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UNC CHARLOTTE

Environmental Health and Safety

WASTE MINIMIZATION PLAN

UNC CHARLOTTE
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I. Purpose

The purpose of this program is to comply with 40 CFR 262.27(a) as adopted in 15A NCAC 13A .0107 by the North Carolina Department of Environmental Quality (NCDEQ).

A generator who initiates a shipment of hazardous waste must certify to the following statements in Item 15 of the uniform hazardous waste manifest:

“I am a large quantity generator. I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment.”

North Carolina (NC) General Statute 130A-309.14 states that the recycling of aluminum, newspaper, sorted office paper, recycled glass and plastic bottles is required by Public Agencies. In addition, NC General Statute 130A-310.60 requires the management of certain products that contain mercury including: fluorescent lights and thermostats.

II. Scope

This program is applicable to facilities that are Large Quantity Generators (LQG) of Hazardous Waste. The University of North Carolina at Charlotte (UNCC) meets this definition. In addition to hazardous waste, this document covers the minimization of waste across all activities on the UNCC campus and is comprised of the following groups: Environmental Health and Safety (EHS), the UNCC Recycling Group and the UNCC Sustainability Office.

Under UNCC PIM 51, the University authorizes the EHS Office to develop and implement a waste minimization program to promote waste minimization and environmental sustainability.

III. Responsibilities:

Executive Leadership: The University of North Carolina at Charlotte has the responsibility to ensure compliance with the Occupational Safety and Health Administration (OSHA) compliance regulations.

Program Administrator: The Office of Environmental Health and Safety shall administer this program and assist departments with implementation.

Departmental Management: The department shall supply appropriate equipment, training, and enforcement of environmental, health and safety regulatory compliance programs.

Employee: The employees shall adhere to all environmental, health, and safety requirements while performing his/her job duties.

IV. Hazardous Waste Characterization

The EHS Office performs waste characterization and coordinates transport, storage and disposal activities for all regulated wastes generated at UNC Charlotte under the EPA large quantity generator designation.

There are five general categories of hazardous waste generated at UNCC:

1. Waste solvents
2. Discarded commercial chemical products
3. Spent chemical wastes
4. Pharmaceutical waste
5. Universal Waste (a subset of hazardous waste).

A. Hazardous Waste Breakdown

Approximately 80 percent of the waste generated at the University falls under one of six EPA waste codes:

1. D001 (ignitable),
2. D002 (corrosive),
3. F002 (spent halogenated solvents),
4. F003 (ignitable spent non- halogenated solvents),
5. F005 (ignitable and toxic spent non-halogenated solvents)
6. D022 (toxicity characteristic for chloroform).

The remaining 20 percent of the hazardous waste includes toxic characteristic waste and discarded commercial chemical products.

B. Pharmaceutical waste

The UNCC Student Health Center (SHC) operates a pharmacy for student health needs. The SHC pharmacy is subject to 40 CFR 266 Subpart P, which includes a prohibition on placing hazardous pharmaceuticals into the sewer system. The SHC complies with these regulations through a reverse distribution agreement that sends expired pharmaceuticals back to the manufacturer for processing.

FDA-approved over-the-counter nicotine replacement therapies (i.e. patches, gums and lozenges) are exempt from regulation as a RCRA hazardous waste and may be discarded as non-hazardous waste.

C. Universal Waste

The UNCC Facilities Management Recycling Group (UNCC Recycling Group) coordinates the collection and storage of Universal Waste prior to off-site shipment for recycling.

Currently, federal regulations allow the following hazardous wastes to be managed as universal waste: batteries, mercury containing equipment, pesticides recalled under FIFRA or collected in a waste pesticide collection program, lamps containing mercury and aerosol cans. North Carolina adopted the federal universal waste provisions (40 CFR 273) by incorporating them by reference at 15ANCAC13A .0119.

The Recycling Group also collects and recycles common recyclables (or municipal waste) including: multiple types of paper, cardboard, plastic bottles and containers, aluminum and tin cans and styrofoam.

According to the UNCC Recycling Group, there are an estimated 1,000 bins throughout campus (including the student dorm common areas) for collection of these items. Paint (latex, oil based and aerosol paint cans), electronic items (e-waste), used oil, antifreeze, refrigerants and lighting ballasts (some containing PCBs) are also collected for recycling.

v. Waste Minimization Efforts

The UNCC Recycling Group utilizes email messaging, face to face and virtual meetings and training sessions, as well as social media (e.g. for common item recycling including: paper, glass, plastic bottles and aluminum cans) with campus stakeholders to encourage recycling and reuse.

