Newton Court Complex
Chemical, Radiological, and Biological/Medical Waste Disposal Policies and Procedures
October, 2008

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I. Introduction

Due to the remote location of this complex with respect to the main campus, specific regulations regarding the storage, packaging, transportation, and disposal of hazardous waste generated at the Newton Court Complex require the following:

- Hazardous waste must be stored at or near the point of generation (i.e., in the laboratory).

- If the waste is included in the California List of Extremely Hazardous Wastes, it must not be accumulated onsite for more than 90 days. All other hazardous waste may be accumulated for one year. See section V. (B) for more information on Extremely Hazardous Waste.

- A dedicated hazardous waste packaging facility/room must be available for use by the vendor and the Office of Environmental Health and Safety.

- Hazardous waste manifests and other regulatory documents must be maintained on-site.

The Office of Environmental Health and Safety will assist the Newton Court Complex faculty and staff in meeting the above requirements through the following policies and procedures for each type of hazardous waste generated. If at any time you have questions regarding hazardous chemical or radiological waste, please contact EH&S at 752-1493 or hazwaste@ucdavis.edu. For question regarding medical waste please contact the EH&S main desk at 752-1493.

II. Packaging Facility

A room will be needed by the Office of Environmental Health and Safety and the hazardous waste vendor to collect, organize, and package the hazardous waste, and to prepare documentation for the transportation and disposal of the hazardous waste.

The facility design requirements are as follows:

- The room must be dedicated to the hazardous waste staging and packaging.
- The room must have limited access and be secured (i.e., keyed separately).
- Adequate shelving, secondary containment, labeling or signage, and flammable liquid storage to ensure segregation of incompatible waste streams.
- Secure storage of hazardous waste manifests and required documents.
- Impermeable flooring.
- Adequate ventilation.
- Direct access to loading dock/area.

At this time, room 425 in the Medical Neuroscience building (1515 Newton Court) will be the Packaging Facility.

III. Materials/Resources required for the Packaging Facility

The materials and resources to be supplied by the Newton Court Complex in order to properly operate the packaging facility (i.e., segregate and contain the hazardous wastes) are as follows:

- One 4'x6' worktable.
- Two stools with backrests or chairs.
- Lockable file cabinet for the hazardous waste manifests and laboratory inventories.

IV. Materials/Resources Supplied by the Office of Environmental Health and Safety

The Office of Environmental Health and Safety will supply the following:

- Standard chemical and radiological waste identification tags.
- Standard forms for chemical inventories and radiological and medical sharps disposal.
- Absorbent for leaks or spills,
- All materials for packing and removal of hazardous waste.
- Staff to accept and organize the hazardous waste prior to removal.
- Vendor liaison.
- Maintenance of the hazardous waste manifests and required documents.

V. Chemical Waste

A. Definition and Classification of Hazardous Materials

The U.S. Department of Transportation (USDOT) defines hazardous material (not waste) to mean a substance or material, that has been determined by the Secretary of Transportation to be capable of posing an unreasonable risk to health, safety, and property when transported in commerce. USDOT divides hazardous materials into the following classes for the purpose of transportation:

- Class 1- Explosives
- Class 2- Compressed Gases (flammable/non-flammable/poison)
- Class 3- Flammable Liquids
- Class 4- Flammable Solids, air and water reactives
- Class 5- Oxidizers and Organic peroxides
- Class 6- Poisons
- Class 7- Radioactive materials
- Class 8- Corrosives
- Class 9- Other (asbestos, etc.)

B. Definition of Hazardous Waste

Hazardous materials becomes a hazardous waste when:

- when the user decides to discard it;
- the material poses a threat to public health or the environment or is mislabeled or inadequately labeled *(unless corrected within 10 days)* or is packaged in a deteriorated or damaged container *(unless corrected within 96 hours)*, regardless of its expiration date;
- the date of expiration has passed, and if the material will not be used for its original purpose, it is considered a "Retrograde material." One year after the expiration date, it is considered a "Recyclable material," and is regulated as a hazardous waste.

Once the material becomes a hazardous waste, it is regulated by the California Department of Toxic Substances (DTSC), and Title 22 of the California Code of Regulations (CCR), and specific storage, labeling, treatment, and disposal restrictions apply.

CCR Title 22 defines hazardous waste as a waste that exhibits any of the following characteristics:

- Ignitability (flash point <140°F, or oxidizers)
- Corrosivity (pH≤2 or ≥12.5)
- Toxicity
- Reactivity (air, water, heat sensitive)

The regulations also contain lists of specific chemicals, which, if included in a waste material, create a presumption that the waste is a hazardous waste. In addition, designated wastestreams from specific manufacturing operations are also classified as hazardous waste.

