1. All “Sharps” items (see Definitions, Appendix A) must be disposed of in sharps containers—rigid, puncture proof containers. Improperly disposing of any sharps in regular trash present a risk of injury to co-workers, students, facilities and housekeeping staff.
2. The Sharps containers must be labeled and/or color-coded for disposal in the appropriate waste stream.
3. All sharps items used only with biological, potentially infectious or infectious materials must be disposed of in containers to be sent for treatment by autoclaving. Those items must be disposed of in the RED tubs.
4. All sharps used with cytotoxic drugs or chemotherapy agents must be sent for treatment by incineration. Such wastes shall be placed in the YELLOW tubs for incineration.
5. All sharps and needles must be placed in appropriate rigid, puncture-proof, containers for disposal, with appropriate labeling to identify them.
6. All sharps containers must be able to fit into the designated transport containers provided by the third party vendor.

NOTE: Sharps containers are sold labeled as DOT-compliant for handling and transport as Div. 6.2 UN 3291 as regulated medical wastes, however, those are not acceptable for use on campus, as they cannot be accommodated for transport in suitable fashion by the third party vendor.

7. Any sharps used with Radioactive Materials (RAM) will be segregated and disposed of as identified by the most current Radioactive Waste Disposal Manual, and in the CIR-approved protocol for those materials. These steps should be documented in an SOP for the laboratory staff to follow.
8. Any sharps used only with chemical or hazardous chemical materials will be disposed of as determined by consultation with the Dept. of Environmental
Health and Safety, Chemical and Hazardous Materials Unit. These steps should be documented in an SOP for the laboratory staff to follow.

E. Treatment and Disposal of Liquid Wastes

**Note:** No standing liquids are permitted in the RMW transport containers, as they present a risk of leaks, spills and exposures.

**Note:** Metropolitan Waste Water District, our POTW has strict prohibitions for sink/sanitary sewer system disposal of wastes. See Appendix B Sink Disposal Guidelines for those prohibitions. Contact the Biosafety Office if you have questions on appropriate sink disposal practices.

1. Liquid wastes from research at CU Denver shall be treated and segregated appropriately. Labs will prepare a written, documented Standard Operating Procedure for addressing any liquid regulated medical wastes generated in their processes. Consult with the Biosafety Office for specific waste streams you generate.

2. Liquid waste disposal options are as follows.
   a. Certain liquid wastes may solidified\(^1\) with a commercial product, in a disposable container, and segregated into the vendor's red tubs, lined with red biohazard bags. The Biosafety Office sells suitable products for solidifying aqueous liquid regulated medical waste.
   b. Certain liquid wastes may be autoclaved on site and may be sink-disposed upon demonstration that they have been adequately treated, with the approval of the Biosafety Office with a written, documented SOP.

F. Management of HEPA Filters

1. Biological Safety Cabinet (BSC) and exhaust system HEPA filters are unique waste streams. Some of these wastes may be considered a Hazardous Waste, some may be a Regulated Medical Waste, and others are a combination of hazardous and regulated medical wastes, depending on the nature of the materials manipulated in the BSC. A filter, which is deemed a combination waste, must always be treated as a Hazardous Waste.

2. Studies have shown Cyclophosphamide and similar drugs have been detected on the HEPA filters of flow hoods used in preparation of hazardous drugs. In those settings in which hazardous drugs are prepared, the laboratory shall implement a waste management plan for those HEPA filters in collaboration with the EHS department.

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\(^1\) The Biosafety Office sells materials suitable for solidifying aqueous infectious liquids. Contact the Biosafety Office for additional information.
3. Biological Safety Cabinet HEPA Filters, which are hazardous wastes, must be disposed of at a permitted hazardous waste treatment, storage or disposal facility.

4. Contact EHS Biosafety Office to assess the appropriate exposure classification of HEPA filters which may be removed from your Biological Safety Cabinet during certification to determine the correct handling and disposal of these wastes.

G. Closure of Containers and Transport

1. Remember: no standing liquids are permitted in the RMW transport containers.
2. Bags must be tied shut by the laboratory staff generating the wastes.
3. Lids shall be placed on and secured on tubs by laboratory personnel.
4. Full tubs will be picked up by EHS staff and transported to a secure location for transportation off-campus for treatment and disposal by the contracted vendor.

VIII. Records Management

A. The University shall maintain all appropriate records for compliance with the State and federal regulations in the Department of Environmental Health and Safety. All records required by 6 CCR 1007-2, Section 13 must be maintained onsite for three (3) years.

B. The following records shall be maintained onsite in an easily retrievable format:

1. The University Regulated Medical Waste Management Plan.
2. University RMW Training
3. Copies of personnel training records.
4. Contractual agreements with an approved commercial medical waste storage, treatment or disposal facility.
5. Records (manifests) for all RMW sent off-site for treatment and destruction.
6. Records of all spills and exposure incidents, and all actions taken to investigate and remediate.

IX. Spill Response Plans

A. General Instructions

1. For spills of what appears to be human or animal blood, or bodily fluid, outside a laboratory environment (e.g. hallways, stairwells, etc.), but within a building, contact Building Services for cleaning.
2. For spills of what appears to be human or animal blood, or bodily fluid, outside a building, contact EHS for assistance in cleaning. Such materials may not be washed into the storm sewer system.
3. Spills of infectious wastes can be safely cleaned up by the laboratory personnel who work with and are familiar with the hazards of the particular infectious agents or biological materials in use in their laboratories.

4. Spills of infectious materials or wastes that exceed the ability of laboratory personnel to manage should be reported to EHS and assistance will be provided. If you believe an agent is aerosolized or airborne, call EHS for immediate assistance.

5. Spills occurring during the internal (on-campus) transport or in the loading dock storage or immediate area will be handled by the appropriately trained EHS personnel.

6. Spills or releases of medical waste which occur during transportation off-site shall be cleaned up immediately by the transporter according to generally accepted procedures.

7. Spills to the environment or those exposing workers or the general public to potential infection shall be reported to the Colorado Department of Public Health and Environment, to the local governing body having jurisdiction, and to the wastewater treatment facility if discharged to the sewer system, within twenty-four (24) hours.

8. A written summary report describing the spill or release and the actions taken to remediate it shall be submitted to the Department within fifteen (15) calendar days of the incident. It also includes any residue or contaminated soil, water, or other debris resulting from the cleanup of a spill or release of medical waste.

B. Laboratory Spills

1. Most laboratory spills of infectious materials can be safely cleaned up by the laboratory personnel who work with and are familiar with the hazards of the particular infectious agent. Most hazards are associated with bloodborne pathogens, however, for some laboratories, there is a risk of exposure to ingested or inhaled agents.