EHS has an active, ongoing program for the reuse and recycling of unused chemicals within University laboratories and facilities. Each quarter, hazardous waste removal requests are received by the EHS Office, and are evaluated to determine if the wastes can be reused by other departments on campus. When unused reagents are in a condition that is satisfactory for reuse, the EHS Office requests that the Department first attempt to redistribute the unused chemicals to others in the same Department prior to these materials being collected as Hazardous Waste. EHS can also evaluate to determine if these materials can be utilized in other Departments. This practice saves on the cost of purchasing new chemicals as well as the cost of disposing of the unused "hazardous waste" material. Additionally, University operational areas are directed to the University's Inventory Control Surplus Property Department to determine if unused commercial products can be auctioned off to other state entities.

The following control practices are used, when feasible, to limit the quantity of waste generated on campus:

1. Chemical substitution/reduction,
2. Inventory control,
3. Good housekeeping, and
4. Off-site recycling.

A. Chemical Substitution

Chemical substitution is the process of replacing a potentially harmful chemical with one that poses less risk to human health and the environment.

The chart below details some options for the substitution of a hazardous chemical or product with a less hazardous alternative:

Chemical	Substitute	Use
Ethidium Bromide	SYBR Safe or Crystal Violet	Gel electrophoresis
Fluorescent Mercury Bulbs (Silver)	Green Tip or LED Bulbs	Lighting
Formaldehyde	Ethanol	Specimen Storage
Halogenated Solvents	Non-Halogenated Solvents	Extractions
Mercury Thermometers	Alcohol (red liquid), Digital	Temperature Readings
Oil Based Paints	Latex Paint	Painting Operations
Organic Solvent Based Inks	Water Based Inks	Oil Painting
Photographic Chemical Developing	Digital Photography	Photographic Film Developing
Solvents (General)	Detergent and Hot water	Parts / Labware cleaner
Staining / Processing solvents (benzene, xylene, toluene)	Citric Acid Based products	Staining, processing, removing alkanes in lab procedures
Toluene based scintillation fluid	Non-ignitable scintillation fluid	Radioactive Samples analysis

B. Practice Inventory Control

Generators are encouraged to audit their chemical supplies periodically and utilize inventory control to purchase only the quantity of material required / needed for specific projects or tasks. During laboratory cleanouts and building renovations, intradepartmental material exchanges are encouraged.

C. Housekeeping

Good housekeeping is essential the prevention of hazardous waste spills and releases. Effective housekeeping also helps to reduce the chance of misplacing items, storing items beyond their use date and limiting contamination of product. Waste generators are instructed not to mix incompatible waste, to properly segregate waste by type and to properly label wastes as to their constituents. Where feasible, secondary containment is used to minimize the potential for breakage and to minimize the consequences in the event of breakage.

D. Off-Site Recycling

In addition to common recyclables, the UNCC Recycling Group collects the following items from various operations around campus for off-site recycling:

- Alkaline, Nickel Cadmium (NiCad), Lead-Acid and Nickel Metal Hydride (NiMH), Lithium and Lithium Polymer (LiPo) batteries,
- Lamps containing mercury including: fluorescent, compact fluorescent (CFL), high intensity discharge (HID) and various halogen types,
- Mercury containing devices (e.g. thermometers and thermostats) are collected and sent to a third-party recycler whenever possible,
- Electrical ballasts (those containing poly-chlorinated biphenyls (PCBs) and those that are PCB free) are recycled whenever possible, based upon contents and condition,
- Used oil, refrigerant, antifreeze and parts washer fluid is collected and recycled, and
- Electronic waste
- Environmental Enterprises, Inc. (EEI) the waste vendor for UNCC hazardous waste disposal reused/recycled/reclaimed 7.7% of the total UNCC hazardous waste in 2018-2019.

VI. UNCC Sustainability

UNCC has a Sustainability Office managed by the UNCC Sustainability Officer, Dr. Michael Lizotte. The UNCC Sustainability program includes the Chancellor's Sustainability Executive Committee (chaired by Dr. Lizotte) which includes members from EHS and Facilities Management - Building Environmental Services and Recycling. UNCC is a member of the Association for the Advancement of Sustainability in Higher Education (AASHE). UNCC is also listed in the Princeton Review Green Colleges "2021 Guide to Green Schools," for outstanding sustainability efforts.

The three current UNCC Sustainability Office initiatives (designed to comply with the University of North Carolina Sustainability Policy) are:

1. Zero Waste Initiative, which focuses on improvements for public waste collection including: composting, recyclables, construction waste, etc.
2. Responsible Purchasing, and
3. Transportation Plan.

More details on the UNCC Sustainability Program can be found here: [UNCC Sustainability Website](#).