REQUIRED READING FOR ALL PERSONNEL WITH DODGEN RESEARCH FACILITY & NUCS CORE FACILITY ACCESS

Facility Safety Procedures

NUCLEAR SCIENCE CENTER
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Washington State University
Dodgen Research Facility &
NUCS Core Facility

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1 GENERAL

1.1 Purpose

This document is to direct general use of all radioactive and non-radioactive material use labs present in the Dodgen Research Facility and the Nuclear and Chemical Science (NUCS) Core Facility, managed by the Nuclear Science Center. It also covers policies and procedures of the Nuclear Science Center staff and department management for use of the laboratories, how to perform experiments, order chemicals, and perform laboratory housekeeping activities safely in the facility.

This document is a minimum set of requirements for operation of the NSC labs and facility. It may be used as a baseline to cover laboratory specific procedures and surveillance documentation.

1.2 Scope

Each laboratory or instrument bay in the Dodgen Research Facility and NUCS Core Facility has a red binder, *Laboratory Safety Manual,* which comprises the laboratory and facility safety program. Inside, the manual is divided into sections including *Total Health and Safety Plan, Laboratory Standards, Facility Safety Procedures*, *Chemical Hygiene Plan*, safety data sheets, and various surveillance forms and procedures. The *Total Health and Safety Plan* covers requirements for safely conducting work and identifying hazards at the facility. The *Laboratory Standards* document covers laboratory specific expectations, and this document covers procedures for common activities in the lab.

This *Laboratory Safety Manual* and all its sections, including this document, applies to all NSC employees, WSU students, contractors, and visitors utilizing the NSC laboratories located in the facility.

1.3 Responsibilities

Nuclear Science Center management has accountability for the laboratories contained in the Dodgen Research Facility and the NUCS Core Facility. The management of the laboratories fall to the Reactor Operations and Research Division of the department for each lab type defined either based on use, for reactor operations, departmental research, outside research, or shared use. Teaching laboratories in the facility fall under research division management.

An outgoing laboratory manager shall turn over all relevant records and materials to an incoming laboratory manager or the Director.

The Nuclear Science Center responsible for managing and documenting all hazards associated with the activities in their designated space. Their responsibilities include:

1.3.1 Directors

- Ensuring a safety and responsible work environment.
- Designating a laboratory manager.

- Ensuring that all personnel who engage in laboratory operations have received documented and appropriate training.
- Performing document reviews at least once per year, unless activities change and ensuring that the plans are compatible with current laboratory operations. Additional review (and modification, if necessary) will occur before new experiments or new procedures are implemented if the experiments and/or procedures differ substantially from ongoing laboratory work, and/or before a new hazardous material, instrument, or procedure is brought to the laboratory.
- Ensuring that all personnel performing laboratory work have signed the List of Authorized Laboratory Personnel, placed in the Laboratory Safety Manual, which serves as evidence that the Laboratory Safety Manual have been read and understood by each individual performing laboratory work.

1.3.2 Laboratory Managers

Designation of a laboratory manager will be documented by a memorandum naming the individual. A copy of the memorandum will be kept on file in the laboratory safety binder for each laboratory.

The laboratory manager carries out duties that facilitate the day-to-day operations of the laboratories.

- Train, document, and maintain employee adherence to the Nuclear Science Center Laboratory Safety Manual, which includes:
    - NSC Total Health and Safety Plan
    - NSC Facility Safety Procedures
    - NSC Laboratory Standards (lab specific)
    - NSC Chemical Hygiene Plan (lab specific)
- Ensure completion of WSU required training including:
    - Safety Orientation
    - Sexual Harassment Training
    - Employee on-boarding training provided by WSU Human Resource Services
- Insuring that work proposed to be performed in the laboratory is approved and documented before initiation of the work.
- Performing and documenting any required laboratory surveillances. Additional surveillances will occur before new experiments or new procedures are implemented and/or before a new hazardous material, instrument, or procedure is brought into the laboratory.
- Ensuring the posting of appropriate signs intended for laboratory worker and visitor awareness of laboratory hazards and location of laboratory safety equipment. This includes, but is not limited to signs on doors, maps of the building, including location of eyewash stations, fire extinguishers, and evacuation routes, hazardous material storage, and hazardous waste storage.