2. PPE to be worn
   a. Wear a laboratory coat or disposable gown.
   b. Gloves: Always wear two pairs of gloves. An inner set of disposable nitrile or latex gloves is recommended. An outer impermeable glove is recommended if there is broken glassware or other sharps in the spill area. Immediately replace the gloves if they are torn or become grossly contaminated. If spilled material comes into contact with skin, immediately remove the gloves and wash hands or other exposed skin with soap and water.
   c. Eye protection--consisting of goggles or face shield.
   d. A HEPA filter on a half-face respirator is required for potential airborne agents. Most laboratorians are not routinely fitted for these respirators. If you believe an agent is aerosolized or airborne, call EHS for immediate assistance.

3. When cleaning up a spill use forceps, tongs, or needle-nose pliers to pick up any broken glass. Place the broken glass into a rigid sharps container. Use a dustpan and broom to clean up small shards of glass.
4. Decontaminate all equipment used in cleaning the spill before placing it back into service. Wash hands thoroughly with soap and water after the clean-up is completed.

5. Small spills (less than 100 ml)
   a. Surround the spill with absorbent materials, working from the outside toward the center. Absorb as much of the material as possible.
   b. Prepare a fresh solution disinfectant (follow the manufacturer’s directions on the bottle).
   c. Carefully spray the spill area with disinfectant, until soaking wet. Allow at least 20 minutes of contact time before attempting further clean up.
   d. Wipe up as much as possible, then repeat the procedure. Place all waste in a red biohazard bucket.
   e. Wipe any cleaning aids (tongs, etc.) with the disinfectant solution or dispose of them in a rigid container.

6. Large spills (more than 100 ml)
   a. An appropriate absorbent (Isolyzer) may be used to pick-up much of the spill if it is aqueous. Diatomaceous earth (Ultrasorb 248), paper towels or absorbent pads may be used. Carefully apply the absorbent at the outside edges of the spill working towards the center.
   b. After 20 minutes of contact time, scrape up the absorbent material and place it into a red biohazard waste bucket. Repeat as necessary.
   c. Place the waste into a red biohazard waste tub. Be sure that the initial clean up is thorough (no visible contaminant), so that complete disinfection can occur.
   d. Carefully spray the spill area with disinfectant, until soaking wet. Allow at least 20 minutes of contact time before attempting further clean up.
   e. Wipe up as much as possible, then repeat the procedure. Place all waste in a red biohazard tub.
   f. Wipe any cleaning aids (tongs, etc.) with the disinfectant solution or dispose of them in a rigid container.

7. In cases where the spill is large, the infectious agent may be airborne, or lab personnel do not possess the skills and/or equipment to clean up a spill, call for immediate assistance from Environmental Health and Safety.

8. If the spill involves a BSL3 containment facility, contact the UCD Biosafety Officer, through the UCD Campus Police, 303-724-4444.

C. Emergency Response to Infectious Materials Spills

1. If circumstances warrant and the laboratory staff cannot clean the spill on their own, the EHS emergency response will be in effect.
2. When a spill is reported, have the caller cordon off the immediate area (e.g. with caution tape, etc.), close the room door and prevent others from entering the affected area.
3. Have the caller remain available to assist in the spill response.
APPENDIX A

Glossary of Terms and Definitions

**Air pollutant:** any fume, smoke, particulate matter, vapor, gas or any combination thereof which is emitted into or otherwise enters the atmosphere. “Air pollutant” includes, but is not limited to, any physical, chemical, biological, radioactive (including source material, special nuclear material, and by-product material) substance or matter. “Air pollutant” does not include water vapor or steam condensate.

**Antineoplastic:** acts to prevent, inhibit, or halt the growth of a tumor.

**Antineoplastic drug waste:** any waste antineoplastic drugs, any non-empty containers of antineoplastic drugs (e.g., full or partially full vials, ampules, IV bags, tubing); any items used for dosing human or animal patients with chemotherapy, cytotoxic or antineoplastic drugs or agents; gowns, gloves, any disposable surgical mask or N95 respirator; animal bedding if so designated by EHS and IACUC review; emptied needles, syringes, IV bags and tubing, drug vials or bottles; and any material used to clean up a spill of antineoplastic drugs.

**Autoclave:** pressurized, steam heated vessel used for sterilization; the process of sterilization accomplished with such a vessel.

Autoclave wastes are those wastes that are appropriately disinfected or treated by steam sterilization or autoclaving. This encompasses the majority of our biomedical waste stream.

**Biohazardous waste:** liquid or solid waste containing or contaminated with organisms or viruses infectious to humans, animals or plants (e.g. parasites, viruses, bacteria, fungi, prions, or rickettsia). Includes cultures, plates, media, and other materials that contain or come in contact with living cells, body fluids, viruses, clinical materials, and other microorganisms.

**Blood and body fluids:** waste containing unabsorbed human and animal blood or blood products, components of blood or blood products, and other body fluids. This waste stream includes, but is not limited to, human blood; plasma; serum; platelets; other blood components and blood products; body fluids including exudates, semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, peritoneal fluid, pericardial fluid and amniotic fluid; suction and irrigation fluids contaminated with blood or body fluids; liquid residues or contaminated water resulting from the cleanup of a spill of medical waste; and blood and body fluids from animals known to be infected with diseases that are contagious to humans.

**Bloodborne Pathogens:** microorganisms present in human blood that can cause human disease; including, but not limited to: Hepatitis B Virus (HBV); Hepatitis C Virus (HCV); Human Immunodeficiency Virus (HIV); *Trypanosoma cruzi.*
Category A Infectious Substances: Category A infectious substances includes but is not limited to the following infectious substances affecting humans and animals:

All Risk Group 4 infectious (viral) agents or specimens from patients suspected or known to be infected with RG 4 agents are automatically included as Category A materials.

Any Hemorrhagic fever agents and viruses yet undefined.

All Select Agents organism cultures are automatically included as Category A materials. Category A may also include some Risk Group 3 agents and specimens or specimens from patients suspected or known to be infected with RG3 agents.

