



Chemical Waste Management Practices

1.0 Purpose / Background

Duke University, Duke University Medical Center, and Duke University Health System produce a variety of waste chemicals that may be subject to regulatory management standards and, if improperly managed in the department, could pose a safety risk to Duke Personnel and the environment.

2.0 Scope

This practice applies to all departments at Duke University, Duke University Medical Center, and Duke University Health System.

3.0 Procedures

Any department that generates waste chemicals must be familiar with the Duke University/Medical Center [Chemical Waste Policy](#) prior to producing chemical wastes and must register with the Occupational and Environment Safety Office prior to requesting a waste pickup. Procedures to obtain a generator's ID can be found at <https://www.safety.duke.edu/environmental-programs/hazardous-waste/chemical-waste>. Waste chemicals generated in a department must be managed in accordance with the following practices:

- 3.1 **Accumulation of Waste Chemicals:** Waste chemicals accumulated either during the operation of a process or otherwise accumulated in the department must be placed into containers that are in good condition and compatible with the collected waste.
- 3.2 **Container Labeling and Marking:** Any container used to collect or accumulate waste chemicals must be labeled and marked with the following information using the label shown in attachment 1:
 - 3.2.1 ***Container Contents*** - Containers used to accumulate waste chemicals must be clearly marked with the words "**Waste (name of chemical)**", and label or mark the Hazard(s) that apply to that chemical, all containers must be marked or labeled with the date waste is first placed into that container.
 - 3.2.2 ***Waste Collection Dates*** - Containers must have an "open date" listed on the container label and, when full or no longer being filled, a "fill date". The "open date" is the earliest date that waste is placed in the container whereas the "fill date" is the date when the container has been filled and will no longer be used to accumulate waste.



- 3.2.3 **Small or Odd Shaped Containers** - Small or odd shaped containers used to store chemical waste for pick-up or used to store chemical wastes during a departmental clean out may use the label illustrated in attachment 2. If the container is too small for a label, place the container in a larger container, seal, and then properly label the larger container.
- 3.3 **Container Management** - Containers used to collect or accumulate waste chemicals must be managed in the following manner:
- 3.3.1 **Closed Containers** - Containers must be kept closed except when adding or removing wastes.
- 3.3.1.1 Chemical waste collected during processing (e.g., chromatography) on a continuous basis must be collected via tubes that are fed through the cap or container closure so that the container is closed.
- 3.3.1.2 Containers used to collect waste chemicals on a frequent, routine basis (e.g. solvent washes) must be closed at all times except when adding or removing waste.
- 3.3.2 **Clean Containers** - Containers should be kept clean with no visible contamination on the outside of the container and markings or labels on the container must be readable and not defaced.
- 3.3.3 **Secondary Containment** - Areas where waste chemicals are accumulated must have secondary containment sufficient to collect incidental spills that might occur when adding waste to containers.
- 3.3.4 **Full Containers** - Containers should not be overfilled. "Full containers" should have at least a 10% head space to allow for expansion.
- 3.4 **Chemical Waste Stored in the Department** - Full containers used to accumulate chemical waste, unused or unopened chemicals or unknown chemicals that are temporarily stored awaiting removal by OESO must be managed in the following manner.
- 3.4.1 **Container Management** - Containers used to store waste chemicals in the department:
- 3.4.1.1 Must be labeled and marked as outlined in paragraph 3.2,



3.4.1.2 Must be kept closed and clean with no visible contamination of the outside of the container. Markings and labels on the container cannot be defaced such that they are no longer legible.

3.4.1.3 All containers must have secondary containment sufficient to hold the volume of the container should an accidental spill occur during storage.

3.4.2 **Container Storage** - Filled containers must be stored in a secure area under the control of the operator.

3.4.3 **Removal of Chemical Wastes** - Filled containers of chemical wastes must be removed within **12 months** of the accumulation start date or the date the chemical becomes a waste. In addition, no more than **50-gallons** of chemical waste may be stored in a laboratory at any one time. Once this limit is reached, a pickup request for removal, must be submitted.

3.5 Acutely Hazardous Chemicals

3.5.1 **Acutely Hazardous Chemical Identification**

3.5.1.1 **Chemical Identification** - Commercial chemical products that are considered "acutely" hazardous when discarded are labeled as "P-List" waste by the US EPA and are subject to additional regulatory requirements. A list of these chemicals is included as Attachment 3.

3.5.1.2 **Container Management** - "P-List" chemicals must be segregated into separate containers, clearly marked with the words "**Waste (name of chemical)**", label or mark hazards(s) associated with the chemical and label with the date waste is first placed into that container.

3.5.1.3 **Container Inventory** -An inventory (Attachment 4) of the amount (in pounds) of "P-List" waste accumulated in the department must be maintained by personnel. The inventory must be included with the Chemical Waste Pick-Up Request. *Departments must not accumulate more than 2 pounds or 1 quart of "P-List" waste at any time.*

3.6 Unused, Unopened or Unknown Chemicals:

3.6.1 **Container Labeling and Marking**



- 3.6.1.1 **Unused or Unopened Chemicals** - Containers holding unused or unopened chemicals no longer needed by the department should be labeled (using the label shown in attachment 2) as waste with the date that the chemical is considered to be no longer needed. Notify OESO to collect and remove from the department.
- 3.6.1.2 **Unknown Chemicals**- Containers holding chemicals that cannot be identified by chemical name, chemical constituents, or waste generating process by department personnel should be labeled as **Waste Unknown** and with the date that they are considered to be no longer needed.
- 3.6.2 **Removal of Unused, Unopened or Unknown Chemicals** - Chemicals identified by the manager or designated personnel as no longer needed by the department and that are unused, unopened, or unknown **must be removed from the department no later than 30 days after being designated as no longer needed.**
- 3.5.2.1 **Chemical Inventory** - Department managers or designated personnel are required to develop and maintain a chemical inventory. The inventory should be reviewed annually and chemicals identified as expired or no longer needed by the department should be removed from the department within 30 days by contacting OESO to request a waste pick-up.
- 3.7 **Obsolete Chemicals or Substances** - An obsolete chemical or substance is a chemical or substance that will no longer be used for its intended purpose, or will not be used again and needs to be discarded.
 - 3.7.1.1 Departments should conduct routine reviews of inventories and chemical stocks to identify any obsolete chemicals or substances at least once per quarter.
 - 3.7.2 Any obsolete chemical or substance should be removed from shelves or other storage and placed into the chemical waste accumulation area.
 - 3.7.3 Containers holding obsolete chemicals or substances in waste accumulation areas must be labeled and marked as outlined in paragraph 3.2 of this Practice. If the chemical or substance is “unknown” as defined in paragraph 3.6.1.2 of this practice, the container should be labeled as “Waste Unknown”, dated, and submitted to OESO for waste determination within 30 days following the date that the chemical was placed into the accumulation area in the laboratory.



- 3.8 **Chemical Inventory** - Department managers or designated personnel are required to develop and maintain a chemical inventory. The inventory should be reviewed quarterly and chemicals identified as expired or no longer needed by the department should be removed within **30 days** by contacting OESO to request a waste pick-up.
- 3.9 **Process Change or Close-Outs** - Whenever there is a significant process change or close out in a department that will generate waste chemicals, the manager must notify OESO at least 90 days prior to the change or close out, and ensure that all waste chemicals are properly identified, labeled and marked so that they can be properly removed from the department.

4. Roles & Responsibilities

The following key personnel will participate in the implementation of this practice:

Department Directors - Directors are responsible for ensuring that this practice is implemented in department. They may choose to assign or designate a waste manager to implement the practice.

Designated Waste Manager - The manager, supervisor or other designated individual must implement the procedures outlined above in the department or the area over which they have been assigned control.

OESO - OESO will provide support and oversight to the department through education, training, routine assessments of department's performance, and scheduled chemical waste pick-ups.

5. Training

Department managers, designated waste managers, or other persons who manage chemical waste in the department must complete a "Chemical Waste Management Course" developed and presented by OESO available at <http://www.safety.duke.edu/>. Training records will be maintained and updated by OESO.



Attachment 1 - Sample Container Label:

Waste Accumulation Container

Waste: _____

Hazard(s) Check All That Apply
Toxic _____ Ignitable _____
Corrosive _____ Reactive _____
Oxidizer _____ Irritant _____

Open Date: _____ **Fill Date:** _____

Attachment 2 - Small Container Label:

WASTE: _____

Hazard(s) Check All That Apply
Toxic _____ Corrosive _____ Flammable _____ Reactive _____
Oxidizer _____

Date: _____