



WESTERN CONNECTICUT STATE UNIVERSITY

HAZARDOUS WASTE MANAGEMENT PLAN

PROCEDURE E-114

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Please direct any questions or comments about the applicability of this document to Pano Koukopoulos, Director of Environmental & Facilities Services

Developed for WCSU by:

URS Corporation

1.0 PURPOSE

Western Connecticut State University (WCSU) is committed to operating its laboratories and classrooms in the safest manner possible, with concern for the individual and the protection of the environment in accordance with all applicable Federal and State statutes. This Hazardous Waste Management Plan, as outlined in the following sections, has been prepared to comply with applicable regulations promulgated by the United States Environmental Protection Agency (USEPA), the Connecticut Department of Environmental Protection (CTDEP), and local ordinances enacted by the City of Danbury.

2.0 APPLICATION

This program establishes the requirements that University faculty and staff must meet in order to appropriately manage the disposal of hazardous waste and excess chemicals in laboratories, classrooms, shops, and chemical use areas located at WCSU. This program describes the labeling and notification requirements; manifesting requirements; the general management of satellite accumulation areas (SAAs) (with additional information found in Procedure E-103) and hazardous waste storage areas; guidelines for disposal to the sanitary sewer; applicable emergency procedures and prevention and response requirements; and training and record keeping requirements.

WCSU's Midtown Campus is considered to be a Large Quantity Generator (LQG) under the Connecticut hazardous waste regulations for LQGs (see Section 3.0 for regulatory references). As such, the campus as a whole is allowed to generate, on a monthly basis, greater than:

- 2,200 pounds (1,000 kg) of non-acutely hazardous waste (D, F, K, or U waste codes);
- 2.2 pounds (1 kg) of acutely hazardous waste (P waste codes); and
- 220 pounds (100 kg) of acutely hazardous waste spill clean-up materials.

All waste generated on the Midtown Campus is managed and disposed of using the assigned USEPA identification number of CTR 000 502 617, and may be accumulated on-site for a maximum time period of 90 days. Non-contiguous properties, such as the Westside campus, are considered to be Conditionally Exempt Small Quantity Generators (CESQG) and therefore individual generation sites under the hazardous waste management regulations.

The guidance that follows applies to all research, teaching, and support functions within the institution that either produce hazardous waste as a product of their job

function or dispose of excess, old, or unknown hazardous chemicals found within the facilities owned or used by the institution.

Proper hazardous waste management practices are achieved with continual awareness of the regulatory requirements; frequent training for faculty, staff and students; and the use of best business practices. Each laboratory instructor or manager is responsible for ensuring that appropriate hazardous waste management practices are followed on a daily basis and that problems, issues, or concerns are communicated to the Director of Health and Public Safety Management.

3.0 AUTHORITY

Title 40 Code of Federal Regulations (CFR) 262

Regulations of Connecticut State Agencies, Section 22a-449(c)-102

4.0 GENERAL PROCEDURES

WCSU, and each of the individual laboratories, classrooms and chemical use areas located within the campus community, shall make every effort to maintain compliance with LQG standards (or CESQG standards, as appropriate for other non-contiguous properties). Any laboratory or work area generating hazardous waste must notify the Director of Health and Public Safety Management, designate an SAA, and conform to the requirements stipulated by the CTDEP for LQGs.

WCSU will remove all stored hazardous waste containers from the campus at least once during each 90-day period using a licensed contractor. All hazardous waste will be managed according to local, state, and federal law, and every effort will be made to reduce the potential long-term financial and legal liability to the institution. Furthermore, as an institution, WCSU will make every effort to reduce the quantity and/or toxicity of hazardous waste generated through chemical reuse, material substitution, process modification practices, or other pollution prevention activities where possible.

5.0 REQUIREMENTS WITHIN THE LABORATORY, CLASSROOM, OR CHEMICAL USE AREA

5.1 Waste Determinations

Under the Resource Conservation and Recovery Act (RCRA), all hazardous materials destined for disposal must be considered hazardous wastes unless determined otherwise. Persons properly trained in the regulatory definitions of hazardous wastes must make all waste determinations. When knowledge of the hazard characteristics is indeterminate or unknown, waste analysis is required. Once a waste determination is made, the waste is managed as hazardous waste or discarded as a non-hazardous waste, as appropriate. All

waste determinations must be maintained in writing for a minimum of three (3) years.