- Ensuring that eyewash and safety showers are tested on a regular basis, and proper documentation of these tests are maintained.
- Screen for safety hazards and ensure that these screens are documented and reviewed annually. Hazard analyses will be reviewed and updated concurrently with any major changes in laboratory operations or upon introduction of new equipment or processes that could present previously unidentified hazards.
- Maintaining proper knowledge of the chemicals and instruments:
    - Ensure that the radioactive material inventory (RAM inventory) in each NSC laboratory for which they manage is up to date and reported to the RSO if required.
    - Ensure maintenance of a chemical inventory for each lab.
    - Maintain current SDSs.
    - Ensure that no hazardous substance is being used in the laboratory unless all requirements of the Laboratory Safety Manual are met, that proper documentation was completed prior to any use of any hazardous substances, and that management of hazardous wastes is in accordance with the Laboratory Safety Manual.
- Ensure the proper operation and use of all the laboratory instruments, that those instruments remain calibrated, and that the maintenance contracts are up to date.
- Conduct “check out” for laboratory workers upon termination of employment. The check out procedure will include:
    - The laboratory worker has returned any WSU property that may have been in possession of the laboratory worker.
    - The laboratory work area of the departing employee has been cleaned and organized, especially including identification of all samples and chemicals.
    - The departing laboratory worker turns in all records, such as data and laboratory notebooks.
- Conduct laboratory personnel meetings.

Any of these duties may be delegated to laboratory personnel other than the laboratory manager by the laboratory manager.

1.3.3 Laboratory Workers

Laboratory workers include NSC personnel, contractors, and visitors performing laboratory work in the laboratory facilities. All laboratory workers must satisfy the following requirements:

- Read, understand, and comply with the Nuclear Science Center Total Health and Safety Plan.
- Become familiar with the NSC Chemical Hygiene Plan before using chemicals.
- Document laboratory work proposed to be performed in the laboratory and ensure its review and approval before initiation of the work. The document shall, in particular, demonstrate thoughtful planning to minimize the amount of hazardous waste produced.

- Refrain from unsafe operations.
- Inform laboratory manager of previously unidentified hazards.
- Escort guests during visits of the NSC laboratory facilities.

1.3.4 Visitors

A visitor is defined as anyone who is not routinely assigned by NSC management to perform laboratory work in the area being visited. One or more laboratory workers during their visit must escort visitors at all times.

1.4 Training

NSC Employees shall review and understand the Laboratory Safety Manual and its sections. The employee will review this information annually. All employees have a right to know and understand the physical and health hazards of chemicals in the work area, and the measures employees can take to protect themselves from these hazards. These methods include appropriate work practices, the use of engineered control devices (such as fume hoods or other ventilation equipment), emergency procedures, and the proper use of personal protective equipment.

All laboratory workers shall complete radiation safety training for radioactive materials and machines (if applicable), badging, and annual refresher training.

2 FACILITY DESCRIPTION

2.1 General

The Dodgen Research Facility features a 1.0 MW TRIGA reactor, WSU Nuclear Science Center managed laboratories, an RSO office space, an RSO radioanalytical laboratory, offices, break rooms, janitorial closets and three bathrooms, a machine shop, and three loading and receiving docks.

The Nuclear and Chemical Science (NUCS) Core Facility features four NMR spectrometers, four high-purity germanium gamma-ray detectors, an X-ray absorption/emission spectrometer, a small angle X-ray scattering diffractometer, a dynamic light scattering instrument, two X-ray diffractometers, two gamma irradiators, a WSU Nuclear Science Center managed laboratory and offices.

