

Section B - 2

UNO HAZARDOUS WASTE CLASSIFICATION AND STORAGE

A. Who Determines a Hazardous Waste and Its Classification?

EHS is responsible for recommending policies and procedures which enables the University to operate in a legal and responsible manner with regard to the management of its hazardous waste. It is the day-to-day responsibility of EHS to make hazardous waste determinations, or recommend which products can be reused or recycled on campus. A product may be a solid waste if it is discarded and then a determination is made that it is hazardous. Hazardous waste must be handled in a manner that is consistent with EPA RCRA regulations.

The EPA requires UNO to ship its hazardous waste to a permitted off-site treatment, storage or disposal facility (TSDF) within 180 days of generation. This is based on the fact that UNO is classified as a "Small Quantity Generator" by the EPA (See Table 1). A Small Quantity Generator is a facility which generates in a calendar month a total quantity of hazardous waste greater than 100 kilograms (220 lbs.) and less than 1000 kg (2200 lb) , and less than 1 kilogram (2.2 lbs.) of acutely hazardous (P-listed) waste. During this 180 day period, it is required that UNO comply with labeling and marking requirements, storage standards for tanks and drums, safety and spill-response measures, and a paperwork tracking system. This paperwork includes manifests, land-ban notifications, records of inspections and spills, and periodic reports to EPA on waste generation and shipments. Additionally, small quantity generators must have an emergency (contingency) plan for emergency situations.

The compliance status of the UNO campus depends on the cooperation of all individuals engaged in any hazardous material activity on campus.

B. Management of Laboratory Waste by the Authorized User

1. Chemical Collection Tags

Chemical Collection Tags are to be used for all chemical pickups. When chemicals have not been previously identified by EHS as not requiring a tag, a Chemical Collection Tag must be completed prior to pickup.

Please request chemical collection tags from EHS by calling extension 4-3921. Complete one tag for each container that you have ready for collection. Each tag is stamped with a unique number to track the container through collection and subsequent off-site disposal. Complete the tag with the following information as requested.

a. Requester

Fill in the name of the Professor or lab manager in charge of your lab.

b. Department

Fill in the Department name (i.e., Chemistry)

c. Building Name and Room Number

Fill in the name of your building and room number where the chemical will be stored until collection by EHS. This should be the area where the chemical was used or stored before deciding it was no longer wanted. Do not move the chemical to another storage area. Do not provide office or mailing addresses on the tag.

d. Phone

Fill in your phone number, or the phone number of a person who is familiar with the chemical, in case EHS needs to call for more information.

e. Date

Fill in the date that you are filling out the tag and sending it to EHS.

f. Chemical(s) (Percent by Weight)

List the name of the chemical(s) to be collected. Do not abbreviate chemical names or list empirical formulas, as these tags cannot be processed by the EHS.

For products, include the ingredients that are listed on the label. (Example: Lime Green Paint - contains petroleum distillates, sodium silicate and mercury). Include the concentration of each ingredient as listed on the label.

For mixtures of chemicals in the container, list the approximate percentage by weight or concentration of each constituent in the container. Every chemical in the container, including water, must be identified on the tag. Common ways of indicating concentration include percent of total, parts per million (ppm), and molarity/normality. This information is required so that the EHS may arrange for proper disposal or recycling, and to avoid unnecessary and costly analytical tests. Please refer to the following examples:

- Solvents:

Acetone 35%, Toluene 20%, Acetonitrile 5%, Chloroform 10%, Xylene 15%, Methylene chloride 10%, Water 5%

- Solvents with Pesticides:

Formaldehyde 20%, Xylene 45%, Hexane 5%, Water 10%, Ethyl Alcohol 20%, Malathion < 500 ppm

- Acid with Metals:

Nitric Acid 60%, Water 40%, Mercury 100 ppm, Cadmium 200 ppm, Lead < 50 ppm, Zinc < 20 ppm, Selenium < 20 ppm, Thallium < 20 ppm

Double check to ensure that the percentages total 100%.