In order to conduct a waste determination, all potentially hazardous constituents and reaction products must be considered. When in doubt, disposing of a regulatory-agency-defined, non-hazardous material as a hazardous waste is preferable to possibly releasing a potentially toxic pollutant into the environment. In order to properly manage hazardous wastes, the generator must identify and inventory its waste streams, characterize these wastes, and then determine and track the waste generator status. This procedure is conducted by taking the following steps:

- **Identify and inventory the waste** – Identify all waste streams generated within the lab or facility. Examples include unused chemicals, process wastes, and discarded or spent solvents. Once waste streams are identified, determine the volume or quantity of wastes generated in a typical month.
- **Characterize the waste** – Determine if the chemical waste is an RCRA-listed waste or if it meets one of the RCRA characteristics of a hazardous waste. This can be done with the assistance of the hazardous waste transporter contractor. Hazardous waste may include chemicals and solutions with the following components or characteristics:
 - Heavy metals and their salts (toxic);
 - Sulfides, bisulfides, and cyanides (reactive);
 - Other toxic, reactive, or oxidizing inorganics (reactive or ignitable);
 - Organic compounds, except ethanol below 24% (toxic, ignitable, or corrosive); and/or
 - Gases not normally constituents of the earth's atmosphere and all flammable or oxidizing gases (toxic, reactive, ignitable, or corrosive).
- **Determine if a mixed chemical waste is hazardous or non-hazardous** – If a RCRA-listed hazardous waste is mixed with a non-hazardous waste, the resulting mixture will remain regulated as the listed waste regardless of quantity present in the mixture. If a characteristic hazardous waste is mixed with a non-hazardous waste, the resulting mixture will be regulated as hazardous only if the resulting mixture still exhibits the characteristic.

5.2 Unknown, Discarded, and Unneeded Chemicals

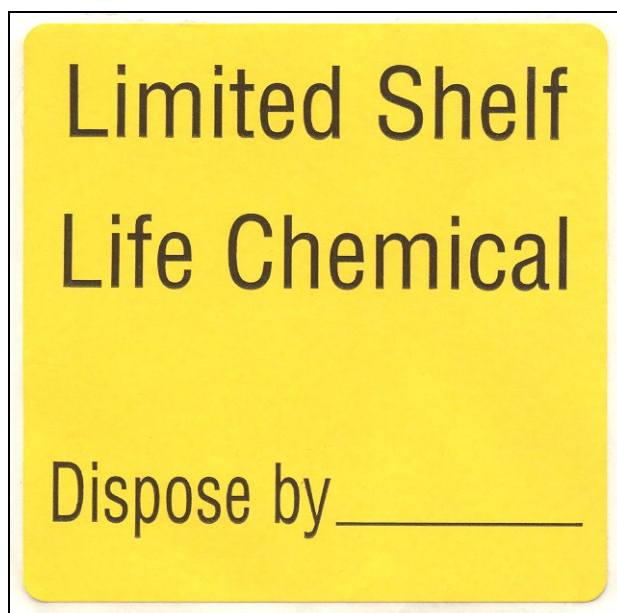
Unidentified substances present a major problem for both storage and disposal. These chemicals can be removed by a hazardous waste transporter, but their disposal is much more expensive than disposing of known hazardous materials. Therefore, proper labeling and identification are important. Unidentified chemicals may include those bottles without a label, containers labeled with only codes or generic process labels that do not specifically list the chemicals contained, and obviously mislabeled chemicals. Each of these chemicals must be “fingerprinted” by a licensed hazardous waste transporter for specific hazard classes before it may be removed from the premises.

Compounds that form peroxides such as ethers, dioxanes, tetrahydrofuran, etc., absorb and react with oxygen to form potentially explosive compounds with time. Exposure to air and light accelerates these formations. Therefore, if the unlabeled liquid is partially or fully evaporated and crystals are present (or the liquid has become unclear), label the container as “Possible peroxide” and handle as little as possible. These chemicals should be brought to the attention of the hazardous waste transporter before any pickup is made.

Chemicals such as picric acid and sodium metal can become unstable if allowed to dehydrate. Due to the potential for friction or shock-sensitive explosion with these chemicals, do not move or attempt to open these bottles if the container appears old, crystalline, or damaged in any way. These chemicals should be brought to the attention of the hazardous waste transporter before any pickup is made.