The Laboratory Safety Manual, including this document, applies to each part of the WSU Nuclear Science Center managed laboratories.

2.2 Access and Key Etiquette

Keys to Dodgen Research Facility shall be distributed at the discretion of the NSC Director and tracked by the Reactor Supervisor.

Access to the NUCS Core Facility shall be granted and tracked by the Assistant Director of the NUCS Core Facility.

2.3 Break Room Areas

No laboratory work is to be performed in common areas (Dodgen Research Facility Rooms 150 and 250 and Fulmer 40) or bathrooms (Dodgen Research Facility Rooms 4, 5 and 124). No chemicals shall be disposed of in the break room or janitorial room sinks (Dodgen Research Facility Rooms 122 and 105). Dodgen Research Facility Rooms 201A and 201B and Fulmer Hall 40 and 40A shall be free of radioactive material.

2.4 Machine Shop and Dock Areas

The machine shop located at Dodgen Research has power tools and machines such as saws, drill press, air compressor, and a variety of hand tools. Paint and painting supplies are also stored in the machine shop for patchwork around the facility. There are two dock areas on the east side of the Dodgen Research Facility (1st floor and 2nd floor) and one on the west side of Dodgen Research Facility (Beam Room South). The NUCS Core Facility has hand tools (magnetic and non-magnetic) for repair of the instrumentation located within and these can be found in Fulmer B3.

2.5 Reactor Radiochemistry Laboratory

The reactor radiochemistry laboratory (Dodgen Research Facility Room 101), which is designed for chemistry experimental laboratory work as well as repackaging for radioactive samples that are being prepared to be shipped. Room 101 features chemical storage cabinets, 4 fume hoods, one oven, and one desiccator.

2.6 Radioactive materials (machines)

The X-ray diffraction/absorption/emission instrumentation is located in Room 114 of the Dodgen Research Facility and Room B3 of Fulmer Hall (NUCS Core Facility). The instrument design prevents personnel from any exposure to instrument generated X-rays, however the completion of Radiation Worker Training (RSO Training) is required prior to using the instrument. The Varian 500 MHz NMR spectrometer, Varian 600 MHz NMR spectrometer, Bruker D8 Venture single crystal X-ray diffractometer, Bruker D2 Phaser powder X-ray diffractometer, and easyXAFS 300+ are approved for the analysis of radioactive samples.

3 FACILITY SAFETY RULES

This section discusses safety-related equipment in both the NSC laboratories, the Dodgen Research Facility, and the NUCS Core Facility.

3.1 Chemical Storage

For details on requirements on chemical storage, refer to Section 8.2.5: Storing Chemicals. A small subset of chemicals may be stored in the laboratory, including bulk solvents (e.g. acetone,

DI water), however large quantities of chemicals are stored in the chemical inventory room 220 (Dodgen) or 40A (Fulmer).

3.2 Eyewash and Safety Shower

Facilities Services maintains eyewashes and safety showers are available in all NSC laboratories. The equipment shall be tested by laboratory workers on a weekly basis and documented in the Laboratory Safety Binder located in each lab. Signs are posted to indicate the location of the equipment.

3.3 Fire Protection

Facilities services in conjunction with the WSU Fire Marshall and the Pullman Fire Department maintain fire protection equipment and pull stations throughout the building. The following details the best practices for maintaining fire code compliance at the NSC.

- All hallways must have a maintained and clear path to the exit east end doors or the stairwell from every lab and office. The path must be a minimum of 48 inches in width with no obstructions.
- Circuit breaker panels must be free of obstruction out to 36 inches.
- Fire extinguishers and pull stations must not be covered and must be free of obstruction.
- Ceilings must be free of non-permanent installations and personal items to 24 inches below the ceiling.
- Waste pallets must be removed from the facility and off-site in a timely manner. Do not allow accumulation of pallets.
- Extension cords must be the minimum required to react from outlet to unit. Coiled extension cords can generate heat and create a fire hazard. Extension cords are not to be used as a substitute for a permanent power installation.
- All junction boxes must have covers on them unless temporary work is being performed.
- All extension cords, power cables, and surge protectors must be in good condition with no tears, rips, or degradation of the cord. Do not repair with electrical tape.
- All gas cylinders must be securely fastened to an anchor structure.
- Large containers (even empty ones) with flammable markings must be stored in flammable cabinets with not in use.
- All labs, offices, general areas, storage areas must be well kept and organized.