<table>
<thead>
<tr>
<th>Category</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>African swine fever virus (cultures only)</td>
<td>Avian paramyxovirus Type 1—Velogenic</td>
</tr>
<tr>
<td>Bacillus anthracis (cultures only)</td>
<td>Brucella abortus (cultures only)</td>
</tr>
<tr>
<td>Brucella melitensis (cultures only)</td>
<td>Brucella suis (cultures only)</td>
</tr>
<tr>
<td>Burkleholderia mallei (Pseudomonas mallei)-Glanders (cultures only)</td>
<td>Burkleholderia pseudomallei (Pseudomonas pseudomallei)—Melioidosis (cultures only)</td>
</tr>
<tr>
<td>Chlamydia psittaci—avian strains (cultures only).</td>
<td>Classical swine fever virus (cultures only)</td>
</tr>
<tr>
<td>Clostridium botulinum (cultures only).</td>
<td>Coccidioides immitis (cultures only)</td>
</tr>
<tr>
<td>Coxiella burnetti (cultures only)</td>
<td>Dengue viruses (cultures only)</td>
</tr>
<tr>
<td>Eastern equine encephalitis virus (cultures only)</td>
<td>Escherichia coli, verotoxigenic (cultures only)</td>
</tr>
<tr>
<td>Foot and mouth disease virus (cultures only)</td>
<td>Francisella tularensis (cultures only)</td>
</tr>
<tr>
<td>Goatpox virus (cultures only)</td>
<td>Hantaviruses causing hemorrhagic fever with renal syndrome (cultures only)</td>
</tr>
<tr>
<td>Herpes B simiae (B-virus, Monkey B virus) virus (cultures only)</td>
<td>Highly pathogenic avian influenza virus (cultures only)</td>
</tr>
<tr>
<td>Human Immunodeficiency virus (HIV)(cultures only)</td>
<td>Lumpy skin disease virus (cultures only)</td>
</tr>
<tr>
<td>Monkeypox virus (cultures only)</td>
<td>Mycoplasma mycoides—Contagious bovine pleuropneumonia (cultures only)</td>
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<tr>
<td>Mycobacterium tuberculosis (cultures only)</td>
<td>Newcastle disease virus (cultures only)</td>
</tr>
<tr>
<td>Peste des petits ruminants virus (cultures only)</td>
<td>Poliovirus (cultures only)</td>
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<tr>
<td>Rabies and other lyssaviruses (cultures only)</td>
<td>Rinderpest virus (cultures only)</td>
</tr>
<tr>
<td>Russian spring-summer encephalitis virus (cultures only)</td>
<td>SARS virus (cultures only)</td>
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<tr>
<td>Sheep-pox virus (cultures only)</td>
<td>Shigella dysenteriae type I (cultures only)</td>
</tr>
<tr>
<td>Swine vesicular disease virus (cultures only)</td>
<td></td>
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<tr>
<td>Tick-borne encephalitis virus (cultures only).</td>
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<tr>
<td>Venezuelan equine encephalitis virus (cultures only).</td>
<td>Vesicular stomatitis virus (cultures only)</td>
</tr>
<tr>
<td>West Nile virus (cultures only)</td>
<td>Yersinia pestis (cultures only).</td>
</tr>
</tbody>
</table>

Category B Infectious Substances: includes but is not limited to the following infectious substances affecting humans and animals:

Risk Group 2 (RG2) - Bacterial agents including Chlamydia, fungal, parasitic or viral agents
Risk Group 3 (RG3) bacterial, fungal, viral or parasitic agents not otherwise included under Category A, above.

Please cross-reference the NIH Risk Group 2 and 3 categories for agents affecting human and animal health.

Please cross-reference USDA-APHIS for agents affecting animal or plant health.

If you have any questions on the materials you are using, contact the Biosafety Office.

This list is not definitive under current Federal regulations. Cultures or stocks of these agents, and any items potentially contaminated by these agents must be segregated into the biomedical waste stream for transportation, treatment and disposal.

**Chemotherapy waste:** any waste chemotherapy drugs, any non-empty containers of antineoplastic drugs (e.g., full or partially full vials, ampules, IV bags, tubing), any items used for dosing human or animal patients with chemotherapy, cytotoxic or antineoplastic drugs or agents; gowns, gloves, any disposable surgical mask or N95 respirator; animal bedding if so designated by EHS and IACUC review; emptied needles, syringes, IV bags and tubing, drug vials or bottles; and any material used to clean up a spill of chemotherapy drugs.

**Controlled substances:** a drug or other substance, or immediate precursor, included in schedule I, II, III, IV, or V of the Controlled Substances Act (Title 21 Chapter 13 Subchapter I, Part B (USC)).

**Cytotoxic Drug Wastes:** any waste cytotoxic drugs, any non-empty containers of antineoplastic drugs (e.g., full or partially full vials, ampules, IV bags, tubing) any items used for dosing human or animal patients with chemotherapy, cytotoxic or antineoplastic drugs or agents; gowns, gloves, any disposable surgical mask or N95 respirator; animal bedding if so designated by EHS and IACUC review; emptied needles, syringes, IV bags and tubing, drug vials or bottles; and any material used to clean up a spill of cytotoxic drugs.

**Cultures:** microorganisms propagated on or in a solid or liquid medium for purposes of isolation, identification, diagnosis, research or storage.

**Decontamination:** use of physical or chemical means to remove, inactivate, or destroy pathogens on a surface or item so that they are no longer capable of transmitting infectious particles and the surface or item is rendered safe for handling, use, or disposal; the destruction of microorganisms to some lower level, but not necessarily to zero.

**Disinfectant:** a chemical agent used on inanimate objects (e.g., floors, walls, or sinks) to destroy virtually all recognized pathogenic microorganisms, but not necessarily all microbial forms (e.g., bacterial endospores). The U.S. Environmental Protection Agency
(EPA) groups disinfectants on the basis of whether the product label claims limited, general, or hospital disinfectant capabilities.

**Note:** *Intermediate-level disinfectant:* Liquid chemical germicide registered with EPA as a hospital disinfectant and with a label claim of potency as tuberculocidal

**Note:** *Low-level disinfectant:* Liquid chemical germicide registered with EPA as a hospital disinfectant. OSHA requires low-level hospital disinfectants also to have a label claim for potency against HIV and HBV if used for disinfecting clinical contact surfaces

**Disinfection:** the elimination of most, or all, pathogenic microorganisms on inanimate objects with the exception of bacterial spores.

**Disease vector:** any animal, insect, bacterium or virus capable of transmitting disease, illness or harm to humans.

**Dry, solid wastes:** those regulated medical wastes that dry solid materials, which are appropriately disinfected or treated by steam sterilization or autoclaving

**Drug:** substances defined by the Federal Food, Drug, and Cosmetic Act, as amended (21 USCS Section 321(g)(1)) including (1) substances recognized in the official United States Pharmacopeia, official Homoeopathic Pharmacopoeia of the United States, or official National Formulary, or any supplement to any of them; (2) substances intended for use in the diagnosis, cure, mitigation, treatment, or prevention of disease in man or other animals; (3) substances (other than food) intended to affect the structure or any function of the body of man or other animals; and (4) substances intended for use as a component of any substance specified in any of the above.

**Empty container:** a container or inner liner removed from a container that has been emptied by the generator as much as possible using methods commonly used to remove waste or material from containers (e.g., if the material was pourable, then no material can be poured or drained from the container; if the material was not pourable, then no material can reasonably be removed by scraping).