For chemicals that are created as a result of research, keep the following records in your files:

- 1) procedures used to develop the new chemical;
- 2) chemical formula and structure; and
- 3) hazardous characteristics of the new chemical (i.e., ignitability, toxicity, corrosivity or reactivity, as defined by 40 CFR Part 261 Subpart C).

These records must be kept indefinitely so that, in the event the chemical is designated as unneeded, the information can be attached to the collection tag.

If there is not enough room to write all of the chemical information on the tag, provide the addition information on a separate piece of paper and attach a copy to the tag.

g. Used, Unused, Unopened

Check the box that applies according to the following definitions: "**Used**" means the chemical(s) was used in a process, and some chemicals remain in the container; "**Unused**" means that the container was opened but not all of the chemical was used. A **Unopened** means the container has never been opened. This information is important so that EHS can properly designate the material for disposal or recycling.

h. Solid, Liquid, Gas

Mark the box(es) that best describes the chemical. (Example: Mark "solid" and "liquid" for solutions with precipitate or sludge in the bottom.)

i. Pint, Gallon, 5-Gallon, 30-Gallon, 55-Gallon

Check the box that is closest to the size of container your chemical is stored in.

j. Amount

Estimate to the nearest quarter pound the amount of material you have (i.e., 8.25 lbs).

k. Container Type: Glass, Metal, Plastic

Check the box that applies to the container that your chemical is stored in.

STOP! Do not mark on the back of the tag. EHS will complete this area with the required regulatory information.

Each container must have a separate, completed tag.

- Securely attach the tag to the container;
- Separate incompatible chemicals;
- Mail the lower half of the tag to EHS at the address on the tag.

For laboratory clean-outs or a large number of tags, EHS may require advanced notice.

EHS will collect the chemicals from your area. Contact EHS if the chemicals have not been collected within 5 working days.

See Example: [Figure 5 Sample Chemical Collection Tag](#)

2. Storage

Containers of used/excess chemicals awaiting pickup by EHS must be stored in a manner which minimizes potential risks. The following sections outline prudent practices for temporary waste storage, regardless of whether it is regulated by the EPA.

a. Protection from the Elements

Waste containers should always be stored in an area or facility where the containers are protected from adverse weather. Extremes in temperature can cause pressure buildup in containers with volatile liquid contents. Alternate heating and cooling may cause containers to breathe if they are not tightly sealed. If waste is left standing on the container, it can be drawn into the container during a cooling cycle, resulting in container corrosion or internal chemical reactions.

b. Primary Containment (Chemical Collection Containers)

Waste should be put into containers that are adequate to contain the waste through the storage period. The hazardous material user must utilize a chemical collection container made of or lined with materials which will not react with, and are otherwise compatible with, the chemical waste to be stored, so that the ability of the chemical collection container to contain the waste is not impaired.

A Chemical Collection Container (CCC) holding chemical waste must always be closed during storage, except when it is necessary to add or remove waste.

A CCC holding chemical waste must not be opened, handled, or stored in a manner which may rupture the container or cause it to leak.

c. Secondary Containment

It is required to use secondary containment under primary containment to catch potential leaks or spills from hazardous waste. The base must be impervious to the waste being stored. Total capacity of the containment should be at least 10% of the total volume stored or equal to that of the largest container, whichever is greater. Any material collected in a secondary containment area must be identified before being removed for disposal. Sometimes this identification is obvious, as in the case of rupture of a labeled container; in other cases it may be necessary to perform a chemical analysis.

d. Container Labeling

In general, the requirements for labeling chemicals are divided into two categories: Nebraska Department of Labor (NDL) requirements and EPA requirements. NDL requirements pertain to virgin chemicals that are in use or will be used. EPA requirements pertain to materials that are hazardous waste.

1) NDOL Requirements

Ensure that each container of hazardous chemicals in the workplace is labeled, tagged or marked with the following information:

- Identity of the hazardous chemical(s) contained therein; and
- Appropriate hazard warnings.

You may use signs, placards, process sheets, batch tickets, operating procedures, or other such written materials in lieu of affixing labels to individual stationary process containers, as long as the alternative method identifies the containers to which it is applicable and conveys the information required above. The written materials shall be readily accessible to the employees in their work area throughout each work shift.

