



Pesticide Storage, Mixing and Loading

Introduction

A pesticide is any substance or mixture of substances intended for preventing, destroying, repelling or mitigating any insects, rodents, fungi, weeds or other forms of plant life, animal life or viruses that have been declared to be a pest. Any substance or mixture of substances intended as a plant regulator (growth inhibitor), defoliant or desiccant (chemicals causing plant leaves to fall off) is also classified as a pesticide. Handling and storage of pesticides around the farmstead should meet or exceed label instructions, otherwise, leaks or spills can result in groundwater or surface water contamination. Water quality on and around the farm is better protected if appropriate management procedures, including proper disposal of containers and unused pesticides, are followed.

Environmental Concerns

Improper storage, mixing, or loading procedures can lead to surface or groundwater contamination and pose serious health risks to humans and wildlife. Pesticides can leach through soils and into groundwater. Cleanup of groundwater contaminated by pesticides is often impossible and the contamination may be present for many years. Wells contaminated with pesticides must not be used or used only with appropriate treatment if concentrations are higher than drinking water standards. Pesticides applied to the soil surface can be transported to lakes and streams by water runoff and soil erosion, contaminating these surface water bodies. Pesticides can deform, inhibit growth and reproduction, or kill aquatic organisms. The harmful chemicals can also accumulate in the fatty tissue of fish and other aquatic species which may cause health problems in people or animals if they consume these contaminated species.

Potential Economic Benefits

Careful storage and handling of pesticides can protect the quality of water resources used by humans and animals. The cost to clean up a pesticide spill can be astronomical. Constructing a new storage facility or renovating an older facility used to store pesticides can be an investment, but will provide environmental protection should a spill or leak occur. Additional management practices, highlighted below, will reduce the likelihood of a spill or leak, eliminating the need to invest large amounts of money in clean up and remediation efforts.

Summary of Best Management Practices

- Designate a specific storage area(s) for pesticides and document locations.
- Maintain the structural integrity of the pesticide storage structure and ensure that necessary security measures are being implemented.
- Ensure pesticide containers/drums are in good condition (no cracks, dents, leaks, etc.) and all labels are readable.
- Remove/cap all floor drain from pesticide mixing/storage areas. Any drain or sump must flow to a designated holding area.



Summary of Best Management Practices Continued...

- Properly dispose of pesticide containers and any unwanted or banned pesticides.
- Protect water supplies by using anti-siphoning devices, mixing/loading outside of recharge areas, maintaining minimum separation distances, and following pesticide label directions.
- Ensure equipment used to transport pesticides is in good working condition, ensure all transported chemicals are labeled properly and MSDS documents are with the chemical at all times.
- Dispose of water used to clean sprayer equipment by storing it and applying it to labeled crops or immediately spraying back on labeled crops.
- Limit the quantity of pesticides stored on the farm between growing seasons.

Summary of Regulations

State Regulations

[NYS Department of Environmental Conservation – Pesticide Statutes, Regulations, and Policies](#)

Federal Regulations

[US Environmental Protection Agency – Pesticide Container and Containment Rule](#)

[US Environmental Protection Agency – Federal Insecticide, Fungicide, and Rodenticide Act \(FIFRA\)](#)

[US Environmental Protection Agency – Resource Conservation and Recovery Act \(RCRA\)](#)

Background Information for Worksheet Questions

Is there a designated pesticide storage area on the farm?

Proper storage of pesticides protects human and animal health, and safeguards surface and groundwater resources. Ideally, pesticides should be stored in a designated building separated by the type of pesticide. The temperature and humidity of the storage facility should meet the requirements listed on the pesticide labels. Exceeding the temperature and/or humidity limits can cause pesticides to breakdown, freeze, volatilize, combust, etc. and may be unlawful. Pesticides can also be stored in a separate cabinet or room in a multiple use building. Storing pesticides with other chemicals (i.e. insecticides, fungicides, herbicides), in insecure areas (i.e. basements, corner of a barn, areas prone to flooding, etc.) or not according to label instructions poses the greatest risk to human/animal safety and water resources.