**Environmental release:** any event when an infectious material is released outside of any protective packaging, or containment device (biological safety cabinet, containment centrifuge, etc.) resulting in a potential release to the non-laboratory environment.

**Exposure:** any event when an infectious material is released outside of its protective packaging, or containment device, resulting in known or suspected physical contact with humans or animals; any actual and specific eye, mouth, other mucous membrane, non-intact skin or parenteral contact with blood or other potentially infectious material resulting from performance of employee’s duties.

**Hazardous waste:** those substances and materials defined or classified as such by the Hazardous Waste Commission pursuant to 25-15-302, C.R.S., as amended.
**Household medical waste:** any medical waste generated by households. Does not include medical waste generated at health and residential care facilities regulated under the Standards for Hospitals and Health Facilities (6 CCR 1011-1).

**Incinerate-Only Wastes:** those wastes which cannot be appropriately disinfected or treated by steam sterilization or autoclaving and which must be treated by incineration in an EPA-permitted biological waste incinerator, followed by landfill disposal of the ash generated in the incineration process.

**Note:** CU Denver uses this method for regulated medical wastes, in an incinerator which is engineered to burn these wastes completely and stay within EPA emissions standards.

This waste stream typically consists of human pathological specimens, tissues\(^2\), etc. and trace contaminated waste items generated in the preparation or use of cytotoxic or chemotherapy drugs in laboratory or clinical settings. Animal tissues and specimens will normally be disposed of in the OLAR tissue digester. Types of biomedical wastes which must be incinerated are listed below. A list of common cytotoxic/chemotherapy drugs is available from EHS and in Appendix C of this document.

Examples of trace chemotherapy (antineoplastic/cytotoxic) drug wastes include intravenous tubing, bags, bottles, vials and syringes incidental to the preparation and administration of chemotherapy drugs. Such wastes must be "EMPTY" per the RCRA criteria and definition, containing only residual amounts of cytotoxic or chemotherapy drugs, that are less than 3% by volume.

**Absolutely NO full or partially full chemotherapy containers or vials may be disposed of as infectious waste. They must be turned in as RCRA hazardous chemical waste.**\(^3\)

Any pathological specimens, which are in a chemical preservative, must have the preservative decanted\(^4\) prior to disposal of tissues in the biomedical waste containers, for incineration.

**Infectious Materials:** any material known or reasonably expected to contain a pathogen, a micro-organism (including bacteria, viruses, rickettsia, parasites, fungi) or other agent, such as a proteinaceous infectious particle (prion), that can cause disease in humans, animals or plants.

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\(^2\) Animal wastes in these categories, generated at the Anschutz Medical Campus CCM vivaria will generally be disposed of in the tissue digester. Animal wastes in these categories, generated at any other UCD vivaria will need typically need incineration.  
\(^3\) All RCRA wastes are to be turned in to the Chemical Hazardous Materials Management Section, EHS, as chemical wastes. 
\(^4\) Preservatives are to be turned in to the Chemical Hazardous Materials Management Section, EHS, as chemical wastes.
**Infectious Waste:** waste containing pathogens or biologically active material which because of its type, concentration and quantity could present a potential hazard to human health when improperly handled, stored, processed, transported or disposed of. Includes contaminated animal bedding from animals known to have been exposed to infectious materials during research.

**Isolation Waste:** contaminated material from humans or animals that are isolated because they are suspected or known to be infected with an infectious agent capable of causing a highly communicable, possibly lethal disease. National biosafety guidelines developed by agencies such as the U.S. Department of Health and Human Services, National Institutes of Health or the Centers for Disease Control and other medical professionals should be referenced when making this determination.

**Liquid Waste:** any waste material that is determined to contain “free liquid”. Liquid wastes will include those liquids generated in tissue culture work, from work with human or animal subjects (blood, bodily fluids, serum, plasma, bronchoalveolar lavage, etc.), which may or may not contain pathogens or recombinant DNA, which can be effectively and appropriately treated by steam sterilization or autoclaving.

**Liquid biological or biohazardous wastes:** any liquid waste containing known infectious materials, potentially infectious materials, recombinant DNA materials; or human blood, blood products (such as serum, plasma, and other blood components) or other bodily fluids. Some liquid biological wastes, particularly the media used to culture cell lines, (with or without rDNA) or infectious agents, will require sterilization or disinfection to inactivate the agent before disposal to the sewage system.

**Medical Waste** includes wastes generated from CU Denver research, clinical and academic laboratory operations:
- in working with recombinant DNA or recombinant RNA materials;
- in research involving human, plant or animal tissue culture materials including human, plant and animal cell lines in culture;
- in working with human and animal blood, bodily fluids and tissues, etc. Human blood and blood products and body fluids consisting of serum, plasma and other blood components, cerebrospinal fluid, synovial fluid, pleural fluid, peritoneal fluid, pericardial fluid, and amniotic fluid
- the diagnosis, treatment, immunization, or care of humans or animals;
- human pathological/anatomical waste consisting of tissues and body parts that are discarded from surgical, obstetrical, autopsy, and laboratory procedures and/or during in the preparation of a body for cremation or interment;
- research animal carcasses, body parts, and bedding which are known or suspected of harboring an infectious agent materials, including those generated during necropsy procedures;
- in research pertaining to the production or testing of microbiologicals;
- in research using human or animal pathogens (viruses, bacteria, parasites, or other micro-organisms); or
any residue or contaminated soil, water, or other debris resulting from the cleanup of a spill or release of medical waste.

“Sharps” including needles, “safety” or “safer” needle devices, razors, scalpel blades, glass Pasteur pipettes, etc. which can puncture skin;

All materials from persons or animals having a disease caused by an infectious agent/organism in RG2, RG3 or RG4.

Wastes presumed to be medical waste include certain radioactive wastes, blood and body fluids, potentially infectious waste, pathological waste, non-RCRA C (hazardous waste) waste pharmaceuticals and vaccines, sharps, trauma scene waste, and any additional waste determined to pose a sufficient risk of infectiousness as established by the Colorado Department of Public Health and Environment on a case-by-case basis.

Exceptions: Patient-related wastes such as saliva, nasal secretions, sweat, tears, vomitus, urine or feces that are not contaminated with visible blood and/or are not related to isolation wastes.

Medical Waste Generator: any person whose act or process produces medical waste. This includes, but is not limited to, generators at medical, dental or veterinary offices, clinics, hospitals, or surgery centers; ambulances and other emergency medical responders; medical or research laboratories; facilities holding shot clinics or health fairs; other health-related facilities or events; educational and research facilities.

Medical Waste Management Plan: a document that must be developed and implemented by medical waste generators that designates all of the medical wastes generated by the facility, waste handling techniques to be used at the facility, contingency plans for spills or releases, staff training requirements, and designation of the person responsible for implementation of the management plan.