You are not required to label portable containers into which hazardous chemicals are transferred from labeled containers, and which are intended only for the immediate use of the employee who performs the transfer.

Do not remove or deface existing labels on incoming containers of hazardous chemicals, unless the container is immediately marked with the required information.

2) EPA Requirements

The EPA requires each container be labeled with words (not abbreviations or acronyms) that identify the contents of the containers. Pre-printed container labels are available from several vendors.

NOTE: A Chemical Collection Tag must still be used for disposal.

e. Segregation of Wastes (Incompatibility)

Segregation of incompatible materials in a storage area is essential. It is particularly important to segregate ignitable from oxidizers or sources of ignition. Other types of incompatibles should never be put in the same container; segregation of their containers is also necessary.

f. Flammable Storage

Up to 4 liters of flammable liquids may be stored on open shelves. Quantities between 4 and 40 liters should be stored in a safety can or flammable liquids safety cabinet. Flammable liquids in excess of 40 liters should be in a flammable liquids safety cabinet. (Note: Some newer fume hoods are designed with flammable storage cabinets under them. If designed for the purpose of storing flammable liquids, they are acceptable in lieu of a flammable safety cabinet).

Use only flammable material refrigerators and freezers for the storage of flammable liquids requiring refrigeration.

For questions concerning fire safety, contact EHS.

g. Inspections

An area used for storage of containers of EPA-regulated waste must be inspected at least weekly. Even if a waste storage area does not contain EPA-regulated waste, periodic inspection is recommended. Containers should be inspected for leaks, corrosion, proper closure, labels, and

segregation. Safety and emergency equipment should be inspected for general condition and expiration of re-service dates. Secondary containment should also be checked. Any problems noted in an inspection must be reported promptly to EHS and corrected immediately.

3. Terminations

A laboratory using hazardous materials can request a laboratory close-out by having the A.U. or laboratory supervisor write to EHS at least 30 days prior to vacating the premises. EHS will assist in determining the proper chemical disposal, but it is the Authorized User's responsibility to ensure that all hazardous material has been removed.

It is important that the laboratory be able to identify all chemicals prior to removal. The disposal of unknown (unlabeled) chemicals is extremely expensive. Waste disposal firms will not accept unknown chemicals. Therefore extensive chemical analysis must be performed to identify the chemical constituents.

Problems have arisen when an employee separates from the University without tagging the chemicals. There have been instances when an entire laboratory has been left with hundreds of untagged and many, unknown chemicals. These "unknowns" include chemicals labeled with coding only known to the user. When chemicals are left untagged, EHS must tag each chemical, and if unknowns are present, send the chemicals for analysis to an outside laboratory.

Additionally, employees have separated without turning in keys to the laboratory or storage area so a locksmith is required.

Unless an employee separates from the University due to a health problem, the employee generally knows the separation date at least three months prior to leaving. With proper time management, this is adequate time for the employee to tag the chemicals and identify the contents. Of course, there may be a few chemicals that are used possibly to the last week. However, if most of the chemicals have been tagged before the last week of separation, tagging the remaining chemicals should not be burdensome.

All costs associated with non-compliance (e.g., chemical analysis for unknowns, locksmiths and EHS expenses) will be charged to the department responsible for the chemicals.

C. Management of Laboratory Waste by Environmental Health & Safety

1. EHS collects waste from individual laboratory areas. Certain wastes are taken to Waste Accumulation Areas (WAA) and segregated by waste profiles for shipment off-site. Wastes are either lab-packed or bulked into DOT-approved containers. Others are recycled, reclaimed or reused.

EHS must ensure compliance with RCRA regulations (same requirements as authorized user) concerning:

- a. primary containment
- b. secondary containment

- c. segregation (compatibility)
- d. fire protection
- e. inspections
- f. labeling/posting

2. Each EPA-approved TSDF which receives UNO waste must have a chemical profile of that waste. A chemical profile enables the TSDF to comply with the requirements of its EPA permit. For example, not all classifications of hazardous wastes may be accepted by a TSDF. They may be restricted from treating certain waste classifications and the waste profile will identify these discrepancies.

