

**NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD
CONNECTICUT**

**AGRICHEMICAL HANDLING FACILITY
(No.)**

CODE 309

DEFINITION

A facility with an impervious surface to provide an environmentally safe area for the handling of on-farm agrichemicals.

PURPOSE

To provide a safe environment on farm and ranch operations for the storage, mixing, loading and cleanup of agrichemicals, retain incidental spillage, retain leakage, and to reduce pollution to surface water, groundwater, air, and/or soil.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies where:

- An assessment indicates that the handling of agrichemicals creates significant potential for pollution of surface water, groundwater, air or soil and a facility is needed to properly manage and handle the chemical operation;
- An adequate water supply is available for filling application equipment tanks, rinsing application equipment and chemical containers, and safety features as needed for the operation;
- An assessment indicates that soils and topography are suitable for construction.

This standard does not apply to the handling or storage of fuels.

This standard does not apply to commercial or multi-landowner agrichemical handling operations.

CRITERIA

General Criteria Applies to All Purposes

Laws and Regulations. All Federal, state, and

local laws, rules, and regulations, permit conditions and requirements, including local inland wetland agency regulations, governing the construction and use of this practice shall be followed. This includes setbacks from wells, surface water and property boundaries. The landowner shall obtain all necessary permits prior to construction or any land clearing activities.

Connecticut General Statutes (CGS) Section 22a-449(c)-100 Hazardous Waste Management System and CGS Section 22a-449-(c)-102(a)(1) Hazardous Waste Container Management, and 40 CFR 260 may apply to facilities, as well as RCRA and FIFRA Container/Containment requirements

The size of the **agrchemical storage or handling facility** will be based on an **assessment** of the size of the equipment used and the agrichemical use on the farm over a typical growing season or an average of the last five years.

The pad, hoses, pipes, valves, seals, connectors, filters, tanks, and related plumbing material must be compatible with the chemicals being handled and capable of withstanding the intended use.

Sump outlet drains are not permitted in the agrichemical collection, storage or handling areas.

Posts, pipes, hoses, discharge valves, or other devices may not pass through the floor, containment storage walls, or the sump.

When more than 60 gallons of Class I, II, or III flammable or combustible liquids or a single storage container larger than 5 gallons of Class I, II, or III flammable or combustible liquids are

stored in an agrichemical handling facility, National Fire Protection Association (NFPA) 30, Flammable and Combustible Liquids Code, Chapter 4, shall be followed. **Agrichemical** storage cabinets or other remedies must be installed when required. **There are also storage limits set by RCRA.**

When the agrichemical handling facility is also used for agrichemical storage, provide sufficient space and designate a separate room or area.

Separation Distances. Separation distances from residences and buildings, property lines, surface water bodies including wetlands, private or public wells or springs, seasonal high water table and/or bedrock shall be determined on a case by case basis in consultation with appropriate state or local regulatory agencies.

Use the following separation distances for preliminary planning purposes only.

Residences and businesses – Owner-Operator	250 feet
Residences and businesses – Other	500 feet
Property lines	250 feet
Public Roads	250 feet
Drinking Water Supply Lines	150 feet
Surface water bodies	250 feet
Private well or spring	150 feet
Public water supply well	500 feet
Above seasonal high water table	24 in.
Depth to bedrock	48 in.*
* Per CT Health Code. May reduce with DEP concurrence.	

Permanent Facilities

Location. Locate the agrichemical handling facility as follows:

- When chemical storage is not incorporated into the facility, locate it adjacent to or as near the chemical storage building as practical;
- Isolated and located downwind from residences and other buildings used to store feed, seed, petroleum products, or livestock with a minimum separation distance as required;
- ***At sites that have not been used as stationary mixing/loading sites in the past.***

Locate the bottom of the facility a minimum of two feet above the seasonal high water table.

Minimize the potential for contamination of streams by locating facilities outside of floodplains. However, if site restrictions require location within a floodplain, they shall be protected from inundation or damage from a 100-year flood event, or larger if required by laws, rules, and regulations.

Facilities shall be located so the potential impacts from accidental releases, and/or liner failure are minimized; and separation distances are such that prevailing winds and landscape elements such as building arrangement, landforms, and vegetation minimize odors, drift, and runoff.

Storage Capacity. Provide a minimum storage volume on the chemical-handling pad of 250 gallons or 1.25 times the volume of the largest storage or spray tank on the pad, whichever is greater.

For unroofed facilities provide storage on the pad as stated above or the volume of the 25-year, 24-hour storm, whichever is greater. Provide a means of storing or field applying, according to chemical label directions, the full storage volume within the 72-hour period following the storm.

Exclude runoff from the facility.

Rinsate Tanks. Provide **above-ground** rinsate tanks of adequate number and size as needed for the type of operation, allowing for separation of non-compatible chemicals. The material type shall be suitable for the type of chemical to be contained in the tank. Tanks shall be installed only.

Manufactured Components. Manufactured tanks and components shall be structurally sound, capable of withstanding all anticipated loads, and constructed of suitable materials for their intended use. Tanks will be sized based on a single farm owner or operator agrichemical need.