Medical waste treatment: any validated method, technique, or process designed to change the biological character or composition of a medical waste so as to minimize its potential to harm human health or the environment.

Microbiologicals: a diagnostic, preventive, or therapeutic preparation made from living organisms and their products, intended for use in diagnosing, immunizing, or treating humans or animals, or in related research.

Mixed infectious / chemical wastes: wastes that contain some infectious biological agent (i.e. human, animal or plant pathogen) in addition to a chemical waste. Such wastes generally cannot be autoclaved and may not be suitable for other chemical decontamination methods. Consult with EHS before you generate such wastes to assure you have an appropriate SOP.

Municipal Solid Waste (MSW): includes general office, household, community, or other wastes or trash, which does not contain hazardous materials.
Pathogens: disease-causing organisms

Pathological waste: all tissues, organs, limbs, products of conception, and other body parts removed from the whole body. This waste stream includes, but is not limited to, tissues; organs; body parts removed during surgery, autopsy or other medical procedures; and human anatomical remains. It also includes contaminated animal tissue (including animal carcasses and body parts) from animals known to have been exposed to infectious substances during research, production of biologicals, testing of pharmaceuticals, or other exposures and those known or suspected of being contaminated with infectious substances contagious to humans. Pathological Wastes must not include preservative agents, e.g. formalin, formaldehyde. These must be decanted into an appropriate container and disposed of as chemical wastes.

Pharmaceutical: any prescription or over-the-counter chemical product, vaccine or allergenic that is intended for use in the diagnosis, cure, mitigation, treatment, or prevention of disease in humans or animals. This waste stream includes, but is not limited to, drugs, pills or tablets; medicinal gums or lozenges; medicinal liquids, ointments and lotions; intravenous (IV) or other compounded solutions; live vaccines; non-hazardous attenuated vaccines; allergenics; medicinal shampoos; antiseptics; medicinal dermal patches; and any delivery devices with the primary purpose to deliver or dispense a medicinal chemical product, vaccine or allergenic. This category includes drugs as defined by the Federal Food, Drug, and Cosmetic Act, as amended (21 USCS Section 321(g)(1)).

Point of Use Container: Any container or receptacle used in the lab to store the waste prior to disposal in the designated RMW transport containers.

Potentially infectious waste: any waste known or suspected to be contaminated with a transmissible infectious agent potentially capable of causing disease or injury.

Prion: Protein particle lacking nucleic acid that has been implicated as the cause of certain neurodegenerative diseases (e.g., scrapie, CJD, and bovine spongiform encephalopathy [BSE]).

Putrescible wastes: those solid wastes that contain organic matter capable of being decomposed by microorganisms, and of such a character and proportion as to be capable of attracting or providing food for birds or disease vectors.

Radioactive medical waste: Low-level radioactive wastes generated by administering radiopharmaceuticals, performing nuclear medicine procedures, performing radioimmunology procedures or by using radioactive traces in diagnostic procedures or medical research. Includes, but is not limited to, contaminated wastes from humans or animals undergoing procedures using low level radioactive materials, such as biological waste and discarded materials contaminated with blood, excreta, exudates or secretions; contaminated laboratory trash; and containers used to store radioactive

Recombinant DNA:

**Render non-infectious**: to treat infectious waste by inactivating pathogens and other biologically active material to a level that will no longer present a potential hazard of infection when managed, stored or disposed.

**RMW Transport Container**: Color-coded and appropriately marked containers (red or yellow) provided by the contracted vendor, for the transport of Regulated Medical Wastes.

**Sharps**: any discarded article that may purposely or accidentally puncture or cut the skin or mucosa. This waste stream includes, but is not limited to, used needles; scalpel blades; syringes (with attached needle); pen needles; lancets; Pasteur pipettes; broken blood vials; needles with attached tubing; suture needles; razor blades; broken culture tubes and culture dishes, regardless of presence of infectious substances; broken and unbroken glassware that were in contact with infectious substances (e.g., used slides and cover slips); disposable trocars; and discarded unused or expired hypodermic needles, suture needles, syringes, and scalpel blades. Other items to be included when they have been in contact with potentially infectious materials include: plastic serological pipettes, glass (including broken glass), plastic pipette tips, etc.

**Sharps container**: a container that is closable, puncture resistant, leakproof on the sides and bottom, and labeled or color-coded in accordance with Occupational Safety and Health Administration (OSHA) requirements.

**SOP**: Standard Operating Procedure. Written, written document or instruction detailing all relevant steps and activities of a process or procedure. In this context, SOPs for segregation, transport, treatment and disposal of regulated medical wastes, which can be incorporated into the laboratory procedures for clinical, academic or research processes or experiments.

**Sterilization**: treatment method that destroy all forms of microbial life including high numbers of bacterial spores, either by steam under pressure (autoclave), gas (ethylene oxide), dry heat, or immersion in EPA-approved chemical “sterilant” for prolonged period of time, e.g., 6-10 hours or according to manufacturers’ instructions.

**Steam Sterilization**

Steam sterilization of materials is a dependable procedure for the destruction of all forms of microbial life. Steam sterilization generally denotes heating in an autoclave utilizing saturated steam under a pressure of approximately 15 pounds per square inch (psi) to achieve a chamber temperature of at least 121°C (250°F) for a minimum of 15
minutes. The time is measured after the temperature of the material being sterilized reaches 121°C (250°F).

Physical controls such as pressure gauges and thermometers are widely used but are considered secondary methods of sterilization. The use of appropriate biological indicators at locations throughout the autoclave is considered the best indicator of sterilization.

Note: Liquid chemical “sterilants” should be used only on those instruments that are impossible to sterilize or disinfect with heat.

Note: Autoclave or steam sterilization for up to 90 minutes at 250°F (121°C), depending on the size of the load and type container, may be necessary to ensure an adequate decontamination cycle for solid regulated medical wastes.

Stocks: bacterial or other microbial strains that have been maintained under laboratory conditions as representative of its type.

Trace chemotherapy waste: any empty container used to hold an antineoplastic drug (except P-listed hazardous waste), and contaminated items used with these drugs, such as gowns, wipes, or gloves; no standing liquids; trace by definition must be less than 3% by volume of the empty container.

Transportation: transport any form of transport. Transportation includes pedestrian transportation.

Water pollution: the manmade or man-induced alteration of the background physical, chemical, biological or radiological integrity of ground water or surface water.
APPENDIX B

SINK DISPOSAL GUIDELINES

Hazardous materials cannot be discarded down the drain. Collect these materials in properly labeled and chemically compatible containers. For removal, complete the Chemical Waste Disposal form. Please call Environmental Health and Safety at (303) 724-9345 if you have any questions. The list of examples below is NOT all-inclusive.