3.4 Fume Hoods

Fume hoods are located throughout the NSC laboratories. The following precautions are for operation and use of these fume hoods at the NSC.

- All fume hoods shall be tested and documented to follow the rules of the chemical hygiene plan and the Laboratory Safety Manual. No fume hoods shall be used that do not meet these requirements.
- Personnel shall not disable the 18” sash stop which would diminish the airflow.
- The hood sash shall be lowered when not in use to achieve optimal containment.
- Personnel shall only introduce their arms and no other part of their body within the hood when carrying out laboratory work with open chemical containers.

3.5 Personal Protective Equipment (PPE)

REFER TO THE NSC TOTAL HEALTH AND SAFETY PLAN SECTION ON PPE

When working with radioactive material gloves shall be worn at all times. When gloves are put on, they shall be considered contaminated and should be disposed of in a radioactive trash box located in the lab where the work is being performed, or surveyed and disposed of as appropriate. Gloves shall NOT be worn outside of labs unless transporting radioactive material and the “One Glove Rule” shall be followed or a second individual without gloves shall help open doors and navigate around other obstacles.

The wearing of laboratory coats is recommended. Laboratory coats will be made available to every laboratory worker.

3.6 Spill Kits

Spill-control kits capable of absorbing hazardous spills are located in each lab throughout the facility. Section 9.8 provides guidance on the use of spill-control devices.

3.7 First-aid Kits

First-aid kits are located throughout the Dodgen Research Facility in Rooms 2, 100E, 101, 112A, 200E, and 201 and the NUCS Core Facility in each instrument bay (Fulmer B3) and Fulmer 40A.

3.8 Radioactive Decontamination Kits

Large scale decontamination kits are located in the Transformer Vault and Room 105 at Dodgen Research Facility. Smaller scale kits are located under or near sinks in frequently used radiation labs at Dodgen Research Facility and the instrument bays of all instrument certified for radioactive sample analysis in the NUCS Core Facilty.

4 GENERAL LABORATORY RULES

4.1 The Two Person Rule

Many people pass through the laboratory building frequently throughout the business day. Therefore, a single person may perform laboratory work alone during normal business hours,

8:00 a.m. to 5:00 p.m., Monday through Friday, excluding holidays, unless the laboratory worker is engaged in a hazardous task. Hazardous tasks of any kind may not be carried by a lone laboratory worker. Laboratory workers must consult with the laboratory manager if there is any uncertainty about whether a particular task is hazardous in order to determine appropriate mitigating actions.

Some types of non-laboratory work may be performed at any time by a lone worker in the laboratory building. Such non-laboratory work includes data processing on a computer, writing reports, reading and reviewing documents, and other types of non-laboratory work that are typically carried out in an office environment.

4.2 Eating and Drinking in the Laboratory

Eating, drinking, or storing food are strictly prohibited in the laboratory rooms. WSU is a tobacco-free campus.

4.3 Distractions

Every person in the facility shall ensure they are able to hear alarms and announcement on the public address system. This applies to music in labs and personal music players with earbuds.

4.4 Fiberglass Molded Lab Tray System

The NSC employs a tray system when working with RAM. Laboratory workers must use a fiberglass molded designated lab tray lined with absorbent lab paper whenever working with RAM. The use of RAM will be signified by the placement of a RAM sticker as seen in Figure 1.

Figure 4-1. Lab tray system for use of radioactive materials.