Extremely hazardous wastes are wastes whose toxicity or reactivity characteristics pose a greater threat to human health or the environment. These wastes have lower accumulation volume thresholds, and require additional documentation for disposal. The California List of Extremely Hazadous Waste is available at: http://safetyservices.ucdavis.edu/environmental-health-safety or California Code of Regulations Title 22, Division 4.5, Chapter 11, Appendix X.

C. Treatment

DTSC defines treatment as any method, technique, or process that changes the physical, chemical, or biological characteristic of any hazardous waste. This includes neutralization, detoxification, or volume reduction.

Treatment of hazardous waste is strictly regulated, and in most instances a permit will be required by DTSC. Contact the Office of Environmental Health and Safety before attempting any waste treatment, or applying for any treatment permit.

D. Waste Minimization

Listed below are various waste minimization alternatives suggested by DTSC and the Office of Environmental Health and Safety.

Material management practices:

- Practice good housekeeping techniques in your laboratory.
- Develop a centralized chemical purchasing, inventory, tracking and storage system.
- Purchase and use the smallest quantity of chemical needed and rotate chemical stock to prevent chemicals from becoming too old to use.
- Use the campus Chemical Recycling Bulletin Board to find another user for any unwanted, usable chemicals instead of labeling and disposing of them as hazardous waste.
- Establish and maintain a proper hazardous waste storage area. This area should be safe from activity or traffic that may cause spills. Maintain secondary containment, provide weather protection, and keep the area clean, organized, and secure.

In order to improve laboratory practices, the following recommendations are provided:

- Use chemicals in small volumes.
- Examine laboratory procedures and substitute less-hazardous or recyclable chemicals whenever possible.
- Incorporate processes for hazardous waste minimization into existing experimental protocols to reduce final volumes of

- Reuse and/or recycle spent solvents and recover metal from spent catalyst.

- Segregate hazardous waste from nonhazardous waste.

- Segregate incompatible waste streams.

- Clearly mark/label contents of all hazardous waste containers.

- Contact your Department's Safety Advisor (DSA) in the Office of Environmental Health and Safety to investigate other options for hazardous waste recycling or off-site treatment.

E. Proper Storage and Segregation in the Laboratory

At at the Newton Court Complex, hazardous waste will be accumulated in the laboratories under regulations often referred to as "Satellite Accumulation Areas." This is limited to hazardous waste accumulated in containers at an initial accumulation point that is in the laboratory, and is under the control of the Principal Investigator (PI).

A PI may accumulate hazardous waste for up to one year from the date of accumulation, **provided** that a maximum volume of 55 gallons of hazardous waste is not exceeded. A PI may accumulate for up to 90 days one quart of extremely hazardous waste(See Sect V.(B)). If the wastestreams generated at the same location are not compatible, a separate 55 gallon or one quart limit shall apply to each group of compatible wastestreams.

The Office of Environmental Health and Safety will arrange with the hazardous waste vendor for hazardous waste removal at least quarterly.

The following general procedures or safe work practices should be followed:

- All hazardous wastes must be stored in suitable containers in good condition and must be sealed at all times unless hazardous waste is being added or removed at that moment. The most suitable container for the hazardous waste is generally the container in which the material was originally received. A secondary container should be used to contain the material in case the primary container is overfilled or leaks.

- All waste streams must be segregated (i.e., compatible) and properly stored to ensure that a chemical reaction would not occur if the waste materials were to leak from the containers and mix. Information to assist you in segregation can be found on Material Safety Data Sheets and/or chemical references. Generally, hazardous wastes should be segregated into the following categories:

  1. Bases (pH >10)
  2. Mineral Acids (pH <4)
  3. Organic Acids (pH <4)
  4. Flammables
  5. Inorganic Oxidizers
  6. Organic Oxidizers
  7. Poisons
  8. Reactives
  9. Mercury Compounds

- Maintain your hazardous waste in a secure area. Access to hazardous waste containers should be limited to those who are properly trained in hazardous waste disposal requirements per the laboratory chemical hygiene and emergency contingency plans.

F. Labeling Requirements

To comply with regulations regarding the accumulation of hazardous waste on-site, all hazardous waste must be labeled with the following information:

- The words “Hazardous Waste”

- Name and address of generator.

- Date of initial accumulation (start date).

- Composition by percentage and physical state of the hazardous waste.

- A statement identifying the particular hazardous properties of the hazardous waste.

Hazardous Waste labels are also available for downloading at the EH&S website. The address is http://safetyservices.ucdavis.edu/environmental-health-safety.

G. Hazardous Waste Removal

Disposal of hazardous wastes via sanitary sewer (sink drains) or solid waste containers is strictly forbidden, and may result in fines and/or imprisonment. All suspected improper disposal or release of hazardous waste to the environment must be reported to Office of Environmental Health and Safety at 752-1493 immediately.

The specific procedures to be implemented for the hazardous waste removal at the Newton Court Complex are as follows:

1. An annual schedule of hazardous waste removal will be arranged by the Office of Environmental Health and Safety and distributed by February 1 of every year.

2. The Medical Neuroscience building (1515 Newton Court) will deliver hazardous waste to the packaging room (room 425) on the morning (typically 9-10 a.m..) of the scheduled hazardous waste removal. An Office of Environmental Health and Safety staff member will be present to receive and segregate the hazardous waste as they are brought to the packaging room. **NOTE:** This room is only for packaging of the hazardous wastes. Do not drop off or store your hazardous waste in this area at any other time.

3. The other Newton Court Complex and Annex facilities will deliver only their hazardous waste pickup request by 9:00 a.m. to the packaging room on the day of the scheduled removal date. Later that day, an Office of Environmental Health and Safety staff member will remove the hazardous waste from the individual laboratories and transport them to the packaging room.

4. All hazardous waste accumulated in the laboratory should be inventoried on an on-going basis. When delivering the wastes to the packaging facility, an accurate and complete inventory using the "Chemical Waste Disposal Form" must be submitted to the Office of Environmental Health and Safety staff member. Any hazardous wastes brought to the packaging room not recorded on the disposal form will not be accepted.

5. On the day of hazardous waste removal, the hazardous waste vendor will package, manifest, and remove all hazardous wastes from the packaging facility. Typically, this will take 4-6 hours. Any hazardous wastes that

are rejected by the hazardous waste vendor will be returned to the laboratory that generated the waste. The Office of Environmental Health and Safety will assist the laboratory in arranging for the proper disposal of any rejected wastes.

6. A representative from the Office of Environmental Health and Safety will be present to review and sign the hazardous waste manifest after it is completed by the hazardous waste vendor.

7. A representative from the Office of Environmental Health and Safety will forward a copy of the hazardous waste manifest to the Department of Toxic Substance Control in Sacramento. EH&S will manage all shipping papers in accordance with applicable regulations. Copies, as required will be maintained on site.

VI. Radioactive Waste

The packaging, labeling, and disposal procedures for radioactive waste generated at the Newton Court Complex will remain unchanged except for the packaging and removal of the liquid scintillation vials.

The radiological waste request forms to be used for all radioactive dry, liquid, and biological waste generated are available at http://safetyservices.ucdavis.edu/environmental-health-safety.

A. Classification of Liquid Scintillation Vials (Mixed Waste)

The material in the liquid scintillation vials is classified as a "mixed waste" because it contains both a chemical and radioactive hazardous waste component. Because of this classification, the restrictions apply:

- the waste must be packaged, labeled, and manifested as hazardous waste (similar chemical hazardous wastes).

- on-campus storage is limited to ten days after removal from the Newton Court Complex.

B. Removal Procedure

1. All requests for disposal of liquid scintillation vials must be made on a separate Radiological Waste Disposal Request Form available at http://safetyservices.ucdavis.edu/environmental-health-safety . The Office of Environmental Health and Safety will collect these requests until enough vials (approximately 15 flats) to fill a drum are ready for disposal. If any individual laboratory has difficulty properly storing a large number of vials prior to the next packaging date, the Office of Environmental Health and Safety should be notified to make special arrangements.

2. The Office of Environmental Health and Safety will contact laboratory personnel and arrange a packaging date that ensures that the material will not be stored at the Environmental Services Facility more than 10 days.

3. Upon arrival at the packaging room, the Office of Environmental Health and Safety staff member will be available to receive the vials. The staff member will inspect the integrity of all the packages/flats receive, and will reject any leaking packages.

4. All vials will be packaged in a DOT drum, labeled, and manifested for transportation to the on-campus Environmental Services Facility.

5. EH&S will manage all shipping papers in accordance with applicable regulations. Copies, as required will be maintained on site.

VII. Biological and Medical Waste

A. Sharps Waste

Sharps waste is composed of instruments used to puncture, cut, or scrape, that when disposed of can cause punctures or cuts. **DO NOT** throw sharps containers or sharps directly into garbage cans or dumpsters.

1. Needles and Syringes:

Containing biological substances:

- Place into a hardwalled sharps container (non-red without biohazard label).
- Label contents, room number and building and dispose of as medical waste.

Containing human pathogen materials:

- Place into a hardwalled sharps container (red with biohazard label).
- Label with room number and building and dispose of as medical waste.

Containing chemical carcinogens

- Place into a hardwalled sharps container (non-red without biohazard label).
- Label with a hazardous waste label, and dispose of as a hazardous chemical waste.

Containing radioactive materials

- Place into a hardwalled sharps container (non-red without biohazard label).
- Label with radioactive tape, and place full sealed container in a dry radioactive waste box.
- Contact EH&S for pick-up as radioactive waste.