These materials CANNOT be sink-disposed.

1. **FLAMMABLE SOLVENTS**
   Acetone, acetonitrile, alkanes, alcohols, amines, aromatics, ether, ketones, pyridine, toluene, xylene (aqueous alcohol solutions must be collected for disposal through EHS).

2. **CORROSIVE MATERIALS**
   Acids, bases, ammonium hydroxide, hydrochloric acid, sodium hydroxide, sulfuric acid, etc.

3. **HALOGENATED SOLVENTS**
   Carbon tetrachloride, chloroform, Freon, halothane, methylene chloride, trichloroethane.

4. **TOXIC CHEMICALS/SOLVENTS/HEAVY METALS**
   Acrylamide, cyanides, dyes, formaldehyde, mercaptans, mercaptoethanol, phenol, carcinogens, mutagens, teratogens, arsenic, barium, cadmium, chromium, copper, lead, mercury, etc.

5. **DRUGS/PHARMACEUTICALS**
   All drugs, pharmaceuticals and DEA controlled substances must be disposed of through EHS.

6. **NON WATER-SOLUBLE MATERIALS**
   Gels, kerosene, mineral oil, solid wastes, vacuum pump oil.

7. **INFECTIOUS OR BIOHAZARDOUS MATERIALS**
   Whole blood (human or animal), prohibited tissue culture materials, infectious agents, pathogens or recombinant DNA material; unless otherwise rendered non-infectious by an approved method. Consult the Biosafety Office. Unsupported judgments are not acceptable.

8. **RADIOACTIVE MATERIALS**
   Only H-3 in concentrations less than 10 microcuries per liter (subject to other restrictions) may be sink-disposed. Consult the Radioactive Waste Disposal Manual. All potentially contaminated wastes must be assayed, and assays must be documented before disposal. Unsupported judgments are not acceptable.

9. **DEIONIZED WATER**
   Undiluted deionized water is corrosive to building plumbing. Run copious amounts of tap water down the drain whenever DI water is discharged to the sanitary sewer.

10. **EQUIPMENT DISCHARGE**
    Collect discharge from equipment until/unless EHS has verified the discharge to sanitary sewer is acceptable. Ensure that photographic processing units are equipped with silver recovery units that are serviced routinely and that records are maintained for these units (contact EHS to register your unit).

11. **SOLID MATERIALS**
    Any solid or viscous material which could cause an obstruction to flow in the sewers or any particle greater than one-half (1/2) inch in any dimension.

CAD-001 Revised 4/30/2012
## Appendix C
### Cytotoxic/Chemotherapy Drugs

This lists many of the common antineoplastic drugs; it is not an all-inclusive list.

<table>
<thead>
<tr>
<th>DRUG</th>
<th>TRADE NAME DRUG</th>
<th>RCRA LISTED</th>
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</thead>
<tbody>
<tr>
<td>Actinomycin D</td>
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</tr>
<tr>
<td>Adriamycin</td>
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</tr>
<tr>
<td>Asparaginase</td>
<td>Elspar, Oncaspar, Pegaspargase</td>
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<tr>
<td>Bleomycin</td>
<td>Blenoxane</td>
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<tr>
<td>Carboplatin</td>
<td>Paraplatin, CBDCA</td>
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<tr>
<td>Carmustine</td>
<td>BCNU, BiCNU, Gliadel</td>
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<tr>
<td>Chlorambucil</td>
<td>Leukeran,</td>
<td>U035</td>
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<tr>
<td>Cisplatin</td>
<td>Plantinol</td>
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<tr>
<td>Cyclophosphamide</td>
<td>Cytoxan, Neosar, CTX,</td>
<td>U058</td>
</tr>
<tr>
<td>Cytarabine</td>
<td>Cyosar-U, Ara-C, Cytosine arabinoside, DepoCyt</td>
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<tr>
<td>Dacarbazine</td>
<td>DTIC, DTIC-Dome</td>
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<tr>
<td>Daunorubicin</td>
<td>Daunomycin, Cerubindine,</td>
<td>U059</td>
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<tr>
<td>Doxorubicin</td>
<td>Rubex</td>
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<td>Epirubicin</td>
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<td>Etoposide</td>
<td>Etopophos, Toposar, VP-16, VePesid</td>
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<tr>
<td>Fluorouracil</td>
<td>Adrucil, Efudex, Fluoroplex, 5-FU</td>
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<td>Gemcitabine</td>
<td>Gemacitabine</td>
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<td>Hydroxyurea</td>
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<td>Idarubicin</td>
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<td>Irinotecan</td>
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<tr>
<td>Melphalan</td>
<td>Alkeran</td>
<td>U150</td>
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<tr>
<td>Mercaptopurine</td>
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<td>Methotrexate</td>
<td>MTX Injection</td>
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<tr>
<td>Mitomycin</td>
<td>Mutamycin, Mitomycin - C,</td>
<td>U010</td>
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<td>Mitozantrone</td>
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<td>Oxaliplatin</td>
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<td>Procarbazine</td>
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<td>Steroids</td>
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<tr>
<td>Streptozotocin</td>
<td>Zanosar,</td>
<td>U206</td>
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<td>Taxotere</td>
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<td>Tamozolomide</td>
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<td>Topotecan</td>
<td>Hycamtn</td>
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<td>Treosulfan</td>
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<tr>
<td>UFT (Uracil-tegufur)</td>
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<tr>
<td>Uracil Mustard</td>
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<td>U237</td>
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<tr>
<td>Vinblastine</td>
<td>Velban,</td>
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<tr>
<td>Vincristine</td>
<td>Oncovin, Vincasar</td>
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</tr>
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Appendix D

Autoclave Validation/Quality Assurance

Standard Operating Procedures

All infectious wastes known or suspected of harboring Category A infectious agents must be treated by autoclaving on campus, in an appropriately maintained and serviced autoclave, prior to collection, transport and further off-site treatment and final disposal.

All Category A materials and wastes will be appropriately treated on-site then wastes co-mingled with other RMW for secondary treatment off-site and final disposal. This is mandatory to comply with U.S. Dept. of Transportation regulations for the movement of Category A infectious agents in the regulated medical waste stream.

For each autoclave used to sterilize Category A materials, monthly spore testing will be conducted by the Biosafety Office or the PI or laboratory staff.

For each PI who works with a Category A infectious material, the University must assure that each autoclave is checked by a competent service provider not less than every 3 months (quarterly) to assure proper function. CU Denver Facilities Operations & Maintenance Autoclave team is the competent service provider of record.

The services must include preventative maintenance, temperature calibration, and verification of adequate disinfection. Verification of adequate disinfection shall be completed by the use of a spore test which demonstrates adequately that sterilization has occurred.