Chemical Handling Pad. Size the pad to accommodate the largest spraying equipment used in the operation. Allow for equipment access from more than one direction. The minimum width of the mixing pad shall be based on the width of the spray equipment with one of the booms extended, **plus** adequate **pad** space for maneuvering around equipment. **Provide a**

minimum of 2 **additional feet from the edge of the pad** for open facilities and 4 **additional feet** for enclosed facilities.

Slope the pad to allow for drainage to a collection area or sump.

Flexible Membrane Liners. All flexible membranes shall be certified by the manufacturer to be suitable for the intended use.

Use of the flexible membrane shall be in accordance with manufacturer recommendations. All flexible membrane installations shall meet the material and installation requirements of the plans and specifications provided for each installation and shall be certified by the installer.

Minimum Thickness for Membranes	
Type	Minimum Thickness
HDPE	40 mil thickness
LLDPE	40 mil thickness
PVC	30 mil thickness
RPR	45 mil thickness
EPDM	45 mil thickness

Concrete Surfaces. To protect concrete from agrichemical penetration and contamination, all concrete must have:

- an admixture for concrete meeting the requirements of ASTM C1240 (micro silica), ASTM C618 (fly ash) or ASTM C989 (ground blast furnace slag),
- or
- be sealed with a chemically resistant non-vapor barrier forming coating,
- or
- have measures taken to prevent vapor formation under the concrete sealed with a chemically resistant coating.

All coatings must be compatible with the agrichemicals used at the facility and installed in accordance with the manufacturer's recommendations.

Agrichemical Collection. Provide a collection area or sump with adequate dimensions for sediment removal and pump operation.

Provisions shall be made to collect, store, utilize, and/or treat contaminated runoff or spillage, or rinsate.

Consider covering the facility to exclude precipitation and reduce or eliminate the volume of contaminated runoff. Roof structures or other covers shall be designed in accordance with Connecticut NRCS Standard 367, Roofs and Covers.

Structural Design. For the structural design, address all items that will influence the performance of the structure, including loading assumptions, storage tanks (RCRA), material properties, and construction quality. Indicate design assumptions and construction requirements on the plans.

Roof Structures or Rigid Covers. Roof structures or tank covers shall be in accordance with Connecticut NRCS Standard 367, Roofs and Covers and shall be designed to withstand both dead and live loads. The live load values for covers contained in ASABE EP378.3, Floor and Suspended Loads on Agricultural Structures Due to Use, and in ASABE EP 393.2, Manure Storages, shall be the minimum used. The actual axle load for tank wagons having more than a 2,000 gallon capacity shall be used.

If the facility is to have a roof, snow and wind loads shall be as specified in ASCE 7-05, "Minimum Design Loads for Buildings and Other Structures". If the facility is to serve as part of a foundation or support for a building, the total load shall be considered in the structural design.

Connecticut NRCS Standard 367, Roofs and Covers provides additional requirements and guidance.

Locate footings below the anticipated frost depth unless measures are designed to accommodate frost/freeze conditions.

Fabricated structures shall be designed according to the criteria in the following references as appropriate:

- Timber - National Design Specifications for Wood Construction, American Forest and Paper Association;
- Steel – Manual of Steel Construction, AISC, American Institute of Steel Construction;

- Concrete - *Building Code Requirements for Reinforced Concrete, ACI 318*, American Concrete Institute;
- Masonry - *Building Code Requirements for Masonry Structures, ACI 530*, American Concrete Institute;
- Slabs – Use a five (5) inch minimum concrete slab thickness. Base the required area of reinforcing steel on the subgrade drag theory in accordance with American Concrete Institute, ACI 360, *Design of Slabs-on-Grade*. When heavy loads are to be resisted and/or where a non-uniform foundation cannot be avoided, use an appropriate design such as ASAE EP514 “Design of Concrete Structures for Secondary Containment of Liquid Pesticides and Fertilizers”, and procedure incorporating a subgrade resistance parameter(s) such as ACI 360.

Water Supply. Provide an adequate water supply for mixing agrichemicals, rinsing tanks and containers, and for emergency health and safety needs as appropriate for the facility. Provide all pipelines, hoses, backflow prevention and other hardware as **required**.

Safety. Design shall include appropriate safety features **as required** to minimize the hazards of the facility. Provide warning signs, emergency eyewash station, and other devices as appropriate, to ensure the safety of humans. Provide adequate ventilation at all times for enclosed buildings using natural or mechanical means.

Vegetation. Stabilize disturbed areas, as necessary, to prevent erosion, in accordance with Connecticut NRCS Standards 327, Conservation Cover, 561, Critical Area Planting, and/or 561 Heavy Use Area Protection.

Portable Facilities

The portable agrichemical handling facility is a manufactured portable device that can be easily moved from field to field and will meet the needs of the user. ***Portable facilities shall meet the same setback requirements as permanent facilities.***

Pad. The pad shall be constructed of durable material that is chemically resistant for the intended agrichemicals. The minimum containment capacity of the pad is 1.25 times the volume of the largest individual agrichemical

container or tank that will be located on the pad. Include a sump or other provisions for easy recovery of spilled liquid

Rinsing Devices. Design rinse devices so that residual contents of agrichemical containers can be adequately rinsed directly from the container to the spray tank. Design the rinse system to operate from the nurse tank discharge pump or a separate pump that provides an adequate slow rate and pressure. Verify with the manufacturer of the facility that any pump to be used in pressure rinsing is compatible with the rinse device.