For More Information:

[Pesticide Environmental Stewardship, Center for Integrated Pest Management – Pesticide Storage](#)

[University of Missouri Extension - Reducing the Risk of Groundwater Contamination by Improving Pesticide Storage and Handling](#)

[Pesticide Environmental Stewardship, Center for Integrated Pest Management – How to Read the Label](#)



Background Information for Worksheet Questions

Where are pesticides stored?

Pesticide storage areas should be documented and can be marked on a farmstead map or in a table/chart. Pesticides may be stored in different locations during the growing season and leftover pesticides may also be stored in separate locations. These additional storage areas should also be marked on the map or documented in the chart. When considering the location for a pesticide storage facility care should be taken to avoid stream floodplains, other areas prone to flooding, wellhead or groundwater recharge areas, etc.

For More Information:

[Penn State Extension – What You Need to Know about Storing a Pesticide](#)

What is the structural integrity of the pesticide storage structure (e.g. roof condition, floor condition, security of door, etc.)?

The structural integrity of a pesticide storage facility is critical to preventing water quality contamination and maintaining the safety of farm employees, children, and wildlife. The physical conditions (i.e. age, type of material, etc.) of the roof, floor, and door should be documented. Ideally, the roof should not have any leaks and should be maintained regularly. The floor of the storage structure should be impervious with no cracks. The door to the facility should function properly and be secured with a lock when the storage is not in use.

What is the condition of pesticide storage containers?

Pesticides should be kept in original containers that are in good condition (no leaks, cracks, or dents) with original readable labels. Readable labels are important as they identify the contents of the bottle, as well as, contain important directions regarding pesticide use and disposal. Storing pesticides in containers that are in poor condition with missing or unreadable labels does not meet the requirements of the environmental conservation law and can lead to improper use, dangerous mixing, and inappropriate disposal.



If stored pesticides are no longer used, are the pesticide containers or drums in stable condition?

Pesticide storage containers/drums should be in stable condition, meaning the containers should not be cracked, dented, or leaking and drums should not be rusted. If containers are unstable, farm employees, children, etc. are at risk from exposure to dangerous chemicals. Unstable containers can also be a potential fire hazard and have an increased risk of leaking which may contaminate water resources.

What security measures are taken at the storage area?

To provide the highest level of security at the storage area, the area should be fenced off, have properly posted signage, and be locked at all times. Only authorized employees should have access to the area. These measures will help to keep children, neighbors, or unauthorized employees away from the site and away from harmful chemicals.

Background Information for Worksheet Questions

What is the condition of the floor in the pesticide storage/mixing area?

In order to provide the most protection to the environment and water quality, pesticides should be stored and mixed on an impermeable surface, such as sealed concrete. The floor should be free of cracks and have curbs or dikes that would be able to contain a minimum of 250 gallons of liquid or 125% of the largest pesticide holding tank used on the farm (if greater than 250 gallons). An impermeable surface prevents any spilled chemicals from seeping into the ground and threatening groundwater resources. They also provide for faster, more efficient cleanup.

For More Information:

[Pesticide Environmental Stewardship, Center for Integrated Pest Management: Storage Building and Location](#)

[USDA NRCS Conservation Practice Standard - Agrichemical Handling Facility \(309\)](#)

Is there a floor drain in the storage/mixing area?

The USDA NRCS Standard for Agrichemical Handling Facilities (309) states that outlet drains are not permitted in the agrichemical collection, storage, or handling areas. However, the floor of the facility may be sloped so that any spills flow to a designated collection area or sump that pumps to a designated collection area. If a floor drain does exist within the facility it should be capped or it should lead to a holding tank that has a volume 1.25 times greater than that of the largest pesticide holding tank or sprayer.