Records to be maintained include:
1. Documentation of each (quarterly) autoclave maintenance service visit. The record should show that the autoclave is fully operational as well as the date that service was performed.
2. Documentation of any deficiencies and their correction.
3. Documentation of monthly spore testing conducted by the Biosafety Office, the PI or laboratory staff.
Appendix E

Biomedical Radioactive Wastes

**Biological non-carcass waste** is a radioactive waste classification that applies to any biological material that does not qualify as "animal carcasses or tissue" including:
- animal bedding from animals dosed with radioactive isotopes;
- sharps contaminated with biological materials and radioactive isotopes, in approved sharps containers;
- plastic tubing, culture vessels of various types, and all other liquids and solid materials contaminated with small amounts of biological materials and radioisotopes.

The category of biological non-carcass wastes includes all solid or liquid radioactive waste materials that were ever previously classifiable as infectious before they were disinfected, no matter how clean and dry these materials may appear to be after the process of disinfecting them is completed.

Biological non-carcass wastes should be packaged in the manner prescribed by the Radiation Safety Office.

Biological non-carcass liquids, apart from their classification, are packaged the same as aqueous liquid wastes.

**Infectious Radioactive Wastes** include all wastes that have ever been in contact with human blood, serum, or other human bodily fluids, human, animal or plant pathogens, and are also radioactive. Human cell culture lines are also considered a potentially infectious material, unless they have been specifically demonstrated to be free of pathogens.

**Infectious radioactive wastes must be disinfected by appropriate methods and classified as biological non-carcass wastes for the radioactive waste stream.**

Autoclaving may be feasible as a means of disinfecting, but the Radiation Safety Officer (RSO) must be contacted for specific direction to address the potential for release of radioactive materials. A written Standard Operating Procedure should be reviewed and approved by the RSO and the Biosafety Office for autoclave treatment of infectious radioactive wastes.

Liquid, potentially infectious wastes that cannot otherwise be autoclaved must have a documented Standard Operating Procedure that complies with both Radiation Safety and all Regulated Medical Waste requirements.

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5 **NOTE:** Animal blood is classified as "animal tissue," not "biological non-carcass" per the Radiation Safety Program, Radioactive Waste Manual, etc.
Solid materials, including absorptive materials, are typically treated by immersion for appropriate periods of time in the appropriate disinfectants, followed by pouring out or decanting off the disinfectant liquid into a liquid waste container.

Radioactive sharps contaminated with human blood or other infectious materials must be disinfected before or after being placed into a sharps container. The resulting container of disinfected sharps can then be presented to EHS as “biological non-carcass waste”.

All questions and inquiries should be directed to the Radiation and Biosafety Offices, Department of Environmental Health and Safety, 303-724-0345.
Appendix F

Campus-Specific Guidelines
CU Denver uses a third party waste contractor for the segregation, treatment and disposal of biomedical wastes. The tubs they provide are for the transport of biomedical wastes and are a shared resource in labs at the Anschutz Medical Campus. Tubs must be lined with a red bag. The red bag must be tied shut when full. The lid must be placed on the tub when full. Tubs should weigh about 35 to 40 pounds when full. They are picked up by EHS staff when full. Call 303-724-0111 in the event tubs are not picked up in a timely manner. Empty tubs and red bags are delivered to laboratories by EHS staff.

Questions regarding biomedical waste tubs should be directed to 303-724-0111/40235/45954/47396.

<table>
<thead>
<tr>
<th>Description of Waste Material</th>
<th>Treatment &amp; Disposal</th>
<th>Segregation Protocol</th>
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<tbody>
<tr>
<td>Human tissues, organs, pathological wastes and all wastes from Creutzfeldt-Jakob disease cases or other prion wastes.</td>
<td>Must be incinerated.</td>
<td>Use Yellow regulated medical waste tubs.</td>
</tr>
<tr>
<td>Non-human primate tissues or organs.</td>
<td>Placed in the appropriate CCM freezer, refrigerator, or turn in to the OLAR carcass disposal staff. Disposal in the tissue digester, following CCM Standard Operating Procedures.</td>
<td>Place ONLY THE TISSUES or ORGANS in a clear, labeled zip lock carcass bag or equivalent. No absorbent pads, no gauze, no gloves, no trash of any kind should be placed inside the carcass bags. Someone must be present in the laboratory to hand the wastes to OLAR staff.</td>
</tr>
<tr>
<td>All other animal carcasses, tissues or organs.</td>
<td>Placed in the appropriate CCM freezer, refrigerator, or turn in to the OLAR carcass disposal staff. Disposal in the tissue digester, following CCM Standard Operating Procedures.</td>
<td>Place ONLY THE CARCASSES in a clear, labeled zip lock carcass bag or equivalent. No absorbent pads, no gauze, no gloves, no trash of any kind should be placed inside the carcass bags. Someone must be present in the laboratory to hand the wastes to OLAR staff.</td>
</tr>
</tbody>
</table>
**UNIVERSITY OF COLORADO DENVER**  
**BIOMEDICAL WASTE STREAM SEGREGATION**  
**ANSCHUTZ MEDICAL CAMPUS**

If your biomedical wastes contains any radioactive materials or chemicals, these materials may not be addressed here. Refer to the Radiation Safety Waste Manual and/or the Hazardous Waste Generators Manual for instructions on disposal of these wastes or contact EHS for assistance (303-724-0345). If you are not located on Anschutz Medical Campus, contact the Biosafety Office, 303-724-0235 if you have questions.

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<th>Description of Waste Material</th>
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<tr>
<td>Contaminated animal bedding from animals administered hazardous drugs or chemicals, or cytotoxic/chemotherapy agents.</td>
<td>Must be incinerated or otherwise disposed of per SOP developed in consultation with EHS, OLAR manager and the PI.</td>
<td>Collect for prescribed time period for the agent per established SOP. Use appropriate waste containers as stated in written SOP.</td>
</tr>
<tr>
<td>Cell culture wastes, plates, flasks and items used to manipulate cultures that contain hazardous drugs or chemicals or cytotoxic / chemotherapy agents.</td>
<td>Must be incinerated or otherwise disposed of per SOP developed in consultation with EHS, and the PI.</td>
<td>Sharps used to administer hazardous drugs must be placed in sharps containers designated and labeled for cytotoxic agents. Use Yellow tubs for this sharps, trace chemotherapy waste or other containers as designated in written SOP.</td>
</tr>
<tr>
<td>Cultures and stocks of infectious agents classified as Risk Group 3 human pathogens, Select Agents, or agricultural pathogens.</td>
<td>Must be autoclaved by the laboratory staff, followed by segregation as biomedical waste for further off-site treatment and disposal.</td>
<td>Individual researchers must autoclave at the laboratory, in appropriate autoclave bags. Then segregated and co-mingled with other biomedical wastes in Red tubs for off-site autoclaving, grinding and landfill disposal.</td>
</tr>
<tr>
<td>Contaminated animal bedding from animals administered infectious agents that present a human or animal health risk.</td>
<td>Must be autoclaved out of the ABSL suite, followed by segregation as biomedical waste for further off-site treatment and disposal.</td>
<td>All animals are housed at ABSL2 or ABSL3 as appropriate and all materials will be autoclaved out of the ABSL facility per CCM Standard Operating Procedures. It is then segregated and co-mingled with other biomedical wastes in in Red tubs for off-site autoclaving, grinding and landfill disposal.</td>
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**UNIVERSITY OF COLORADO DENVER**  
**BIOMEDICAL WASTE STREAM SEGREGATION**  
**ANSCHUTZ MEDICAL CAMPUS**