CONSIDERATIONS

For permanent facilities, the agrichemical handling facility may cause an increase in water use at the site from the mixing of agrichemicals and rinsing of agrichemical sprayers, containers and agrichemical-handling pad.

Consider measures to prevent or minimize wind drift.

Consider installing an apron at the facility entrance to minimize sediment transport onto the pad in accordance with Connecticut NRCS Standard 561, Heavy Use Area Protection.

Consider providing a mixing platform for filling agrichemical sprayers.

For portable handling facilities consider using a top/bottom-loading valve with built-in check valve in the hose from the nurse tank to the spray tank. This will enable the operator to remain on the ground while filling the sprayer.

PLANS AND SPECIFICATIONS

Plans and specifications shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose. Plans and specifications shall include construction plans, drawings, job sheets or other similar documents. These documents shall as a minimum, specify the requirements for installing the practice and include the kind, quantity and quality of materials to be used.

- To the extent practical, specifications shall conform to NRCS National Engineering Handbook Part 642.

Portable agrichemical handling facilities are manufactured items. Review plans and specifications submitted by the manufacturer to

ensure that the proposed facility meets the requirements of this standard.

AS BUILT DRAWINGS

As built drawings shall be prepared showing all facility elements as actually installed and a copy shall be provided to the owner / operator upon construction completion.

OPERATION AND MAINTENANCE

An Operation and Maintenance (O&M) Plan shall be prepared for, reviewed with, and signed by the landowner or operator responsible for the application of this practice. The O&M Plan shall provide specific instructions for proper operation and maintenance of each component of this practice and shall detail the level of repairs needed to maintain the effectiveness and useful life of the practice.

All actions, inspections, record-keeping and reports shall be the responsibility of the landowner/operator.

The O&M Plan shall address the following:

- Brief description of the facility. Define parameters used to size and design the facility such as storage tank and equipment sizes.
- **Acceptable uses.** The facility shall not be used for purposes other than the storing, mixing, loading, cleaning, and maintenance of materials and equipment used for agrichemical application.
- **Inventory. Ensure that an inventory of agrichemicals to be stored or handled at the facility and their respective Material Safety Data Sheets (MSDS) are available.**
- The proposed method of handling and disposing of **containers**, rinsate, washwater, and spills.
- The process for handling accumulated rainfall.
- The process for handling accumulated sediment.
- The strategy for cleaning surfaces between different agrichemical mixing operations.
- An inspection plan of structural components such as the condition of concrete, curbing,

sump, access roads, building structure, etc. Note the timing of inspections, conditions that would cause concern, and required actions as appropriate.

- Any weekly, monthly, or annual maintenance that may be necessary for the proper functioning of the system components including, but not limited to, concrete surfaces, sumps, pumps, hoses, pipelines, building materials, electrical equipment, and other materials and equipment.
- The schedule of any required written inspection and maintenance reports.
- Proper winterization of the facility.
- Required safety signage.
- An Emergency Response Plan with safety procedures in the event of an accidental spill, exposure, fire, or other hazardous incident. Provide a list of safety equipment, contact names, and phone numbers.

REFERENCES

- American Concrete Institute, *ACI codes*, Detroit, MI.
- American Forest and Paper Association, *National Design Specifications for Wood Construction*, Washington, DC.
- American Institute of Steel Construction, *AISC, Manual of Steel Construction*, Chicago, IL.
- American Society of Agricultural Engineers, ASAE EP514, *Design of Concrete Structures for Secondary Containment of Liquid Pesticides and Fertilizers*, St. Joseph, MI.
- American Society of Civil Engineers, ASCE 7, *Minimum Design Loads for Buildings and Other Structures*, Reston, VA.
- Daum, D. R., and D. J. Meyer. *Pesticide Storage Building*. Pennsylvania State University, Agricultural Engineering Department.
- MidWest Plan Service, 1995. *Designing Facilities for Pesticide and Fertilizer Containment MWPS-37*, Ames, IA.
- Doane's Agricultural Report. *Chemical Containment Facilities*. Vol. 53, No 36-5.
- Kammel, D. W., 1988. *Protective Treatment for Concrete*. Agricultural Engineering Department, University of Wisconsin.

Kammel, D. W. et al, 1991. MWPS-37, Designing facilities for pesticide and fertilizer containment. 1st Edition, MidWest Plan Service.

Noyes, R. I., 1989. *Modular Farm Sized Concrete Agricultural Chemical Handling Pads*. Oklahoma State University, Agricultural Engineering Department.

Noyes, R. T., and D. W. Kammel, 1989. *A Modular Containment, Mixing/Loading Pad*. ASAE Paper No 891613, American Society of Agricultural Engineers, Winter Meeting, New Orleans, LA.