The waste profile is usually based on a chemical analysis of a sample of that waste stream. Information normally indicated on a waste profile includes:

- a. listed and characteristic waste code numbers
- b. free liquid range
- c. total suspended solids
- d. total dissolved solids
- e. viscosity
- f. pH range
- g. liquid flash point
- h. chemical constituents and concentrations

A flow chart of hazardous waste management at UNO is included in Figure 7.

Table 1

RCRA REGULATED GENERATOR CLASSIFICATIONS

CLASSIFICATION	ON-SITE ACCUMULATION	CONDITIONS
Conditionally Exempt Small Quantity Generator (CESQG) 40 CFR 261.5	<ul style="list-style-type: none"> • 100 Kg (220 lb) Hazardous Waste/Month • 1 Kg (2.2 lb) "Acute" Hazardous Waste/Month • 100 Kg (220 lb) "Acute" Hazardous Waste + Soil, Water Debris from Spill Cleanup 	<ul style="list-style-type: none"> • No Accumulation Time Limit • No more than 1000 Kg (2200 lb) of Hazardous Waste on-site at any one time
Small Quantity Generator (SQG) 40 CFR 262.34	<ul style="list-style-type: none"> • > 100 and < 1000 Kg (220 lb - 2200 lb) Hazardous 	<ul style="list-style-type: none"> • 180 Day Accumulation Time

	<p>Waste/Month</p> <ul style="list-style-type: none"> • 1 Kg (2.2 lb) "Acute" Hazardous Waste/Month • 100 Kg (220 lb) "Acute" Hazardous Waste + Soil, Water Debris from Spill Cleanup 	<p>Limit (270 days if disposal site over 200 miles)</p> <ul style="list-style-type: none"> • No more than 6000 Kg (13,200 lb) Hazardous Waste on-site at any one time
<p>Large Quantity Generator (LQG) 40 CFR 262.34</p>	<ul style="list-style-type: none"> • >1000 Kg (2200 lbs) Hazardous Waste/month • > 1 Kg (2.2 lbs) "Acute" Hazardous Waste + Soil, Water Debris from Spill Cleanup 	<ul style="list-style-type: none"> • 90 day (maximum) Accumulation Time Limit • No maximum volume on site

Sample Chemical Collection Tag

Front

(Attach Top Portion of tag to Container)

No. 12345

CHEMICAL COLLECTION TAG

REQUESTER: Dr. John Smith
 DEPARTMENT: Chemistry
 PHONE: 4-2345
 CHEMICAL(S): _____
Used Solvents: Acetone 35%, Toluene 20%,
Acetonitrile 5%, Chloroform 10%, Water 5%

(Mail Lower Portion Of Tag To:
 Environmental Health & Safety
 E&S Room 100)

No. 12345

CHEMICAL COLLECTION TAG

REQUESTER: Dr. John Smith
 BLDG. NAME & ROOM NO.: DSC Room 318
 DEPARTMENT: Chemistry
 PHONE: 4-2345
 CHEMICAL(S): _____
Used Solvents: Acetone 35%, Toluene 20%,
Acetonitrile 5%, Chloroform 10%, Water 5%

☒ USED ☐ UNUSED ☐ UNOPENED
☒ LIQUID ☐ GAS ☐ SOLID ☐ OTHER
☐ Pint ☒ Gallon ☐ 5-Gallon ☐ 30-Gallon
☐ 55-Gallon
☐ Other Amount 8 (lbs.)
☒ Glass ☐ Metal ☐ Plastic ☐ Other _____

Back

No. 12345

HAZARD/LOCATION (To be filled out by EHS)

Location _____
 EPA # _____
 REMARKS _____

HAZARDOUS WASTE ☐ Yes ☐ No

Date _____

To be filled out by EHS

CONTAINER TYPE: ☐ ORIG ☐ NON-ORIG

HAZARD/LOCATION
☐ Flammable liquid ☐ Explosive ☐ Oxidizer
☐ Flammable Solid ☐ Acid ☐ Base ☐ Poison
☐ Other _____

