Chemical Waste Management Practices for Off-Campus Facilities

1.0 Purpose / Background

Research, teaching, clinical laboratories, and hospitals produce a variety of waste chemicals that may be subject to regulatory management standards and, if improperly managed, could pose a safety risk to personnel and the environment.

2.0 Scope

This practice applies to all teaching, research and clinical laboratories and other operations at Duke University Health Systems off-campus facilities and the Duke University Marine Laboratories that generate chemical waste.

3.0 Procedures

Any facility that generates waste chemicals must be familiar with on-site chemical waste management policies or OESO Environmental Programs Practice - Management Standards for RCRA Generators of Hazardous Waste prior to producing chemical wastes. Waste chemicals 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 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:

- ***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 the chemical. Containers must be marked or labeled with the date waste is first placed into that container.

- ***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.

- ***Small or Odd Shaped Containers*** – Small or odd shaped containers used to store chemical waste or used to store chemical wastes during a 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:

- ***Closed Containers*** - Containers must be kept closed except when adding or removing wastes.
    - 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.
    - 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.
- ***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.
- ***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.
- ***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 Storage - Full containers used to accumulate chemical waste, unused or unopened chemicals or unknown chemicals that are temporarily stored awaiting removal for disposal must be managed in the following manner.

- ***Container Management*** – Containers used to store waste:
    - Must be labeled and marked as outlined in paragraph 3.2,

- 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.

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

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

- **Removal of Chemical Wastes** – Filled containers of chemical wastes should be stored no longer than **240 days prior to disposal**. In addition, no more than **50 gallons** of chemical waste may be stored at any waste accumulation location at any one time.

3.5 Unused, Unopened or Unknown Chemicals in the Laboratory:

3.5.1 Container Labeling and Marking

- ***Unused or Unopened Chemicals*** – Containers holding unused or unopened chemicals no longer needed should be labeled with the date that the chemical is considered to be no longer needed.

- ***Unknown Chemicals***– Containers holding chemicals that cannot be identified by chemical name, chemical constituents, or waste generating process should be labeled as **Waste Unknown**, with the date that they are considered to be no longer needed.

3.5.2 Removal of Unused, Unopened or Unknown Chemicals –

Chemicals identified as no longer needed and that are unused, unopened, or unknown ***must*** **be removed no later than 30 days after being designated as no longer needed**. Also, the chemicals must be identified as either a hazardous or non-hazardous waste. If the chemicals are determined to be hazardous waste, they must be managed in accordance with OESO Environmental Programs Practice - Management Standards for RCRA Generators of Hazardous Waste.

- ***Chemical Inventory*** **–**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 should be removed within 30 days.

3.6 Shutdowns or Close-Outs:

Whenever there is a significant process change in a facility or in a location within a facility that will generate waste chemicals or whenever a facility or location is shutdown or closed out a responsible person must ensure that all waste chemicals are properly identified, labeled and marked so that they can be safely removed.

3.7 Standards for the Management and Disposal of Chemical Waste

Off campus facilities will be responsible for proper accumulation, preparation, shipment, and disposal of chemical wastes that are hazardous wastes generated at the facility. Potential generator of hazardous wastes must:

1. Determine if solid wastes generated at the facility are hazardous wastes,
2. Determine if the facility will be a Large Quantity Generator (LGQ), a Small Quantity Generator (SQG), or a Very Small Quantity Generator (VSQG) based on the amount of hazardous waste generated in a calendar month;
3. Follow the waste accumulation standards outlined above;
4. Properly prepare hazardous waste for shipment; and,
5. Maintain certain records and submit certain reports.

Procedures to determine if a solid waste is a hazardous waste; to determine if your facility is a LQG, SQG, or a VSQG; prepare waste for shipment, and to identify records and complete reports are outlined in OESO Environmental Programs' Practice "Hazardous Waste Management – Generator Requirements". An additional guidance document about generator regulatory requirements can be found on the EPA website.

4.0 Roles & Responsibilities

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

- **Principal Investigators, Laboratory Directors, or Responsible Persons** – Principal Investigators, Laboratory Directors, or a Responsible Persons must ensure that this practice is implemented. They may choose to assign or designate a waste manager to implement the practice.

- **Waste Managers** – The waste manager or other designated individual must implement the procedures outlined above in those locations over which they have been assigned control.

5.0 Training

Principal Investigators, Laboratory Directors, Responsible Persons, Waste Managers, or other persons who manage chemical waste must complete a "Waste Management Course" developed and presented by OESO available at https://vmw-oesoapps.duhs.duke.edu/onlinetraining/HM140/. Training records will be maintained and updated by OESO.

6.0 References

- **Standards** -

  40 CFR Parts 260- 262. – Hazardous Management Standards for Generators

- **Other Polices/Practices** -

  "Chemical Waste Policy – Duke University/Medical Center", Occupational, Environmental Safety Office.

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: