
**UNIVERSITY OF WISCONSIN-RIVER FALLS
HAZARDOUS WASTE MANAGEMENT PROGRAM
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UNIVERSITY OF WISCONSIN-RIVER FALLS HAZARDOUS WASTE MANAGEMENT PROGRAM

This program provides information on the guidelines and procedures for the proper management of hazardous waste at the University of Wisconsin-River Falls (UWRF). This program also serves to ensure compliance with United States Environmental Protection Agency (USEPA) and Wisconsin Department of Natural Resources (WDNR) regulations pertaining to management of hazardous, special, and universal wastes.

1. PURPOSE

This program has been developed to provide specific procedures for the management of hazardous wastes generated at UWRF.

2. RESPONSIBILITIES

This section describes responsibilities related to hazardous waste management at UWRF.

2.1 ADMINISTRATION

Administration is responsible for providing the necessary resources for the proper and compliant management of hazardous wastes generated by all activities at UWRF.

2.2 PRINCIPAL INVESTIGATORS

Principal Investigators (PI) are ultimately responsible for the proper collection, storage and pickup of wastes generated within their laboratories. PIs shall ensure staff and student have received training and instruction related to proper management of hazardous waste generated in their laboratories.

2.3 FACULTY AND STAFF

Responsibilities of faculty and staff creating hazardous waste includes:

- Dispose of waste using the procedures outlined in this program
- Ensure all wastes are packaged and labeled according to this program
- Arrange for prompt removal of full waste containers

2.4 ENVIRONMENTAL HEALTH AND SAFETY

Environmental Health and Safety (EH&S) office provides for the collection, transportation, storage, and proper disposal of hazardous chemical wastes generated on campus as well as administration of the waste management program including regulatory documentation. Though primarily focused on small quantities of wastes from laboratories, studios and shops, EH&S will also be responsible for coordinating collection and disposal of any bulk wastes and special wastes.

3. WASTE DETERMINATION

All wastes must be properly classified to ensure proper disposal. This section discusses how a waste is classified to determine if it will require special handling and disposal. Any questions regarding classification of wastes shall be directed to EH&S. EH&S reserves the right to make the final determination of a waste's classification.

3.1 HAZARDOUS WASTE

Hazardous wastes constitute a subset of solid waste. There are specific federal and state specifications for what classifies a waste as "hazardous". In general, a hazardous waste may be a "Characteristic Waste" or a specific "Listed Waste". WDNR regulations pertaining to the characterization of wastes, and the tables of "Listed Wastes" described below can be found under **NR 605 Identification and Listing of Hazardous Wastes** at <http://www.dnr.state.wi.us/org/aw/wm/information/wiacssh.htm>.

3.1.1 Characteristic Wastes

Characteristic wastes are those that fall within the definition of one of the four categories below:

- **Ignitable** - a liquid with a flash point less than 140 Fahrenheit, an ignitable compressed gas or oxidizer, or other material that can cause fire through friction, absorption of moisture or spontaneous chemical changes. Common examples include used oil-based paint, used paint thinner, adhesives and mineral spirits.
- **Corrosive** – an aqueous solution with a pH less than or equal to 2.0 or greater than or equal to 12.5, or a liquid that corrodes plain carbon steel at a rate greater than 6.35 mm per year. Examples include waste rust removers and waste battery acids.
- **Reactive** - a waste that is normally unstable, readily undergoes violent changes without detonating, reacts violently with water, forms a potentially explosive mixture with water, or generates toxic gases or fumes when exposed to pH conditions between 2 and 12.5, is capable of detonation or explosive reaction, or is a forbidden Class A or Class B explosive.
- **Toxic** - A waste is considered toxic if (according to a specific Toxicity Characteristic Leaching Procedure) it exceeds the regulatory concentration for any of the listed eight metals, six pesticides or 25 organic chemicals. This list includes metals like chromium, lead, mercury, silver and organic chemicals like benzene, chloroform, methyl ethyl ketone, and butadiene.

3.1.2 Listed Wastes

Listed wastes fall into four groups. These listed wastes are found in the four tables in the hazardous waste regulations. Each listed waste has a hazardous waste number which starts with the letter "F", "K", "P", or "U."