For More Information:

[NRCS Agrichemical Handling Facility \(309\) Standard](#)

What is done with unwanted or banned pesticides?

Pesticides maybe classified as hazardous waste and should not be disposed of along with normal household or farmstead trash. Under no circumstances should unwanted or banned pesticides be disposed of by dumping them into drains, ditches, etc. Labels found on pesticide containers are required to contain information regarding proper disposal procedures and should be followed accordingly. To avoid having to store excess pesticide chemicals, purchase only necessary amounts. If absolutely necessary, store pesticides in original containers with legible labels and in a locked cabinet and/or building. Leftover pesticides can also be returned to the manufacturer or distributor.



For More Information:

[EPA Pesticides and Toxics Management](#)

[NYS DEC Agriculture and Farming](#)

[Clean Sweep NY](#)

Background Information for Worksheet Questions

What is the proximity of the in-field mixing/loading area to wells, springs, and watercourses?

Most pesticide spills occur during mixing and loading. When possible, these processes should take place on an impermeable surface (i.e. concrete pad) to prevent any spilled pesticides from seeping into the ground or contaminating nearby water resources. Since impermeable surfaces are generally not installed in-field, the mixing and loading area should be located outside of a well/aquifer recharge area and at least 200 feet from any watercourse. A portable mixing facility may also be used to protect against spills. Pesticides can be extremely harmful to the environment and all precautions should be taken to prevent contamination.

For More Information:

[University of Missouri Extension - Reducing the Risk of Groundwater Contamination by Improving Pesticide Storage and Handling](#)



How are pesticide products transported to fields (e.g. pre-mixed in a sprayer of good condition, in concentrate in vehicle, etc.)?

Document how the farm operation transports pesticide products to the fields. The operation should be using a method that reduces the potential for leaks and spills that can be harmful to human and animal health, as well as, the surrounding environment. Pesticides can be transported to fields a number of ways. Any equipment/vehicles used to transport pesticide products should be well maintained to ensure it is in good working order.

Are all transported pesticides properly labeled?

When transporting pesticides in their original containers, the full label must be readable and the MSDS (Material Safety Data Sheet) must be with it. If pesticides are being transported mixed in a sprayer or tank, a copy of the full label and MSDS must be in the applicator's possession, as well as, on the farm. Sprayers and tanks may be considered alternative containers under the Environmental Conservation Law and minimum pesticide information needs to be affixed to the sprayer or tank. It is important to carry this information in case of accidental spills; responders will know how to properly clean up the chemical.

For More Information

[NYS Department of Environmental Conservation – Questions and Answers Regarding NYS Pest Management Program, Containers](#)

How is sprayer rinse water disposed?

Sprayer rinse water or rinsate is water that is used to rinse out pesticide application equipment and pesticide containers after application. It can be properly labeled and stored for later crop application or it can be immediately sprayed back on a labeled crop. Even though sprayer rinse water will have a low concentration of pesticide, it should be treated the same as pesticides and not be disposed of through drains, ditches, along fence lines, etc. Even low concentrations of pesticides can be extremely harmful if allowed to contaminate water sources or wildlife habitats.

Background Information for Worksheet Questions

What is the quantity of pesticides usually stored between growing seasons?

The goal for a farm operation should be to store as few pesticides as possible. While purchasing pesticides in bulk may be more cost effective, it can lead to a significant amount of unused chemicals that need to be stored between growing seasons. Limiting the amount of stored pesticides reduces the risk of fires, explosions, or spills. When possible, an operation should make pesticide purchases from retailers that allow unused pesticides to be returned.

For More Information:

[Pesticide Environmental Stewardship, Center for Integrated Pest Management – Pesticide Storage](#)

How and where are pesticide containers disposed?

Used pesticide containers need to be disposed of properly in order to reduce the risk of soil/water contamination and protect human and animal health. Containers need to be triple rinsed according to label directions and can be returned to pesticide dealers. Appropriate hazardous waste recycling services or solid waste management facilities can also be used to deal with pesticide containers. Containers should never be thrown out with other farm garbage, burned, buried, or stockpiled on the farm. Any of these methods can put the health and well-being of humans and wildlife in danger, and pose a serious threat to surface and groundwater resources.

For More Information

[Pesticide Environmental Stewardship, Center for IPM – Handling Containers](#)

[University of Missouri Extension - Reducing the Risk of Groundwater Contamination by Improving Pesticide Storage and Handling](#)

Have you considered purchasing pesticides in mini-bulk or returnable containers to reduce the number of containers requiring disposal?

See “What is the quantity of pesticides usually stored between growing seasons?” above.

Has an emergency action plan been developed should a pesticide spill/major leak, fire or natural disaster occur? If yes, does it include an up to date inventory of all pesticides stored or being transported? Are all employees aware of the plan?

An emergency action plan is a required component of a Tier 3A Plan or Tier 3B CNMP. It outlines specific procedures to be followed in the event of a chemical or manure spill, fire, flood, etc. If pesticides are stored or mixed on the farm, the emergency action plan should have a section that addresses what to do should pesticide spills, leaks, or fires occur. At a minimum, the plan will include a list of phone numbers and people to contact, a description of proper pesticide handling procedures, inspection and repair methods for equipment, spill containment, spill recovery and disposal procedures, an up to date pesticide inventory and/or list of products being transported, map or sketch indicating area runoff patterns, water sources, drainage systems, and location of spill kits/equipment. All employees should be aware of the plan, what information it contains, and where it is located. It would be beneficial to place copies of the plan in several different locations around the farm for easy access. Additionally, if a farm employs any non-English speaking workers, it would be beneficial to have a copy of the plan written in their native language.

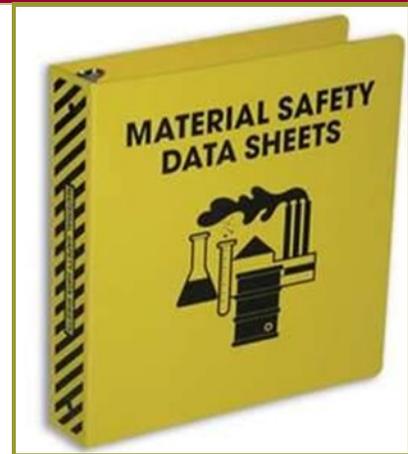
For More Information:

[Pesticide Environmental Stewardship, Center for IPM – Contingency Planning](#)

Background Information for Worksheet Questions

Are Material Safety Data Sheets (MSDS) and labels printed and kept on file?

It is a legal requirement to keep Material Safety Data Sheets and labels on file. Copies should also be kept in any vehicle that is used to transport or apply pesticides, as well as, in the applicators possession during application. Material Safety Data Sheets contain information on the potential hazards and how to work safely with a specific chemical product. They also contain information on use, storage, handling, and emergency procedures related to the hazards of the product.



SUMMARY

AEM Tier 2 Assessments document environmental stewardship and establish benchmark conditions on the farm. They also identify resource concerns and areas of opportunity. The AEM Tier 2 worksheets also help to further establish baseline data that can be used to prioritize issues for Tier 3 planning.

Tier 2 Assessments should be completed on-site with the farmer. When the initial assessment is completed, appropriate feedback in the form of an AEM Tier 2 Worksheet Summary should be provided to the farmer. The summary should include an overall level of concern for the worksheet, explanation of the overall ranking, a list and description of items of greatest concern, as well as, documentation of what is being done well and what areas need improvement. After the evaluation is complete, the farm should be given a ranking which will determine their priority to advance to the AEM Tier 3 planning phase. Appropriate ranking categories that could be used are: High, Medium, or Low Priority. A ranking procedure that has been approved by your local AEM Team should be used to make the ranking determinations.