Discarded and unneeded chemicals often represent unnecessary waste due to chemical mismanagement. Removal of unwanted chemicals and frequent evaluation of stored chemical containers are necessary to maintain chemical storage areas in a safe operating condition. To properly manage chemicals on the WCSU campuses, the laboratory instructor or manager shall:

- Regularly conduct a thorough laboratory cleanup and properly dispose of all unknown, unwanted, and unneeded chemicals.
- Follow storage and labeling practices described in WCSU Procedures E-103 and S-101 to ensure that unknowns are not generated in the future. The University has implemented a limited shelf life chemical policy. All containers are labeled with expiration dates (see label, below).



- Keep chemical storage supply to a minimum, and review the annual inventory for unneeded chemicals in order to identify items that can be given to colleagues or placed into a re-use program before they have become useless or expired.
- Borrow and share small amounts of rarely used chemicals with neighboring laboratories. When purchase is necessary, order the minimum practicable quantity.

5.3 Containers, Compatibility, and Storage

Waste chemicals must be stored in containers that are chemically compatible with the contents. Incompatible wastes must not be mixed together, nor can they be placed in an unwashed container that contained an incompatible material. Acids cannot be mixed with bases, nor flammables with corrosive chemicals. Similarly, corrosives cannot be placed in metal containers, and hydrofluoric acid cannot be placed in glass containers.

Containers must be kept tightly closed when waste is not being added to or removed and must be stored in such a way that they will not rupture or leak. All containers must be appropriately and visibly labeled according to the guidelines in Section 5.4, below.

All wastes must be stored indoors on a firm working surface or have secondary containment to prevent the release of hazardous waste to the environment. Containers shall be stored in a manner such that, in the event of a release, the contents will not enter the sanitary sewer or stormwater drains.

All wastes must be placed in Department of Transportation (DOT)-approved shipping containers before shipment off-site.

5.4 Marking and /or Labeling Requirements

Each hazardous waste container must be properly marked or labeled. The marking or label must include the following information:

- The words “Hazardous Waste”;
- List of chemicals contained within the container and approximate percentages; and
- Hazards of the waste (i.e., flammable, combustible, toxic, acid, alkaline, halogenated solvent, or reactive).

Preprinted labels are available from the Office of Health, Safety, and Environmental Affairs (see label, below). Each SAA inspection binder also has a supply of labels. Fill in all applicable information, being sure to include all hazardous chemical constituents and the approximate concentration of each. Accumulation dates are added after the container is full.

<u>HAZARDOUS WASTE</u>	
CONTENTS: _____	
<u>HAZARDS</u>	
IGNITABLE _____	TOXIC _____
REACTIVE _____	CORROSIVE _____
Date container completely filled.	

5.5 Satellite Accumulation Areas (See Procedure E-103 for more information)

In each area that initially generates hazardous waste, a SAA shall be demarcated and labeled as a point of generation. This area is to contain accumulating hazardous wastes and hazardous materials that have been identified for disposal only. Each SAA must be located at or near the point of generation and under the control of the laboratory manager or faculty person directly responsible for the process generating the waste. SAAs may not contain accumulated hazardous wastes that are combined from several laboratory areas. Hazardous wastes may not be transported from one laboratory to another, such as in a common hallway, in an elevator, or in a

stairwell, except by authorized WCSU personnel trained in hazardous waste management procedures.

Only one container per waste stream (a maximum of 55 gallons for a hazardous waste or one quart for an acutely hazardous waste) is allowed in each SAA. When the container is full, the “fill date” must be completed on the label and the container must be removed from the SAA to the 90-day Central Hazardous Waste Storage Facility within 72 hours. Notification is made by calling the Director of Health and Public Safety Management. Containers must be stored by compatibilities on an impervious surface or in secondary containment to prevent access of spilled waste to the sanitary sewer.

Although not required by Federal or State of Connecticut hazardous waste regulations, as a best business practice, SAAs will be inspected on a monthly basis. Inspections will be conducted to ensure that hazardous waste is being accumulated in a manner consistent with applicable regulations. Inspections will be logged in a binder located at each SAA, and records will be maintained for a minimum of three years.

5.6 Accumulation Limits

Maximum Amount of Waste Stored in Satellite Accumulation Area	Allowable Amount of Waste Generated on Campus in Calendar Month	Amount of Waste Stored in Central Hazardous Waste Storage Facility
<ul style="list-style-type: none"> • One container per waste stream. • 55 gallons of non-acute hazardous waste. • 1 quart of acutely hazardous waste. • Removed from the SAA within 72 hours of filling the container. 	No quantity limit.	No quantity limit. Waste must be shipped off-site within 90-days of the “fill date” (i.e., the start date, when marked “full” at the SAA).

A waste container must be removed from the Central Hazardous Waste Storage Facility within 90 days of the accumulation start date for all hazardous wastes. All containers within the Central Hazardous Waste Storage Facility must be inspected weekly.

Containers used for accumulation of hazardous wastes in SAAs must be removed at least once a year to prevent problems caused by container deterioration and to prevent excess accumulation of hazardous wastes. July 1st

has been designated as the date that all wastes will be removed from every SAA.

5.7 Disposal to the Sewer System

The majority of chemical substances will be disposed of by transferring them to a company licensed to operate a treatment/storage/disposal facility (TSDF). Chemical substances cannot be flushed down the drain without issuance of a wastewater discharge permit. Wastewater discharge permits are issued by the CTDEP, which authorizes discharge to a publicly owned wastewater treatment plant (a.k.a. "POTW") through the sanitary sewer system.

As previously stated, all wastes must be characterized to determine if they are considered a hazardous waste. In no instance may a hazardous waste be discharged to the sanitary sewer. If discharge of a nonhazardous waste stream is desired (e.g., a rinsate or salt solution), prior approval must be obtained from the Director of Health and Public Safety Management. It should also be noted that chemical wastes cannot be dumped in stormwater catch basins or floor drains.

5.8 Illegal Treatment or Disposal

In general, the treatment of hazardous wastes is illegal without a permit from the CTDEP. Adding additional steps to the end of an experiment for the sole purpose of reducing the volume or toxicity of a hazardous waste is considered to be a method of treatment and is illegal under Connecticut hazardous waste rules. This includes the neutralization of acids or bases.

5.9 Training for Faculty and Staff

All WCSU faculty and staff who generate or handle hazardous wastes will be trained in this Hazardous Waste Management Plan, the requirements of the state and federal laws, and the management of their SAAs. A review of the initial training shall be repeated on an annual basis.

Written documentation of each training session, including a signature and date of the person trained, will be maintained for a minimum of three (3) years.

5.10 Laboratory Renovations, Modifications and Academic Restructuring

From time to time, the use of a particular laboratory at WCSU is modified to meet the needs of new faculty members, an expanding department, or academic curriculum. Similarly, as emeritus faculty members leave the University, their research spaces are reallocated to new department members. Invariably, chemicals and equipment are left behind or no longer needed and must be addressed. Before renovations can commence, it is imperative that

each laboratory is thoroughly inspected and excess chemicals and hazardous waste are removed from the area. Neutralizing all surfaces and thoroughly washing all surfaces with soap and water should decontaminate the room's surfaces and storage areas. All excess chemicals and hazardous wastes shall be managed according to the requirements of this plan and the laboratory reassigned to the new faculty member in the best possible condition. This process is the responsibility of the Department Chair and/or the Academic Dean.

6.0 CENTRAL HAZARDOUS WASTE STORAGE FACILITY AND DISPOSAL/ MANIFESTING REQUIREMENTS

6.1 Central Hazardous Waste Storage Facility Requirements

All containers of hazardous waste and unneeded hazardous materials shall be stored on an impervious surface. Outdoor storage areas must be provided with secondary containment that can contain 10% of the total volume in storage or 110% of the largest container, whichever is greater. Indoor storage areas must be provided with secondary containment that can contain 10% of the total volume in storage or 100% of the largest container, whichever is greater.

The Central Hazardous Waste Storage Facility shall be clearly marked with the words, "Hazardous Waste", maintained separate from all other areas, and secured under lock and key. Access to the Facility is restricted to authorized personnel only.

Each container or drum located in the Central Hazardous Waste Storage Facility shall be marked or labeled with the words "Hazardous Waste", list the start fill date (the day the container became full in the SAA) and the contents of the container in accordance with Section 5.4.