2. Laboratory Glass:

Any item that could puncture regular waste bags and endangers waste handlers. **DO NOT** pick up broken glass with your hands, if possible. Wear cut-resistance gloves and use a broom. Collect broken glass as carefully and completely as possible.

Clean or contaminated with nonhazardous materials:

- Place clean glass into a sturdy container marked "Clean Lab Glass."
- Custodial will dispose as nonhazardous waste.
- See SafetyNet #12, "Why Didn't the Custodian Pick Up my Trash" for more information.

Contaminated with biohazardous agent:

- Place into a hard walled sharps container (with biohazard label).
- Label contents, room number and building and dispose of as medical waste.

Contaminated with toxic or hazardous chemicals:

- Place into a hard walled sharps container (non-red without biohazard label).
- Label with a hazardous waste label, and dispose of as hazardous chemical waste.

Contaminated with radioactive material:

- Place into a hard walled sharps container (non-red without biohazard label).

- Label with radioactive tape, and place full sealed container in a dry radioactive waste box.
- Contact EH&S for pick-up as radioactive waste.

Contaminated with biohazardous agent and carcinogenic or hazardous material:

- If the chemical disinfectant for the biohazardous agent is compatible with the hazardous material, disinfect the material and place into a hard walled sharps container (non-red without biohazard label).
- Label with a hazardous waste label, and dispose of as a hazardous chemical waste.

B. Biological Waste

Any material that once contained or now contains living organisms, or that is a product, portion, or waste of a living or once-living organism. The waste does not contain a suspected or known human pathogen

1. Animal Carcasses and Waste Products:

Healthy animals not treated with chemicals, radioisotopes, or human pathogens:

- Place animal parts, tissue, waste and carcasses (small and large animals) in a labeled tightly sealed plastic bags in cold box in room 425.
- Carcasses will be collected weekly by ARS and sent off campus to BFI to be incinerated. Contact EH&S for more information.

Animals treated with chemical, radioactive, or human pathogens

- Contact EH&S to develop a written handling, transportation and treatment and/or disposal procedure.

2. Blood and Body Fluids:

Non-infectious blood and body fluids in tubes, bags, vacutainers, etc.:

- Treat with bleach (10% final volume) and pour into a sink drain connected to the campus sewage system. **DO NOT pour into a storm drain.**
- Place the containers in autoclavable bags with autoclave tape and autoclave. **DO NOT dispose of containers of liquids in garbage cans or dumpsters.**
- Dispose of autoclaved waste in solid waste container.

Non-infectious blood or fluid soaked materials:

- Place bandages, gauze, paper towels, etc. in autoclavable bags with autoclave tape and autoclave. **There should be no dripping or leakage of liquid from bagged waste.**

- Dispose of solid autoclaved waste in solid waste container.

Blood, fluid or fluid soaked materials that contains chemical, radioactive, or human pathogens:

- Contact EH&S to develop a written handling, transportation and treatment and/or disposal procedure.

3. Tissue Culture Media:

Culture material used to transfer, inoculate, and mix biological cultures:

- Place solid tissue culture material waste in autoclavable bags with autoclave tape and autoclave. **DO NOT put dispose of untreated materials in garbage can or dumpsters.**
- Dispose of autoclaved waste in solid waste container.
- Treat liquid tissue culture material waste with bleach (10% final volume) and pour liquids into a drain connected to the campus sewage system. **DO NOT pour into a storm drain.**

Culture material that contains chemical, radioisotopes or human pathogens.

- Contact EH&S to develop a written handling, transportation and treatment and/or disposal procedure.

C. Medical Waste

A biological agent known or suspected of being a human pathogen. All wastes that are classified as medical waste (infectious human waste and sharps waste) must be stored, handled, transported and treated in accordance with the Medical Waste Management Act. The accumulation site for Medical Waste is located in room 425. The Medical Waste is picked up weekly by UCDHS and treated. Contact EH&S to develop a written handling, transportation and treatment and/or disposal procedure.

1. Types of Medical Waste Generated:

- Bag Waste
- Sharps Waste
- Pathology

2. Medical Waste in the Laboratory:

- Red bag in labeled, rigid, leakproof secondary container with tight closing lid.
- Red sharps container labeled and not overfilled.
- Segregated from other wastes at the point of generation in each laboratory.
- Red bags disposed of within seven days from initial use.
- Red sharps disposed of within seven days from capping the container.

- Red bags and sharps labeled with room number and building prior to disposal at accumulation or autoclave location.
- Monthly cleaning and daily monitoring of cleanliness of all Medical Waste containers.
- Emergency contacts and spill procedures posted.
- Spill kits available.
- Any leak or spill of Medical Waste by a generator will be decontaminated immediately.