EPA # _____
 Remarks: _____

FIGURE 6

Proper Chemical Collection Container Storage

Compatible Materials

Keep closed except
when adding waste

Good Condition

Proper Labeling

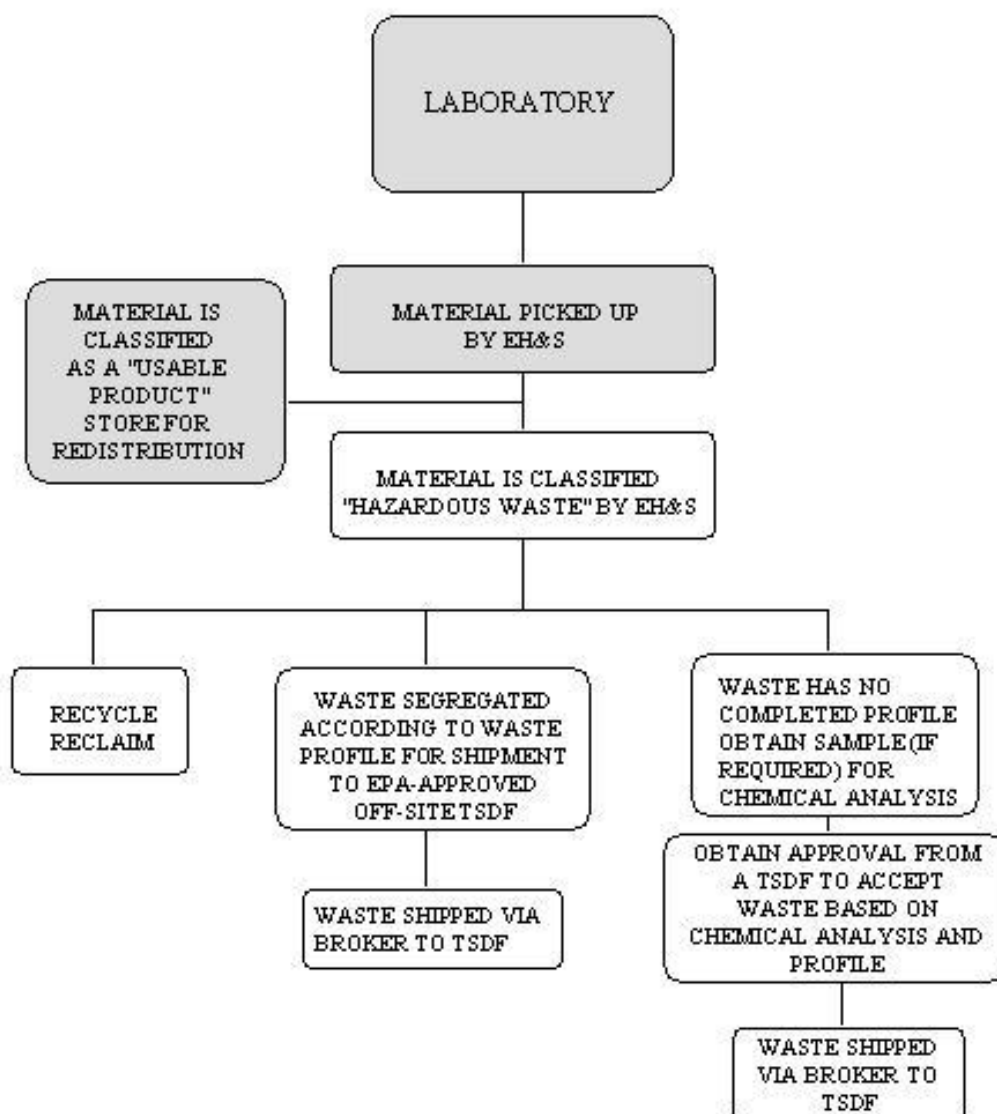
<u>Chemical</u>	<u>% by Weight</u>
Acetonitrile	60%
Methanol	10%
Water	30%

SECONDARY CONTAINMENT

Total capacity of the containment must be at least 10% of the total volume stored or equal to that of the largest container, whichever is greater.

FIGURE 7

Hazardous Waste Management Flow Chart



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