The tray system is meant to minimize the spread of contamination when working with RAM. The replacement of absorbent lab paper between uses assists with tidiness and containment of material. When work is completed, tools, glassware, PPE, lab paper and lab tray shall be scanned out and disposed of properly and returned to their appropriate place.

4.5 Housekeeping

- Good housekeeping is a key to performing operations safely: Keep laboratory areas clean and uncluttered.
- Close containers, except when in use.
- Avoid excess material scattered on floor, benches, desks, or tables.
- Replace unused chemicals or equipment in proper cabinets or locations.
- Route wires, cables, hoses, straps, etc, to minimize tripping hazards.
- Bundle cables to phone, computers, instruments, and other electrical equipment.

5 STANDARD OPERATING PROCEDURE FOR PERFORMING LABORATORY WORK WITH CHEMICALS

READ AND UNDERSTAND THE NUCLEAR SCIENCE CENTER TOTAL HEALTH AND SAFETY PLAN, PARTICULARLY THE SECTIONS ON CHEMICAL SAFETY, CHEMICAL LABELING, AND PERSONAL PROTECTIVE EQUIPMENT.

5.1 Selecting and Procuring Chemicals

The chemicals shall be selected and procured in accordance with the NSC Chemical Hygiene Plan, and personnel shall:

- Attempt to substitute hazardous chemicals with less hazardous ones when possible.
- Minimize quantities to fit anticipated usage.
- Design procedures to use minimum quantities of hazardous materials.
- When in doubt, consult the laboratory manager before purchasing hazardous materials.
- Orders shall be performed by a laboratory manager or NSC budget authority.

5.2 Receiving and Accepting Shipments of Chemicals and Laboratory Supplies

- The shipment of chemicals and laboratory supplies will be received at the front desk of the NSC, in room 50.
- Packages containing chemicals and laboratory supplies shall be opened in the NSC laboratory facilities in the labs for which they are to be used.

- Upon opening packages, the receipt inspector shall inspect the shipment against the packing list, inspect the shipment for any damage or malfunctioning. If damage is observed, document damage and contact sales representative.
- The receipt inspector shall give packing lists to the NSC administrator, who will keep them on file.

6 STANDARD OPERATING PROCEDURE FOR PERFORMING LABORATORY WORK WITH RADIOACTIVE MATERIALS

READ AND UNDERSTAND THE NUCLEAR SCIENCE CENTER TOTAL HEALTH AND SAFETY PLAN, PARTICULARLY THE SECTIONS ON CHEMICAL SAFETY, CHEMICAL LABELING, AND PERSONAL PROTECTIVE EQUIPMENT.

6.1 Selecting and Procuring Radioactive Materials

Procuring radioactive materials for use at the NSC labs is to be done in consultation with the WSU Radiation Safety Officer, NSC laboratory manager, and the authorized user.

Any procurement involving off site shipment of radioactive materials to an onsite lab at the Dodgen Building, transfer of RAM between labs within the facility, or transfer of radioactive material produced by the reactor to any non-reactor laboratory space will be performed after notification and approval of the transfer to the University RSO.

6.2 Receiving and Accepting Shipments Radioactive Materials

Receiving and acceptance of RAM shall be done in accordance with the SPPM.

6.3 General Laboratory Practices on the Use of Radioactive Material Laboratories

- Bring a GM detector into all RAM labs, regardless if you are working with radioactive materials.
- Use a GM detector or equivalent to frisk out of RAM labs, regardless if you are working with radioactive materials.
- Follow all general practices on the use of chemicals located in the LSM.
- Store used stock RAM in locked cabinets in labs or locked labs if the lab is sole use.
- The NSC employs a tray system when working with RAM. Use a RAM designated try whenever possible when working with these materials.
- Transfer of RAM from lab to lab within the Dodgen Research Facility or the NUCS Core Facility occurring through unrestricted areas must be double contained. Use vial holders, trays, and pails whenever possible. Minimize the chance occurrence of spill or tipping at all times through mechanical isolation.