When ignitable or reactive wastes are being handled, smoking and open flames will not be allowed. "No Smoking" signs are posted around the working area. All potential sources of ignition or reaction will be removed or addressed before work with ignitable or reactive wastes commences. Grounding connections will be used when transferring flammable liquids from one container to another.

6.2 Disposal and Manifesting

6.2.1 Disposal of Hazardous Wastes

Since wastes need to be removed from an LQG site before the "90-day" accumulation periods are reached, hazardous waste pickups at WCSU will be conducted before the end of each 90-day accumulation

period and will be managed by a licensed hazardous waste transporter. Where possible, WCSU will allow the licensed contractor to recycle hazardous wastes and materials (e.g., mercury), allow for fuel blending opportunities, or allow elementary neutralization of simple corrosives (i.e., acids and bases) where no other hazard exists. All other hazardous wastes will be transported to a licensed hazardous waste TSDF for recycling, incineration, or chemical treatment before landfill disposal. At no time will hazardous wastes generated on the WCSU campuses be shipped to foreign countries for disposal.

6.2.2 Shipping Manifests

WCSU representatives shall ensure that the USEPA-required eight-part uniform hazardous waste manifest is properly completed. The generation and destination state copies (copies 6 and 7) must be transmitted to the CTDEP and the destination state within seven days of the day the shipment begins, per RCSA 22a-449(c)-102(b)(3)(B). The generator copy (copy 3) must be transmitted to the generator within 35 days of the facility acceptance, and the generation and destination state copies (copies 1 and 2) must be transmitted by the receiving facility to the CTDEP and the destination state within 14 days of facility acceptance. All copies received by WCSU from the hazardous waste transporter over the 35-day period will be maintained together in a readily accessible location. If WCSU has not received copy 3 from the receiving facility within 35 days of shipment, they are to contact the receiving facility to reconcile the disposition of the shipment. If copy 3 has not been received with 45 days of shipment, an Exception Report must be submitted by WCSU to the CTDEP and USEPA.

The hazardous waste transporter shall provide WCSU with the USEPA-required two-part manifest for wastes that are reclaimed or recycled according to the contractual agreement. All copies received by WCSU from the hazardous waste transporter will be maintained together.

The transporter shall also provide WCSU with a shipping form for waste oils. The generator copy must be transmitted to the generator within 35 days of the facility acceptance. All copies of the manifest received by WCSU from the hazardous waste transporter over the 35-day period will be maintained together in a readily accessible location.

Manifests and accompanying documents must be retained for at least three (3) years.

6.2.3 Facility Personnel Training

There shall be at least two employees of WCSU who receive DOT Hazardous Materials training, in addition to hazardous waste handler training (see below), to ensure that hazardous waste manifests are completed properly. Only those individuals who have been trained are to sign hazardous waste manifests on behalf of the institution. This training must be re-taken every two years.

Copies of the training and training certificates will be retained for a period of three (3) years.

6.2.4 LQG Hazardous Waste Handler Training

The USEPA and CTDEP requires that persons handling hazardous waste at LQG sites be trained to ensure that they are thoroughly familiar with proper handling and emergency response procedures relevant to their responsibilities.

Responsibilities may include any, or all, of the following:

- Hazardous waste determinations;
- Container compatibility, handling, and storage management;
- Container inspections;
- Verifying accumulation limits;
- Labeling;
- Disposal and manifesting; and/or
- Spill response.

Training should be conducted at the time of initial assignment to duties which require handling waste or chemicals that may become waste.

7.0 EMERGENCY RESPONSE EQUIPMENT AND PROCEDURES

All faculty and staff are required to be trained in appropriate emergency procedures under both CTDEP and Occupational Safety and Health Administration (OSHA) regulations. Emergency evacuation plans, fire extinguishers, spill control equipment, and the training to use them are all part of responsible waste management.

Emergency phone numbers, including the number of the local fire department and emergency response person, are posted near each telephone. The locations of fire

extinguishers, alarm systems (if present), and spill control equipment should also be posted and clearly marked.

Each LQG site must have an Emergency Coordinator (EC) capable of responding to emergencies within a short period of time. The EC must call the fire department in the event of a significant fire, ensure that the flow of hazardous materials is contained in the event of a release, and ensure that any contaminated materials or soils are removed. All ECs are required to respond to an emergency and interface with external emergency response agencies.