If your biomedical wastes contains any *radioactive* materials or *chemicals*, these materials may not be addressed here. Refer to the Radiation Safety Waste Manual and/or the Hazardous Waste Generators Manual for instructions on disposal of those wastes or contact EHS for assistance (303-724-0345). If you are not located on Anschutz Medical Campus, contact the Biosafety Office, 303-724-0235 if you have questions.

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<tr>
<td><strong>Sharps Wastes:</strong> needles, scalpels, razor blades, lancets, <em>Pasteur pipettes</em>, and microscope slides, if unfixed tissues</td>
<td>Segregated as biomedical wastes for off-site treatment and disposal.</td>
<td>Sharps must be placed in rigid, puncture proof sharps containers. It is then segregated and co-mingled with other biomedical wastes in in <em>Red</em> tubs for off-site autoclaving, grinding and landfill disposal.</td>
</tr>
<tr>
<td>Human blood, bodily fluids, other potentially infectious fluids</td>
<td>Segregated, collected in a leak proof container, and solidified for off-site treatment and disposal.</td>
<td><strong>Sanitary sewer disposal may be appropriate in some but not all cases.</strong> Consult with Biosafety Office for sanitary sewer disposal protocols.</td>
</tr>
<tr>
<td>Cell culture wastes, plates, flasks and items used to manipulate cultures that are not otherwise contaminated with chemicals or RAM.</td>
<td>Segregated as biomedical wastes for off-site treatment and disposal.</td>
<td>Segregated and disposed of in <em>Red</em> tubs, for off-site autoclave, grinding and landfill disposal.</td>
</tr>
<tr>
<td>Cultures and stock vials of infectious agents, tissue culture/cell lines derived from human cells; tissue culture/cell lines immortalized with infectious agents (CMV, EBV, etc)</td>
<td>Autoclave on-site, and co-mingled with other biomedical wastes for off-site treatment and disposal.</td>
<td>Segregated and disposed of in <em>Red</em> tubs, for off-site autoclave, grinding and landfill disposal.</td>
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MUNICIPAL SOLID WASTES THAT SHOULD NOT BE PLACED IN BIOMEDICAL WASTE STREAM

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<tr>
<th>Description</th>
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<tr>
<td>Common patient-related wastes such as urine cups, bandages, garments, bedding, etc., not otherwise contaminated with chemicals or RAM.</td>
<td>Empty urine into sanitary sewer system. Recap emptied urine cups. Municipal Solid Waste (regular trash).</td>
<td>Not likely to release liquid or caked-on blood, bodily fluids, tissues or other potentially infectious materials during waste handling and transportation.</td>
</tr>
<tr>
<td>Uncontaminated animal bedding &amp; cages—no infectious agents, hazardous drugs or chemicals.</td>
<td>None required. Municipal Solid Waste (regular trash).</td>
<td>Follow Standard Operating Procedures for OLAR.</td>
</tr>
<tr>
<td>Uncontaminated solid laboratory wastes, no contact with biological agents, chemical or RAM: lab plastic ware, disposable transfer pipettes, gloves, plastic pipette tips, plastic trays, plastic or glass serological pipettes, paper towels, cardboard boxes, etc.</td>
<td>None required. Municipal Solid Waste (regular trash).</td>
<td>Uncontaminated lab plasticware which could puncture a plastic bag but which is not infectious, should be collected in a sturdy, sealed cardboard box and picked up by housekeeping for disposal in the trash compactor.</td>
</tr>
<tr>
<td>Uncontaminated broken glassware (no contact with biological agents, chemical or RAM)</td>
<td>Municipal Solid Waste (regular trash). Picked up by housekeeping for disposal in the trash compactor</td>
<td>Collect in a rigid, well-sealed cardboard box. Mark as “Broken Glassware.” Do not overload these boxes.</td>
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CU Denver uses a third party waste contractor for the segregation, treatment and disposal of biomedical wastes. The tubs they provide are for the transport of biomedical wastes at the Denver Campus. Tubs must be lined with a red bag. The red bag must be tied shut when full. The lid must be placed on the tub when full. Tubs should weigh about 35 to 40 pounds when full. They are picked up by EHS staff when full. Call 303-556-6779 to arrange for tub pickup. Empty tubs and red bags are delivered to laboratories by EHS staff. Questions regarding proper segregation of biomedical wastes should be directed to 303-724-0235/5954/7395.

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**UNIVERSITY OF COLORADO DENVER**

**BIOMEDICAL WASTE STREAM SEGREGATION**

**DENVER CAMPUS**

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<td>Sharps used to administer hazardous drugs must be placed in sharps containers designated and labeled for cytotoxic agents. Use Yellow tubs for this sharps, trace chemotherapy waste or other containers as designated in written SOP.</td>
</tr>
<tr>
<td>Cultures and stocks of infectious agents classified as Risk Group 2 human pathogens, agricultural pathogens or recombinant DNA.</td>
<td>Segregation as biomedical waste for further off-site treatment and disposal.</td>
<td>Individual researchers must autoclave at the laboratory, in appropriate autoclave bags. Then segregated and co-mingled with other biomedical wastes in Red tubs for off-site autoclaving, grinding and landfill disposal. There can be no standing liquids in the waste tubs. <strong>LIQUID WASTES</strong> must be segregated, collected in a leak proof container, and solidified with Isolyzer or ISOSORB or equivalent product, then dispose of in Red tubs. OR autoclaved on site with an established SOP. Contact EHS for information on purchasing Isolyzer or equivalent product.</td>
</tr>
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<td><strong>Sharps Wastes:</strong> needles, scalpels, razor blades, lancets, Pasteur pipettes, and microscope slides, if unfixed tissues</td>
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<tr>
<td>Cell culture wastes, plates, flasks and items used to manipulate cultures that are <strong>not otherwise contaminated with chemicals or RAM.</strong></td>
<td>Segregated as biomedical wastes for off-site treatment and disposal.</td>
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