- No gloves are to be worn in unrestricted areas, unless in an emergency. Maintain clean laboratory techniques in all RAM authorized labs.

6.4 Labeling Radioactive Materials

- RAM work areas must be designated with a RAM sticker that has the tri-foil symbol present.
- RAM must be labeled for each container that it is radioactive with a sticker containing the tri-foil symbol.

6.5 Storing Radioactive Materials

Storage of RAM shall be done in accordance with the SPPM.

7 DEPARTMENTAL EQUIPMENT AND INSTRUMENTS

All computers including general workstations, office workstations, laptops, and equipment workstations are property of the Department and the State of Washington. The use, modification, and maintenance of this equipment must be in accordance with the following sections.

7.1 Computers

This section covers hardware and software for all computers in the department, owned by the department.

1) Any new computer purchases or old computer surplus will be done through NSC management and OR-IT.
2) No modification of hardware or software will be made without prior approval by NSC management and WSU Office of Research IT (OR-IT). OR-IT will perform the modification.
3) NSC employees are not permitted to modify or change operating systems, or add additional operating systems to departmental machines.
4) No file storage is permitted on the local computer C:/ drive. Storage locations on Desktop and My Documents are permitted as these have maintained backups.
5) File storage is maintained offsite by OR-IT. A local copy may be permitted utilizing a clean flash drive; however, the primary storage location will be on the OR-IT managed file server.
6) NSC Reactor Operations will utilize the N:/ drive for all departmental and reactor records; NSC Research Division will use the M:/ drive for all departmental and research data. The NUCS Core Facility will use the Z:/ drive for all NUCS Core Facility instrument data archives and calibrations.

7.2 Instrumentation

1) Equipment and instruments shall be assembled, installed, used, and maintained in accordance with the manufacturer's recommendations.
2) At present, no offsite storage or network capabilities are enabled for instrumentation computers. Therefore, the collection and storage of the data from these computers are the responsibility of the laboratory managers and researcher that utilize the instrument.
3) Personnel may modify the use or design of equipment or instruments with the approval the laboratory manager.
4) All safety guidelines outlined in the equipment or instrument handbooks will be followed.

7.3 Instrumentation Specific Procedures and Maintenance

1) Procedures for calibration, operation, and maintenance of the instrumentation located in the NUCS Core Facility can be found in the Laboratory Safety Manual located in the instrument bay for instruments operated by the NUCS Core Facility.

2) The NUCS Core Facility maintains and operates the following instrumentation:

    a. High-purity germanium gamma-ray detectors for the analysis of radioactive samples (see procedure QAPNAA-3)

    b. Bruker D2 Phaser Powder X-ray Diffractometer for the analysis of powder samples by X-ray diffraction (see procedure OPPXRD-1)

    c. Bruker D8 Venture Single Crystal X-ray Diffractometer for the analysis of single crystal samples by X-ray diffraction (see procedure OPSCXRD-1)

    d. easyXAFS 300+ for the analysis of samples by X-ray absorption/emission (see procedure OPXAFS-1)

    e. Malvern Zetasizer Pro Blue Dynamic Light Scattering Instrument for the analysis of the size and zetapotential of emulsions (see procedure OPDLS-1)

    f. Bruker Avance Neo 500 MHz NMR Spectrometer for the analysis of samples by NMR spectroscopy (see procedure OPNMR-1)

    g. Varian DD2 600 MHz NMR Spectrometer for the analysis of samples by NMR spectroscopy (see procedure OPNMR-2)

    h. Varian VNMRS 500 MHz NMR Spectrometer for the analysis of samples by NMR spectroscopy (see procedure OPNMR-3)

3) Only the Varian 500 MHz NMR Spectrometer and the Varian 600 MHz NMR spectrometer are approved for the analysis of radioactive samples by NMR spectroscopy and follows procedure RISP-1.

4) Only the Bruker D8 Venture single crystal X-ray diffractometer is approved for the analysis of radioactive single crystal samples by X-ray diffraction and follows procedure RISP-2.

5) Only the Bruker D2 Phaser powder X-ray diffractometer is approved for the analysis of radioactive powder samples by X-ray diffraction and follows procedure RISP-3.

6) Only the easyXAFS 300+ X-ray spectrometer is approved for the analysis of radioactive single samples by X-ray absorption/emission and follows procedure RISP-4.

8 ELECTRICITY

NSC employees, contract associates, and student interns **are strictly prohibited** to perform any work on any of the laboratory building electrical systems. All laboratory building electrical system work will be done by WSU Facilities Services with licensed electricians.

9 WASTE MANAGEMENT

9.1 Waste Minimization

All waste chemicals, including contained gases, liquids, and solids that are toxic, ignitable, corrosive, and/or reactive are to be handled as hazardous waste unless a waste profile has been completed to determine and demonstrate that they are not hazardous. To minimize the hazardous wastes generated by laboratory operations, personnel are encouraged to:

- Substitute less hazardous materials and chemicals for regulated hazardous ones whenever possible.
- Minimize the quantities of chemicals ordered to fit anticipated usage and minimize the volume of excess chemicals on hand.
- Modify processes to generate smaller quantities of hazardous waste, whenever possible.

9.2 Radioactive Material Trash Disposal

Radioactive trash is disposed of in 2 ft^3 lined cardboard boxes or 55 gallon drums. These containers are distributed by the Radiation Safety Office on an as needed basis from the Dodgen Storage Building located behind the Dodgen Research Facility.

All radioactive trash should be consolidated when available to a central radioactive trash box if space permits. Do not let boxes collect in laboratory spaces. Once a box is full:

- Close the bag lining with a zip tie,
- Seal the box with packing tape on all sides,
- Inform the laboratory manager that a rad box is full, and request a new one,

- Fill out the Rad Waste Disposal Pickup form for the box, and
- Schedule a rad waste pickup by filling out the online radioactive waste pickup form at http://www.rso.wsu.edu/radwastepickup.htm

9.3 Non-Radioactive Trash Disposal

Empty boxes, packing material, excess paper and other trash that does not fit in the standard trash cans or wastebaskets in the laboratory area shall be taken by the person generating the waste to the local dumpster for disposal.

Glassware, wire, and all other sharp objects shall not to be placed in trashcans or wastebaskets with the regular trash. Broken glass disposal cartons are available in the laboratory facilities for this purpose.

Waste containing flammable material shall not be disposed of in regular trash. Wipes or towels that had been wetted with alcohol (IPA) or acetone may be disposed of in regular trash, but only if they have been used until dry. Otherwise, these flammable wastes must be handled as hazardous waste.

9.4 Disposal into the Sanitary Sewer

Many of the liquid chemical wastes produced in the laboratory are not hazardous. However, per Environmental Health & Safety regulations, laboratory workers are not authorized to determine which wastes may be disposed of in the sanitary sewer.

9.5 Disposal of Empty Containers

Cardboard containers are provided for glass containers and broken glass. Consult the Laboratory Safety Manual or contact Environmental Health & Safety for questions regarding disposal of empty containers.

9.6 Disposal of Consumer Items

Consult the Laboratory Safety Manual or contact Environmental Health & Safety for questions regarding disposal of consumer items.

9.7 Management of Hazardous Waste

Consult the Laboratory Safety Manual or contact Environmental Health & Safety for questions regarding disposal of hazardous waste.

9.8 Recycling

Containers for collection of NSC work product are placed in several locations on the second floor of the Dodgen Research Facility. Corrugated cardboard is recycled in a bin outside of the first floor east doors of the Dodgen Research Facility or bin outside the first floor main doors of Fulmer Hall.

Battery recycling buckets are maintained in the front office (room 50 of the Dodgen Research Facility) and reactor shop (room 201A of the Dodgen Research Facility) for used batteries. Environmental Health & Safety processes the waste battery recycling buckets when notified.