

Division of Agriculture, Forestry, and Veterinary Medicine (DAFVM)

Guidelines for Pesticide Shipping, Storage, and Handling

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Reason for Revision: To establish guidelines with revisions to the Worker Protection Standard (Rev. 2015) and to affirm installation and proper training of Agricultural Chemical Inventory Officers (ACIO's) for all on premise DAFVM activities. To reaffirm actual pesticide shipping, storage, and handling procedures for all users of DAFVM facilities.

Justification & Purpose

Federal law and best management practices require a systematic method of recording the acquisition, storage, and disposal of pesticides. Proper pesticide mixing and handling techniques are necessary to avoid negative impacts on human health and the environment. Violations of these laws resulting from the improper handling and disposal of pesticides may result in civil and criminal penalties and fines.

Purpose: To provide guidelines to employees, research leaders and designated personnel on the proper procedures for shipping, storage, and handling of pesticides within the DAFVM division.

Who is Affected by these Guidelines?

Individuals or departments that ship, receive, purchase, store or utilize pesticides at any DAFVM facility for application to research field plots, greenhouse/garden experiments, ponds, forest, production-scale fields or other agriculture related areas.

Responsibilities / Definitions

Agricultural Chemical Inventory Officer (ACIO) – responsible for

- Accepting shipments and retrieving pesticides as needed.
- Maintaining centralized pesticide storage area facility.
- Requesting an inventory, from the occupying research leaders, for posting appropriate designations on the entrance door of the centralized pesticide storage facility.
- Assisting research leaders with meeting requirements within these “Guidelines for Pesticide Shipping, Storage, and Handling”.

Research Leaders (may also serve as ACIO for their designated area) are responsible for

- Providing as appropriate, Worker Protection Standard (WPS) training, medical evaluation and fit testing, annual respirator training and personal protective equipment (PPE) to members of his/her research team acting as a mixer, loader or handler.
- Maintaining a chemical inventory of their designated storage area. This must be posted on the entrance door of individual storage areas for reference in the event of an on-site emergency and stored electronically for submittal to ACIO (if applicable) or other requestors. This inventory should be updated monthly from March to October.
- Providing/ensuring supplies as appropriate for safe storage, emergency spill cleanup, and first aid.

Mixer, Loader or Handler - Individuals that utilize a temporary or permanent pesticide mixing area to prepare dilute mixtures and/or solutions of pesticides or experimental chemicals for application to research field plots, greenhouse/garden experiments, ponds, forest, production-scale fields or other agriculture related areas.

In order to be qualified as a mixer, loader or handler an individual must:

- Hold a certification in **Category 10, Research and Demonstration**ⁱ, or
- Have been trained as a Handler according to the [2015 Revised Worker Protection Standard](#), and
- For all pesticides requiring respirators as noted in the **Agricultural Use Requirements** of the label, be medically evaluated and fit tested according to the **2015 Revised WPS** requirements. ([MSU Ext. Pub. M-2166](#))

Documentation of the above qualifications and training must be maintained by the department and available for inspection upon request.

SHIPPING:

Shipping into MSU -

Pesticides and experimental chemicals should be shipped directly to the designated Agricultural Chemical Inventory Officer (ACIO). Pesticides should not be shipped to the main campus addressesⁱⁱ.

Specify an address for pesticide shipments:

<i>(name of facility)</i>	
Shipping Address	
<u>Ship to:</u>	<i>(individual's name)</i>, Agricultural Chemical Inventory Officer Attn. <i>(Research Leader's Name Here, if different than ACIO)</i>
	Mississippi State University <i>(dept. or station name)</i> _____ <i>(address)</i> _____ <i>(phone #)</i> _____

The ACIO will notify the research leader when his/her materials are received at the above location.

For pesticides and experimental chemicals that are shipped directly to research leaders or their designated locations, the research leader is responsible for inventory and appropriate storage.