- **"F" Waste** - waste that results from production or waste treatment process, are discarded chemical products or are contaminated with a specific chemical.
- **"K" Waste** - waste that results from specific production or waste treatment processes. The university rarely has this type of waste.
- **"P" Waste** - waste chemicals that are considered acutely hazardous when discarded because they can be extremely dangerous to human health or the environment. Cyanides and arsenic as well as some pesticides are found in this table. "P" wastes are of particular concern since a small quantity of this waste (2.2 pounds) generated in one month can change our classification to a large quantity generator with significantly greater regulatory burden.
- **"U" Waste** - waste that is considered hazardous but is not an extreme danger to human health or the environment. Examples include phenol, formalin, chlorobenzene, aniline dyes and carbon tetrachloride.

3.2 SPECIAL AND UNIVERSAL WASTES

Special and universal waste are wastes that may not meet the definition of a hazardous waste, but still require special disposal or reclamation procedures.

3.2.1 Batteries

The following is a disposal guide for batteries generated by campus operations:

a. Alkaline Batteries

- Alkaline batteries include AAA, AA, A, C, D and 9 volt.
- Disposal: **Normal Trash**

b. Lead Acid Batteries

- Lead acid batteries are found in autos, trucks, etc.
- Disposal: **Do not place in normal trash. Exchange old battery for new one from supplier or contact EH&S, ext. 3344, for recycling.**

c. Button Batteries

- Button batteries are found in watches, calculators, cameras and other small equipment. They can contain silver oxide, mercury, lithium or cadmium. These materials are considered hazardous waste. The contents can be determined by reading original battery packaging.
- Disposal: **Do not place in normal trash. Contact EH&S, ext. 3344, for collection.**

d. Lithium Batteries

- Lithium batteries are found in some electronic equipment. See original packaging for content information.
- Disposal: **Do not place in normal trash. Contact EH&S, ext. 3344, for collection.**

e. Nickel-Cadmium (NiCd) Batteries

- NiCd batteries are found in items including medical equipment, pagers, and cellular telephones. Check original packaging for content information.
- Disposal: **Do not place in normal trash. Contact EH&S, ext. 3344 for collection and reclamation** Keep NiCd batteries separate from other batteries during collection.

3.2.2 Fluorescent Lamps and Incandescent Bulbs

Fluorescent lamps contain small quantities of mercury and other metals that are harmful to the environment and to human health. UWRF collects the following lamps for off campus recycling:

- Fluorescent lamps
- Sodium-vapor lamps
- High- and low- pressure mercury vapor lamps
- High intensity discharge (HID) lamps

Incandescent light bulbs contain a small amount of lead on the outside of the base. Lead is harmful to the environment and to human health. UWRF collects incandescent bulbs for off campus recycling.

Facilities Management (FM) collects and stores all used lamps. If your department generates any of the above lamps, please contact FM or EH&S. **Avoid breakage of lamps.**

3.2.3 Infectious Waste

Infectious waste is regulated under Chapter NR 526, Medical Waste Management. A waste is considered to be an infectious waste if it falls in one of the following categories:

a. Sharps

- Contaminated sharps which are both infectious and may easily cause punctures or cuts in the skin, including but not limited to: hypodermic needles, syringes with needles attached, scalpel blades, lancets, broken glass vials, broken rigid plastic vials and laboratory slides. Contaminated means they have come in contact with blood or other potentially infectious material.
- Unused or disinfected sharps which are being discarded, including hypodermic needles, scalpel blades, lancets and syringes with needles attached.

Note: Only "contaminated" broken glass, plastic vials, laboratory slides, etc. are considered infectious waste. However, all discarded sharps (contaminated or not) such as hypodermic needles, scalpel blades, lancets and syringes with needles attached are considered infectious waste.

b. Bulk blood and body fluids from humans

"Bulk blood and body fluids" means drippable or pourable quantities or items saturated with blood or other potentially infectious materials. Determine if the blood or other potentially infectious material is drippable, squeezable, pourable or flakeable.

c. Consult the Blood Borne Pathogen Exposure Control Plan for safe handling and disposal procedures.

4. WASTE MINIMIZATION

Reduction in the quantity generated is the waste management method of choice. Reduced volume means reduced labor effort, time, and costs. This section discusses various waste minimization approaches.

As a small quantity generator, UWRF must certify it has made a good faith effort to minimize waste generation each time a manifest is signed. It is important that all persons and departments generating hazardous waste consider how they can contribute to waste minimization. The goal is to either prevent the formation or production of pollutants at the source or reduce the amount of hazardous waste that is generated.

4.1 BASIC CONCEPTS

Basic waste minimization options include:

- Waste stream segregation-keep hazardous and non-hazardous wastes clearly separated
- Good housekeeping-prevent contamination of good material, control spillage, etc.
- Inventory control-keep track of materials to prevent duplicate orders, and generating outdated material
- Order chemicals in smaller containers and quantities
- Material substitution-where possible, use a non-hazardous chemical
- Using smaller scale demonstrations
- Modifying specific experiments-use a non-hazardous metal in place of mercury, lead, cadmium, etc.

4.2 NEUTRALIZATION OF ACIDS AND BASES

Neutralization of acids or bases by the student or researcher as part of the experiment is highly recommended. If a liquid is hazardous only because of pH, the campus EH&S staff may neutralize the solution and pour it down the drain. Please call the EH&S office at 3344 if you have acids or bases to dispose of. The follow are recommended procedures to be used by students or researchers when neutralizing acid or bases

- Acidic solutions (pH <5)
- Adjust the pH to 5-9 using a dilute solution (e.g. KOH, NaOH, NaHCO₃). Use a pH meter, indicator solution, or pH paper to determine the pH.
- Flush down the drain of a chemical sink with 20 volumes of cool water.

- Basic solutions (pH > 9)
- Adjust pH to 5-9 using a dilute solution (e.g. HCl, H₂SO₄, HNO₃). Use a pH meter, indicator solution, or pH paper to determine pH.
- Flush down the drain of a chemical sink with 20 volumes of cool water.

Note: For highly concentrated acids, neutralization with a relatively dilute basic solution will take a very large volume of base and a long time. In this case, consider neutralization using a concentrated basic solution with plenty of ice for an ice bath, performed slowly, and carefully and with constant stirring. Monitor the temperature of the solution with a suitable thermometer to ensure that the solution doesn't get too hot. The same is true for neutralizing some concentrated bases.

4.3 REUSE/REDISTRIBUTION

Where feasible, reuse or redistributing partial quantities of a chemical to another department or employee is encouraged. Reuse of chemicals, especially in a laboratory, may not be as easily achieved due to the typical need for higher purity ingredients. However, chemicals such as acids and bases not contaminated with hazardous constituents can be used for neutralization reactions and used to reduce the volume of corrosive hazardous waste sent out for disposal. Records of neutralizations must be maintained as described in Section 4.2.

5. WASTE STORAGE

This section describes management of waste during storage at accumulation points.

5.1 ACCEPTABLE CONTAINERS

Hazardous waste must be collected in suitable containers. Contact the EH&S Manager for questions regarding acceptable containers for a given waste stream.

Use only containers that are in good condition and made of or lined with a material that is not reactive or incompatible with the waste being stored.

- Containers must have tight sealing caps or lids.
- Do not use an oversized container that may take a year or longer to fill.

5.2 LOCATION OF CONTAINERS

Containers used for collection and temporary storage of hazardous waste must be appropriately located within a facility or room. Listed below are guidelines for container placement.

- Place containers in locations where they will not be subject to damage, tipping, or spilling from foot traffic, carts, work activities, etc.
- Laboratory hoods are sometimes necessary for storage of hazardous waste containers containing odorous and volatile chemicals. Do not obstruct the hood opening or rear baffles.
- Laboratory hoods are expensive hazardous waste storage areas. Alternative storage is highly recommended..

5.3 LABELING

- Remove or deface any old labels.
- Clearly label waste containers with the words “HAZARDOUS WASTE” with the hazardous waste label that is provided by the EH&S office. Identify hazardous constituents as they are added to the container (e.g. “hazardous waste organic solvents, contains toluene and xylene”).
- Example of the hazardous waste label that must be used on hazardous waste containers.

HAZARDOUS WASTE
FEDERAL LAW PROHIBITS IMPROPER DISPOSAL

Generator: UW-River Falls
410 South Third Street
River Falls, WI 54022-5001

EPA#: WID080239080

Person to contact regarding information on tag:
Name _____ Phone _____
Dept. _____ Dept. # _____
Beginning fill date _____

Chemical Name(s) — if a mixture, list all chemical and concentration / volume%. Use full chemical name (no formulas or abbreviations).

Physical State: Gas _____ Liquid _____ Sludge _____ Solid _____
Hazardous Category: Flammable _____ Air/Water Reactive _____
Toxic _____ Corrosive pH _____ Oxidizer _____

Accumulation Start Date _____ / _____ / _____

Waste Code _____ Bar Code # _____
Employee Name _____

EH&S 7172

- Labels should face forward and be clearly visible for viewing and inspection

5.4 SATELLITE ACCUMULATION MANAGEMENT

Hazardous waste collection points must adhere to the following satellite accumulation requirements until the waste is transferred to the campus hazardous waste storage facility:

- Waste containers must be placed in some type of secondary container for spill control. A simple plastic tub capable of holding the contents of the waste containers is acceptable.

- Keep the waste containers closed at all time, except when adding or removing waste. A funnel left in the opening of a waste container makes the container “open,” is considered an open container by regulatory agencies, and is not acceptable.
- Handle and store waste containers properly to prevent rupture or leakage.
- Do not mix hazardous waste with non-hazardous waste. Do not mix incompatible wastes.
- Know what to do in the event a spill should occur. Keep suitable spill control supplies on hand and keep emergency phone numbers posted in labs and work areas.
- When a container is 90 % full, contact the EH&S office at ext. 3344 to arrange for transfer to the hazardous waste storage facility within three days.
- Satellite accumulation areas must inspected weekly for waste containers integrity, and the inspection must be documented by signing the log sheet in the area at the time of the inspection.

5.5 STORAGE PERIODS

Regulatory requirements limit storage of hazardous waste to a maximum of 270 days except at satellite collection locations. Once waste is removed from a waste collection area, the 270 days storage limit takes effect. Though satellite accumulation points in laboratories or shops do not have a time limitation, no more than 50 gallons of a single waste may accumulate before the waste must be moved to the hazardous waste storage area. To provide for better management of waste streams, the following guidelines have been developed.

5.5.1 Chemistry Department

There are four satellite accumulation areas within the department there are located in rooms 207, 250, 258, and 269A. As containers are filled, the lab technician notifies the EH&S office that waste need to be moved to the hazardous waste storage facility. Wastes from teaching labs shall be collected at the end of each teaching period, and taken to the satellite accumulation area. Student samples submitted specifically for grading may be retained for one month past the end of the teaching period. For additional information on proper management of satellite accumulation areas please refer to section 5.4.

5.5.2 Agricultural Science Building

Waste streams generated in the Ag Science building comes from a number of departments. Due to the fact that waste is generated on a sporadic bases all labs shall store the hazardous waste that they generated in the hazardous waste storage, room 133. Lab supervisors and researchers are responsible to transfer hazardous waste generated from their activities to the storage area at the end of their work day. Waste that placed in the storage area must be labeled with the hazardous waste label and dated. The lab technician from the Biology Department will inspect the storage area on a weekly basis and record these inspections on a log sheet.

Waste generated from the quality assurance lab in the dairy processing plant may be accumulated in a satellite accumulation area. The plant manager will transfer waste to the storage area when the containers are 90% full. Waste containers must be labeled with the hazardous label and dated. For additional information on proper management of satellite accumulation areas please refer to section 5.4.

5.5.3 Other

Low volume, routine wastes generated in other areas, including art studios, academic shops, maintenance shops and paint shops, shall be stored at accumulation locations for no longer than one year regardless of quantity. As storage containers are filled to 90% shop or studio managers will notify the EH&S office that hazardous waste needs to be transported to the storage facility.

6. WASTE PICKUP AND REMOVAL

This section outlines the procedures to use for waste pickup and removal.

6.1 SCIENCE DEPARTMENTS

Waste generated by the Science Departments are the most diverse and numerous. This section provides standard procedures for pickup of wastes and guidelines for arranging pickup of specific waste streams.

6.1.1 Standard Procedures

Most wastes generated by Science Departments will be associated with research and teaching labs. In general, wastes pickup will be coordinated through the lab technician or the lab manager. They will contact the EH&S office to arrange for the transport of their hazardous waste. In addition, containers of waste shall not simply be left anonymously in, or near, the hazardous storage facility.

6.1.2 Expired and Old Chemicals

Faculty and the lab technician should regularly check the inventory of chemicals in their area for expired and unusable containers of chemicals. Several hazards may arise from excessive storage periods with some chemicals including formation of shock sensitive peroxides, disintegration of containers, leaking, and degradation of labeling. Contact the EH&S office for assistance with removal of expired and old chemicals.

6.1.3 Laboratory/Studio Cleanouts

Closure of a laboratory/studio or the retirement of faculty may result in the need for cleanout of chemicals from research laboratories, art studios, and other work areas. A serious concern associated with cleanouts is unlabeled or poorly labeled containers of chemicals. Unlabeled containers of chemicals require considerable effort to identify contents and can present a serious health and safety hazard to employees involved in the cleanout.

- Prior to their departure, faculty responsible for the laboratory or studio to be vacated shall contact the EH&S office and arrange for a meeting at the location to discuss and view containers of chemicals that will need to be disposed of or returned to stock.
- The contents of all containers must be identified. The faculty member shall work with the EH&S manager to identify the contents of unlabeled containers. If the identity is uncertain,

“fingerprint” testing shall be performed to ascertain the physical properties of the chemical prior to removal from the area.

- Any unlabeled container shall be removed from the area prior to re-occupancy.
- Usable chemicals shall be inventoried and returned to stock.

6.2 ART DEPARTMENT HAZARDOUS WASTE

Wastes from the Art Department consist of old paints, etching solutions, and used solvents. When containers are full, contact EH&S for pickup and transfer to the hazardous waste storage facility.

- Containers are available in the graphic and painting studio for collection of waste solvents.
- Old or unusable paints will be collected on an as-needed basis. Contact EH&S office for pickup arrangements.

6.3 FACILITIES MANAGEMENT AND RESIDENCE LIFE HAZARDOUS WASTE

Waste from Facilities Management (FM) or Residence Life (RL) may consist of old oil-based paints, used solvents, old or contaminated pesticides, contaminated oils, aerosol cans and several special and universal wastes.

- Old oil-based paints will be collected on an as-needed basis. When the containers are full, FM personnel shall contact EH&S directly for pickup.
- Old and contaminated pesticides will be collected and transferred to the hazardous waste storage room on an as-needed basis.
- In general, most oils used by FM (lubricants, engine oils, etc.) can be collected and taken to the used oil storage tank for recycling. Oils from transformers or other electrical equipment will need to be screened for PCBs. PCB containing oils will be transferred to the hazardous waste storage room. Oils contaminated with chlorinated solvents will need to be treated as a hazardous waste and transferred to the hazardous waste storage room.
- Special and universal wastes are discussed in Section 3.2

6.4 MISCELLANEOUS

On occasion, old or unused chemicals may need to be removed from classrooms, darkrooms, storage areas, etc. When containers of chemicals are found, employees should contact EH&S. EH&S will inspect the containers to determine the proper disposal procedures and arrange for removal.

7. TRAINING

7.1 FACULTY AND ACADEMIC STAFF

Faculty and academic staff responsible for generating hazardous waste or overseeing activities that generate hazardous waste will receive basic training on hazardous waste management. EH&S will schedule an annual training session for staff at the beginning of the academic year.

7.2 STUDENTS

Undergraduate students must receive training and information sufficient to ensure waste management protocol will not be violated in teaching laboratories. Information on proper experimental waste procedures should be provided as part of the student safety orientation. At the beginning of each experiment, students should also be reminded to use the designated waste collection container.

7.3 FACILITIES MANAGEMENT AND RESIDENCE LIFE STAFF

FM staff will receive periodic training regarding the proper collection, storage and pickup of hazardous wastes. Training will be included with annual refresher training provided to FM and RL personnel.

8. INSPECTIONS

8.1 ANNUAL WALKTHROUGHS

On an annual basis, EH&S staff will conduct walkthrough inspections of each department to verify compliance with the requirements of this program.

8.2 REPORTS

A report of findings from the annual inspection will be prepared and submitted to the Vice Chancellor of Administrative and Finance, the Dean of the appropriate collage, department chairs and the Director of Facilities Management.

9. EMERGENCY RESPONSE

9.1 SPILLS/RELEASE

In the event of a spill/release the following action steps shall be taken:

1. For large spills/release call 9-911 and evacuate the building
2. For smaller spills/release there are spill clean up kits that are strategically place in labs or departments for use in the area were the spill occurred. If a staff member has not been trained to clean up the spill they should call the EH&S office 3344 and ask for assistance

If the EH&S office can not be reached, call the Public Safety Office at 3133 and the appropriate help will be called.