Shipping Out of MSU -

There are activities where hazardous materials that are directly transported by MSU employees are not subject to USDOT regulations. However, "Any commercial shipment of hazardous materials or dangerous goods by any MSU department or unit must be coordinated through the Environmental Health & Safety Office." In the event that pesticides, or other agriculture chemicals or related items must be transported or shipped out from MSU facilities, first reference [MSU policy 79.09 - Transportation of Hazardous Materials or Dangerous Goods](#) .

STORAGE:

Storage facilities shall be maintained by the ACIO and/or research leader. This includes the facility's housekeeping, safety, inventory and general upkeep as specified in all applicable guidelines and regulations.

Research leaders shall be responsible for maintaining their chemical inventories and be able to list chemicals within their assigned areas upon request.

In the event that agricultural chemicals will be stored in a centralized storage room with multiple research leader's inventory, specific shelf areas/rooms will be assigned a research leader. The ACIO or their designee will be responsible for general upkeep of this centralized storage area and have a working knowledge of the chemicals stored within it. The ACIO may request an inventory list from the research leader as needed.

Inventories must be posted on the entrance door of individual storage areas for reference in the event of an on-site emergency and stored electronically for submittal to ACIO (if applicable) or other requestors. This inventory should be updated monthly from March to October.

Chemicals in any storage facility shall have each container dated upon arrival and placed in secondary containment when unpacked.

Pesticide and agriculture chemical storage facilities shall remain locked at all times.

Retrieval and Return of Pesticides -

The ACIO or research leader for each designated storage area will be responsible for receiving, inventorying, retrieving, and restocking of pesticides.

Research leaders shall have a method for maintaining their inventory as chemicals are retrieved and returned to the storage facility.

Note: The exterior surfaces of all pesticide containers must be free of formulation residues (rinse if necessary) and their caps tightly sealed prior to return to the storage facility.

HANDLING:

Pesticide solution mixing, loading & handling is normally either small scale (volumes of pesticide solutions prepared in 2 liter or 3 gallon containers) applied by researchers or large scale (volumes of pesticide solutions prepared in tractor-mounted spray tanks) applied to production-scale fields.

No matter the size scale or facility this occurs, operations must follow the same basic principles emphasizing proper chemical hygiene, safety and environmental stewardship.

Ensure that each area of operation has specific procedures to abide by these guidelines.

General -

1. Before mixing, loading, or handling pesticide solutions, individuals must read the label and Safety Data Sheet (SDS) for each pesticide and follow all safety and handling instructions provided by the manufacturer.
2. The research leader must ensure that individuals under his/her charge wear the PPE according to pesticide label instructions during the mixing, loading and application of pesticides.
3. No food, drink or tobacco products are allowed in either the pesticide storage or mixing-loading areas.
4. Before using a facility, users should familiarize themselves with the location and proper operation of the emergency eyewash, spill clean-up materials and other safety systems as appropriate.
5. Only mix & load in a well ventilated area (be familiar with fume hood or ventilation fan systems present inside rooms).
6. The ACIO/research leader or his/her proxy will be responsible for retrieving and restocking of pesticides used for mixing. Non-ACIO researchers shall coordinate retrieval of RUP's from the centralized pesticide storage area, with their designated ACIO in order to expedite and promote efficient retrieval of materials from storage.

Mixing -

7. Research leaders must provide their own mixing equipment (pipettes, graduated cylinders, syringes, funnels, balances etc.) and containers for mixed solutions.
8. Mix and load in an area where accidental spills will be contained appropriately.
9. Individuals mixing pesticides should double-check their calculations to ensure that the proper concentration and volume of pesticide solution is being prepared. Remember: Calculate twice, mix once.
10. Mix only the necessary amount to be used. All this mixture must be sprayed out at the application site. There should be no mixture remaining in tanks or containers when returning from the application site.

When preparing solutions containing Hazard Class I pesticides (highly toxic materials having an LD50 < 50 mg/kg) bearing "Danger Poison" labels such as found on 'Temik' insecticide, the ACIO must be informed so that appropriate safety precautions can be made for his presence in the mixing area.



Handling/Cleanup -

11. Any contaminated items such as paper towels, absorbent granules, etc. resulting from the clean-up of a pesticide spill must be placed in a sealed, impermeable container, and labeled to identify the contaminant, the responsible researcher, and the date of the spill. This material should then be submitted to the Facility ACIO or MSU Hazardous Waste Officer who will ensure its proper disposal.
12. Contaminated items such as disposable syringes, graduated cylinders, weighing boats, spatulas, etc. must be triple rinsed with water and the resulting rinsate collected. Triple rinsed items with no observable formulation residues on/in the items can be placed in the regular trash receptacle.
13. The outsides of the pesticide containers with remaining contents must be wiped off, the caps placed on tightly, and the containers returned to the designated pesticide storage facility.
14. Empty pesticide containers must be triple rinsed, the rinsate captured. Rinsed containers must be punctured (so as to render unusable) and lids removed before disposal into the recycling trailer. If no recycling trailer or facility is available, the prepared containers may be disposed of (with permission from waste service provider) in on-site dumpster.

15. No pesticide or experimental chemicals, their concentrates, solutions or rinsates are to be poured down a sink (unless this sink drains into containment specifically for capturing rinsate) or onto the general outside ground around the mixing area.
16. All rinsates must be captured and disposed per specific procedure for the area and that also abides by applicable regulations. Rinsate holding tanks may be provided at the pesticide mixing-loading pad for the temporary storage of pesticide rinsates. Areas with emergency sump drains are only to capture accidental tank overflows and spills. Spray tanks should not be intentionally drained into the sump.
17. Following mixing, all areas including countertops, floor, hood, and sink must be cleaned and returned to conditions existing prior to use. Pesticide spray solutions, rinsates and personal items/utensils must be removed from the mixing area at time of departure for proper disposal or stored in their designated area.

Disposal -

18. Research plans should include appropriate measures for pesticide and other agricultural chemical disposal.
19. When agricultural chemicals are bought or donated and contained in large pallet totes or gas cylinders it is imperative to ensure that these containers can be returned to the supplier.
20. Pesticides and other agriculture chemicals that are no longer being used by a research leader should be reported to the ACIO. As appropriate, the ACIO will try to help find use for it within other DAFVM areas. Pesticides and other agriculture chemicals that are no longer usable or outdated must be disposed of in a timely manner and properly, according to the [MSU policy 79.01- Hazardous Waste](#). Any cost associated with such disposal is the responsibility of the research leader and their assigned department.

References

- 2015 Revised Worker Protection Standard
<https://www.epa.gov/pesticide-worker-safety/regulatory-information-2015-agricultural-worker-protection-standard-wps>
- Category 10, Research and Demonstration
<https://register.extension.msstate.edu/commercial-pesticide-applicator-study-materials-order-form>
<http://extension.msstate.edu/agriculture/pesticide-applicator-certification>
- MSU Ext. Publication M-2166
<http://extension.msstate.edu/publications/miscellaneous/how-comply-the-2015-revised-worker-protection-standard-for-agricultural>
- MSU policy 79.09 - Transportation of Hazardous Materials or Dangerous Goods
<https://www.policies.msstate.edu/policypdfs/7909.pdf>
- MSU policy 79.01- Hazardous Waste
<https://www.policies.msstate.edu/policypdfs/7901.pdf>

ⁱ A Certification in Category 10, Research and Demonstration may be obtained through a course of self-study and examination in General Standards and Research and Demonstration. These Study manuals are available at no charge to MSU employees via the following link:

<https://register.extension.msstate.edu/commercial-pesticide-applicator-study-materials-order-form> .

Additional information about the process of Certification may be found on the Pesticide Applicator Certification web page under the heading "Commercial Applicators" at the following link:

<http://extension.msstate.edu/agriculture/pesticide-applicator-certification> .

ⁱⁱ Radio-labeled pesticides must be shipped through the Radiological Safety Officer. Contact the Environmental Health & Safety Office (662-325-3294) for the specific procedures and requirements that are necessary for these materials.